



Night eating syndrome in young adults: Delineation from other eating disorders and clinical significance

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ABSTRACT

The Night Eating Syndrome (NES) is a recently described disordered eating style whose status in current diagnostic systems needs to be further clarified. The aim of this study was to increase knowledge about the clinical features of NES in a sample of 1514 young adults aged 18–26 years from the general population who participated in an anonymous Internet survey. We first examined characteristics of NES and tried to delineate it from healthy controls as well as from other eating disorders in terms of socio-demography, eating disorder pathology and general psychopathology. Second, we attempted to further clarify the clinical utility of the NES by assessing the degree of distress as well as impairment. Twenty (1.3%) participants with NES were identified and there was only modest overlap between NES and both Binge Eating Disorder (BED) and Bulimia nervosa (BN) according to questionnaire-based DSM-IV criteria. Compared to healthy controls, NES individuals reported more pronounced eating disorder pathology as well as general psychopathology (depressive symptoms, chronic social stress). NES seems to be associated with considerable distress and impairment. Implications for the validity and classification of NES are discussed.

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1. Introduction

The clinical phenomenon of Night Eating Syndrome (NES) was first described by Stunkard et al. (1955) as a disordered eating style characterized by morning anorexia (omitting breakfast), evening hyperphagia and insomnia. Since then, research on this potentially new eating disorder has started to increase rapidly and efforts to specify the definition of NES were further developed in order to reduce the heterogeneity in the category “eating disorders not otherwise specified” of current diagnostic systems (Birketvedt et al., 1999; Allison et al., 2005; Thomas et al., 2009). Previous studies assessing prevalences of NES differ considerably with respect to sample characteristics, type of population investigated, age structure and assessment methods. Prevalences obtained so far range between 1.5% and 5.7% in the general population, between 6% and 16% in overweight and obese weight loss seeking populations, and amount to 12.3% in populations

suffering from mental disorders (Rand et al., 1997; Ceru-Bjork et al., 2001; Striegel-Moore et al., 2005; De Zwaan et al., 2006; Lundgren et al., 2006; Colles et al., 2007).

The overlap between NES and other eating disorders, especially Binge Eating Disorder (BED) has been examined mostly in obese populations. Findings indicate a considerable percentage of co-occurrence of BED in individuals suffering from NES, even though comorbidity rates vary widely with a range of 6.3% to 60% (Napolitano et al., 2001; Adami et al., 2002; Grilo and Masheb, 2004; Allison et al., 2006, 2007; Lundgren et al., 2006; Colles et al., 2007). Although both BED and NES seem to share the common feature of hyperphagia, they differ with respect to the amount of ingested food during episodes of hyperphagia (NES individuals consume less food than BED individuals; Allison et al., 2005), and regarding self-reported nocturnal anxiety which only occurs in persons with NES (Sassaroli et al., 2009). Recent studies reported further overlap of NES with other syndromes, for example Bulimia nervosa (BN; Tzischinsky and Latzer, 2004; Jarosz et al., 2007; Lundgren et al., 2011) and Anorexia nervosa (AN; Lundgren et al., 2011).

With respect to eating disorder pathology, findings remain mixed. Whereas several studies reveal that NES individuals indicate higher weight, shape and eating concern as well as

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elevated levels of restrained eating compared to overweight and normal-weight controls (Allison et al., 2005; Lundgren et al., 2008), others find no differences regarding restrained eating (Boseck et al., 2007; Striegel-Moore et al., 2010). These results might partly be due to methodological limitations, as the study of Striegel-Moore et al. (2010) did not rely on suggested diagnostic criteria for NES.

Body weight might not have a causal role within NES pathology, as Marshall et al. (2004) found in their cross-sectional study that normal-weight individuals with NES did not differ from obese individuals with NES with respect to night eating symptomatology, but the former group was significantly younger on average than the latter one. Thus, as self-reported in the study of Marshall and colleagues, the onset of obesity might follow the onset of NES, even though for further clarification longitudinal data is needed.

The overlap between NES and sleeping disorders has only recently been investigated (Howell et al., 2009). There is some evidence that insomnia is associated with increased probability of night eating in individuals with schizophrenia (Palmese et al., 2011). Regarding general psychopathology, several studies in obese and weight loss seeking populations revealed an association between NES and elevated scores of depression, lower self-esteem, and increased stress in terms of elevated cortisol levels compared to healthy controls (Birketvedt et al., 1999; Gluck et al., 2001; Allison et al., 2006; De Zwaan et al., 2006). Other, questionnaire-based studies on normal-weight student populations and NES patients found elevated perceived chronic stress levels as well as maladaptive coping strategies such as denial and substance use in NES individuals (Lundgren et al., 2008; Wichianson et al., 2009). Taken together, increased stress levels, associated with maladaptive functioning and depressive feelings seem to be related to NES (Lundgren et al., 2008). Up to now, the results further suggest that psychopathology in NES is not just due to overweight or obesity, since it is also present in normal-weight NES individuals.

