

Daily and Nightly Anxiety Among Patients Affected by Night Eating Syndrome and Binge Eating Disorder

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We tested if there were any differences about nocturnal and diurnal anxiety between patients either affected by Binge Eating Disorder (BED) or Night eating Syndrome (NES). Fifty four patients affected by BED, 13 by NES and 16 by both BED and NES were tested using the Self Rating Anxiety Scale (SAS) and the Sleep Disturbance Questionnaire (SDQ). Their nocturnal eating behavior was ascertained through the Night Eating Questionnaire (NEQ). Patients affected by both BED and NES scored significantly higher on SAS than other patients. Among NES patients we found a correlation between a SDQ subscale and two subscales of the NEQ. Among BED patients we found a correlation between SAS scores and the nocturnal ingestion subscale of the NEQ. Nocturnal eating is related to nocturnal anxiety among NES patients while it is related to diurnal anxiety among patients affected by BED. These findings

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support the hypothesis that BED and NES are distinct syndromes sharing overeating but with different pathways to excessive food intake.

Night Eating Syndrome (NES) and Binge Eating Disorder (BED) share a common symptom (overeating either by day or by night). NES isn't mentioned in the DSM IV TR whereas BED has been included in its B appendix among pathologies needing further research (APA, 2000).

It is an open question whether bingeing either by day or by night is only a different pathway to obesity or represents the symptom of two distinct eating disorders. (Allison, Grilo, Masheb & Stunkard, 2005; Allison et al., 2006; Brody, Walsh & Devlin, 1994; Cachelin et al., 1999; Devlin, Goldfein & Dobrow, 2003; Striegel-Moore et al., 2006). We are trying to contribute to this debate by researching anxiety among NES and BED patients.

A history of past anxiety among night eaters had been mentioned in the first study about the syndrome (Stunkard, Grace & Wolff, 1955) and was subsequently confirmed by Schenck and Mahowald (Schenck & Mahowald, 1994). In light of these findings Rand, Macgregor and Stunkard (1997) included evening tension at bed time among diagnostic criteria of the syndrome. Yanowski (1993) found a higher anxiety rate amongst BED patients than among other obese subjects. This datum was confirmed by Wilfley, Schwartz, Spurrell and Fairburn (2000) in a study including BED patients and control normal weight people. Napolitano and colleagues (2001), comparing psychological characteristics of BED and NES patients, found that night eaters showed significantly lower levels of anxiety than both BED patients and subjects with dual diagnosis.

In this study we tested nocturnal and diurnal anxiety among patients affected by BED or NES as well as those affected by both pathologies. Our aim was to put in evidence whether there are differences in their anxiety levels. Moreover, we tested whether there is any correlation between nocturnal eating behavior and the patients' anxiety.

MATERIALS AND METHODS

Participants

Over a 6 month period we contacted a total of 202 obese patients, who had been admitted to one of three eating disorder units in Northern Italy. All agreed to be included in the study and gave informed consent. One hundred and sixty-two of them were females and 40 were males, within the age bracket of 15 to 77 (average age 48.51, SD 12.95) and with BMIs ranging from 30.08 to 70.86 (average BMI 39.90, SD 7.74).

Diagnostic Instruments

The diagnosis of BED and NES was ascertained through a clinical interview (2008). To be diagnosed as Night Eaters the participants had to eat more than the 25% of their daily food intake after dinner, to be affected by morning anorexia and nocturnal awakenings followed by nocturnal ingestions at least twice a week for a period of 3 months. Moreover the subjects must have a complete awareness of their nocturnal eating behavior. Excluding criteria were to be affected by Bulimia Nervosa and/or Anorexia Nervosa. The provisional diagnostic criteria for Binge Eating Disorder of the DSM IV TR were followed to identify BED patients.

The last version of the Night Eating Questionnaire (NEQ) was used to assess patients' nocturnal behavior.

Patients were tested for anxiety using the Self Rating Anxiety Scale (SAS; Zung, 1971) and for sleep problems using the Sleep Disturbance Questionnaire (SDQ; Espie, Brooks & Lindsay, 1989).

Statistical Analysis

The NEQ has a four factor structure (Allison et al., 2008), the first factor assessing nocturnal ingestions, the second evening hyperphagia, the third morning anorexia and the percent of total daily food intake consumed after dinner. The last one assesses mood and sleep disturbance. The purpose of this was to find out if there is a relationship between anxiety levels and the NEQ subscale scores.

The SDQ presents three subscales: physical tension, sleep disturbances, and mental anxiety. The latter can be further divided into cognitive arousal and sleep effort. For the purpose of this study we used the mental anxiety subscale to evaluate the sleep related anxiety of the patients. It was tested if there was any significant difference between the groups either with regard to their SAS scores or their SDQ mental anxiety subscale scores. We decided to use the SAS and the SDQ to find out if there were differences between reported anxiety levels by day and by night between different groups of patients.