Although according to the DSM-IV (American Psychiatric Association, 2000) a clinically relevant syndrome needs to be associated with clinical distress or disability in order to fulfill the criteria of a mental disorder, until present, data on subjective burden in terms of distress and impairment in NES is scarce. Due to limited scientific evidence about its clinical utility, NES will not be included as an isolated diagnosis but within the section of eating disorders not elsewhere classified in the fifth edition of the DSM (Tanofsky-Kraff and Yanovski, 2004; Striegel-Moore et al., 2009). The study of de Zwaan and colleagues, using the rather broad definition of NES “nighttime eating problems at least once in the past month”, found that 75% of the 106 participants affected by NES (with 30% overweight to obese) considered their symptoms as a problem. These individuals were younger, had a higher BMI, were more likely to have a lifetime history of another eating disorder and reported less control over eating. However, it remains unclear, whether distress was the consequence of NES symptoms or rather due to accompanying features such as for example increased body weight. Future research should include the use of dimensional data to assess distress, as distress is more likely to be a gradual rather than a dichotomous phenomenon.

In summary, the most significant limitations of current research concern differences in the definitions of NES and disparities in the use of recruitment procedures, study populations and measurement methods. Samples used were mostly obtained from overweight to obese or clinical populations and could thus not be generalized. Further studies should examine the relationship between NES and other eating disorders in both clinical and community samples and adhere to recently proposed criteria in

order to enhance the comparability of future findings (Allison et al., 2010).

Accordingly, in our study we compared individuals meeting diagnostic criteria for NES with individuals suffering from other disordered eating behaviors and with healthy controls in terms of comorbidity, sociodemography, eating disorder pathology, BMI and general psychopathology. We expected values for eating disorder pathology and general psychopathology to be increased in NES individuals relative to healthy controls. Characteristics of NES individuals were assessed using diagnostic criteria by Allison et al. (2010). To increase the generalizability of the findings related to NES, we investigated a sample of young adults from the general rather than the clinical or obese population. In addition, we attempted to clarify the clinical utility of the NES by assessing the degree of distress and impairment and their relationships with eating disorder pathology as well as general psychopathology (Tanofsky-Kraff and Yanovski, 2004; Striegel-Moore et al., 2009; Allison et al., 2010). Results should foster knowledge gain about the NES in the light of a possible classification in current diagnostic systems. We conducted an internet-based study as it offers several advantages over paper-pencil assessment, such as cost-effectiveness, lowered subject burden and therefore increased access to participants, leading to an increased external validity (Reips, 2002).

2. Methods

2.1. Participants

Study participants were to be aged between 18 and 26 years. They were excluded if they reported to be shift working at the moment (Striegel-Moore et al., 2009) or if the completion time of the survey was unrealistic (i.e. below 10 min). Realistic completion time was determined in preliminary tests (for further recommendations in internet-based research see Reips, 2002). Altogether 2406 individuals were registered for the anonymous Internet survey carried through at the Department of Clinical Psychology at the University of Basel, Switzerland. Of the entire sample, 480 individuals were excluded for not meeting inclusion criteria (306 for refusal to participate, 50 for age, 12 for completion time, 112 for missing data), 404 for premature termination of the survey, and eight individuals meeting the criteria for NES had to be excluded due to actual shift-working. This resulted in a sample of 1514 young adults. The local Ethical Committee approved the study design, materials and procedures; participants were informed about the purpose of the study and provided documented consent.

2.2. Assessment measures

Standardized questionnaires were converted into an online format with the online survey software *Unipark* (Globalpark AG, 2009). The original content of the questionnaires was not altered during this procedure and the validity of internet-based questionnaires seems to be comparable with the corresponding paper-pencil versions (Carlbbring et al., 2007).

2.2.1. Night Eating Syndrome

For the assessment of the NES, the Night Eating Questionnaire (NEQ; Allison et al., 2008b; German version by De Zwaan, 2004) was used, which measures symptoms of NES with 14 items (5-point forced choice scale (0–4)), resulting in a 4-factor structure: nocturnal eating, evening hyperphagia, morning anorexia and mood/sleep disturbance. For this study, we did not use these four factors, but used specific items of the NEQ to identify individuals suffering from NES (see section on the categorization and allocation of subgroups below). Psychometric properties have been evaluated showing good internal consistency and validity as well as good factor structure of the original version (Allison et al., 2008b). It has been shown that the NEQ has a high precision to discriminate between individuals with NES and those without NES (Allison et al., 2008a).

2.2.2. Eating disorder pathology and BMI

The Eating Disorder Examination Questionnaire (EDE-Q; Fairburn and Beglin, 1994; German version by Hilbert and Tuschen-Caffier, 2006) is a 28-item questionnaire measuring eating disorder pathology. It contains four subscales (restrained eating, eating concern, shape concern, and weight concern), a global score and frequency measures of binge eating and compensatory behaviors within the last 28 days. Items are rated on a 7-point forced-choice scale (0–6), with

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