We also correlated both their claimed levels of mental anxiety from the SDQ and from the SAS with their scores on the four scales of the NEQ. The research was reviewed and approved by the review board of Studi Cognitivi, research group in Milan (Italy).

RESULTS

Eighty-three patients suffered from an eating disorder: 54 (average age 43.84, SD 12.06, average BMI 36.94 kg/m², SD 6.04) were affected by BED, 13 by

NES (average age 49.69, SD 10.97, average BMI 44.12 kg/m², SD 9.97) and 16 by both BED and NES (average age 47.56, SD 8.65, average BMI 42.13 kg/m², SD 10.89). NES patients had a significantly higher BMI than BED patients, (ANOVA. $F = 4.55$; $df\ 3$; $p = 0.001$). Following this diagnosis the sample was divided into three groups: NES patients, BED patients and patients with a double diagnosis (BED & NES).

On the Self Rating Anxiety Scale the average score of NES patients was 51.02 (SD 11.18) and that of BED patients was 53.27 (SD 9.62). People affected by both NES and BED scored 61.16 (SD 11.66) on average, this group being the only one to score above the average Z point of SAS (58.7). As ANOVA showed a significant difference between the groups ($F\ 9.62$, $df\ 4$, $p < 0.05$), we used the post hoc test (Scheffe) for further analysis. These results revealed that only patients affected by both BED and NES differed significantly from the other groups at SAS.

On the mental anxiety subscale of the SDQ the average score of NES patients was 14.84 (SD 3.58) that of BED patients 14.18 (SD 4.47) and that of patients affected by both BED and NES 15.33 (SD 4.01). Using ANOVA we didn't find any significant difference between the groups.

We found a correlation between the SDQ mental anxiety scores of NES patients and two of the NEQ subscales: Evening Hyperphagia (EH; Spearman's $RHO\ 0.67$; $p = 0.01$) and Mood and Sleep Disturbance (MSD; Spearman's $RHO\ 0.59$; $p = 0.03$). Neither among BED patients nor among patients affected by both BED and NES did we find any correlation between their scores at the SDQ subscale and any subscale of the NEQ.

Regarding the diurnal level of anxiety, no correlation could be found between the SAS score and any subscale of the NEQ, neither amongst patients suffering from NES nor among those affected by both BED and NES. Among BED patients we found a correlation between the SAS score and the Nocturnal Ingestion (NI) subscale of the NEQ (Spearman's $RHO\ 0.76$; $p = 0.04$)

CONCLUSION

In a nutshell: while the SAS anxiety level of NES patients as well as that of BED patients ranged from mild to moderate, the level of patients affected by both NES and BED was found to be marked to severe, what's more, they also have the highest level of mental anxiety on the SDQ subscale. This confirms the previous finding (Napolitano et al., 2001) that patients with a diagnosis of BED and NES suffer from a more severe psychopathology compared to those with a single diagnosis. This seems to be more related to nocturnal behavior itself than to an increased BMI due to overeating. In fact, within our sample we didn't find any significant difference in BMI between NES patients and subjects suffering from both BED and NES.

Given that there were no differences between NES and BED patients with regard to diurnal anxiety levels and nocturnal anxiety levels, the different correlation between those and the NEQ subscales got our attention. Among patients affected by NES, Evening Hyperphagia levels and Mood and Sleep Disturbances levels are correlated to nocturnal mental anxiety. When checking, a correlation with diurnal anxiety could not be found. One could say, the seeds of nocturnal eating grow in the same darkness in which the symptoms blossom. With BED patients the situation is different. Their nocturnal overeating is related to diurnal anxiety—even when they binge by night—there is no connection between nocturnal eating and nocturnal mental anxiety.

Sharing a symptom doesn't necessarily mean sharing a common pathogenesis. Our findings seem to support the hypothesis that BED and NES are distinct syndromes sharing overeating but with different pathways to excessive food intake. This could suggest a different psychotherapeutic approach to each of the pathologies: whereas BED therapy should focus on emotional eating related to diurnal problems, NES therapy should concentrate on nocturnal anxiety as well as mood and sleep difficulties.

The missing correlation between NEQ subscale levels of the SAS and the SDQ among patients affected by both BED and NES could be induced by the complex psychopathology of these subjects. Their nocturnal eating doesn't seem to be clearly related either to nocturnal problems or to daily anxiety. Among BED patients the co-occurrence of NES could be merely a further increase of their pathology rather than an additional eating disorder. Based on this finding the presence of a diagnosis of Binge Eating Disorder could be considered an exclusion criterion for a diagnosis of Night Eating Syndrome.

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