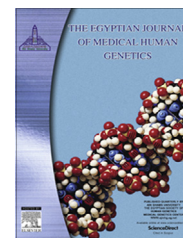




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ORIGINAL ARTICLE

# Can food addiction replace binge eating assessment in obesity clinics?



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## KEYWORDS

Food addiction;  
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**Abstract** *Introduction:* Food addiction (FA) is a new terminology that uses the similarities between the craving for food and drug addiction. The Yale Food Addiction Scale (YFAS) is a recently developed tool that assesses the various symptomatology of FA and diagnoses FA when there are  $\geq 3$  symptoms with clinically significant functional impairment. As Egypt is one of the highest African countries in obesity prevalence, this study aimed at assessment of the presence of FA in a representative sample of Egyptian adolescents and to compare this new diagnosis to binge eating which has some common features with FA particularly loss of control eating, in order to define the true magnitude of the problem and explore the relationship between both so that preventive measures could be planned to combat the rapidly rising obesity prevalence.

*Subjects and methods:* A cross section study using a stratified random sampling technique was conducted on 401 adolescents aged 11–18 years chosen from public, distinguished governmental and private schools. All participants had their weight and height measured with calculation of the body mass index and were interviewed to fill in the Binge Eating Scale (BES) and the Yale Food Addiction Scale (YFAS).

*Results:* The study included 221 females (55.1%) and 180 males (49.9%). Their mean age was  $13.98 \pm 1.93$  years. Clinical BE was present in 77 adolescents (19.2%). FA was diagnosed in 81 subjects (20.2%). Each of BE and FA showed significant differences in the different weight categories. Significant relationships were found between the various symptoms of FA and the scoring of the BE scale.

*Conclusion:* This study proved a reconciliation between BE and FA in a non-clinical sample of Egyptian adolescents.

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## 1. Introduction

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Since the early assumption of the addictive properties of sugars and palatable foods by Dr. Hoebel [1], the concept of craving and tolerance to food which is termed food addiction (FA)

came in focus [2–4]. The Yale Food Addiction Scale (YFAS) [2] was the first scale to objectively assess the different symptomatology of FA and its associated functional impairment. Individuals with FA have activated brain neuronal circuits similar to those activated by substance dependence [5]. Binge eating (BE) is a term that has been used for decades to describe multiple attacks of uncontrollable food craving resulting in the intake of large amounts of food associated with guilty feeling and embarrassment about not being able to stop. Despite using the term BE for a long time, it has been recently included in the DSM-5 [6]. BE shares many physical, behavioural and neurobiological characteristics with substance dependence similar to FA [7]; however, episodes of BE result in increased dopamine response unlike the repeated exposures to tasty foods which result in a decreased response [1]. Recent research has shown that BE and FA are related but not identical as 57% of obese adults who had BE met the diagnosis of FA [8]. However, individuals with combined BE and FA represent a more severe subtype [8]. The treatment of BE and FA utilise the same principles for cognitive behavioural therapy [7]. An important concept in differentiating the process of BE from the concept of addiction is that strict dietary restraints and avoidance of desired foods may be associated with aggravation of BE risk [9]. However, in drug addiction, abstinence may be a goal [7]. Studies on eating disorders are relatively scarce particularly in adolescents in community samples [10–12] and particularly those on FA [4].

The primary aim of this study was to study the prevalence of BE and FA in a representative sample of Egyptian adolescents and compare between the diagnosis of clinical BE episodes and the diagnosis of FA regarding their relationship to the different weight categories in a sample of adolescents in the community i.e. a non-clinical sample. The secondary aim of the study was to screen for the prevalence of the FA symptomatology in the adolescent community. This may provide better understanding of the functional role played by FA in relation to obesity and may provide the basis for the introduction of FA assessment in obese adolescents to implement better strategies to treat and prevent overweight and obesity which increased dramatically in recent years [13,14].

## 2. Subjects and methods

### 2.1. Study design

This was a cross sectional study that used a stratified random sampling technique to identify the randomly selected schools (public, governmental distinguished and private schools) in Cairo, the capital of Egypt. Simple random sample was used for the participant students inside the classes. It was conducted during the school academic year from September 2014 to May 2015.

### 2.2. Study setting

Preparatory and secondary schools in Cairo were distributed in its eastern, western, northern and southern parts.

### 2.3. Sample size justification

The sample size was 400 adolescents which is the maximum number that could be calculated for measuring the prevalence

in a cross section study. The sample was estimated based on the formula given in the following equation:

$$n = \frac{z^2 \times (p * 1 - p)}{\delta^2}$$

$Z$  =  $Z$  value (e.g. 1.96 for 95% confidence interval).  $P$  = Percentage picking a choice.  $\delta$  = Error margin = 0.05.

### 2.4. Clinical assessment

All participants were subjected to measuring the weight in kilograms with a digital scale in minimal clothing. Height was measured to the nearest 0.1 cm on a portable stadiometer (Seca stadiometer 213). Weight and height were compared to the norms [15]. The body mass index (BMI) was calculated as weight (kg)/height (m)<sup>2</sup> [16]. Obesity was defined as BMI > 2 standard deviations and overweight as BMI > 1 standard deviation for age and sex as the recommendations of the WHO [17].

### 2.5. Psychiatric interview

All participants were subjected to:

- Assessment of the presence of BED on the Binge Eating Scale (BES) [18]. The BES is a 16-item questionnaire assessing binge eating severity as well as the feelings and thoughts associated with such behaviour. When rating each item, respondents had to choose between three or four response statements of increasing severity. Individuals with scores less than 17 are considered not to have significant binge eating (no BE), individuals with scores in the 18–26 range probably binge eat (probable BE), and individuals with score of 27 and above have clinical-levels of binge eating (clinical BE). The BES has shown to have good internal consistency, reliability and validity.
- Assessment of food addiction by the Yale Food Addiction Scale (YFAS) for children [2] which is a validated 25-item self-report measure of addictive eating behaviour. The YFAS reports the symptomatology of FA and then a diagnosis of FA is made when  $\geq 3$  symptoms are present in addition to clinically significant impairment or distress. Translation into Arabic was done by an accredited translation office then revised by the researchers and lastly reviewed by three experts to be sure of its validity.

## 3. Ethical approval

The work has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for experiments on humans. The study was approved by the local ethics committee of Ain Shams University and the Egyptian Ministry of Education as well as the administrative departments of the involved schools. Verbal assent was obtained from all adolescents participating in the study on the day of the interview.

### 3.1. Statistical analyses

All analyses were performed with SPSS 20.0 statistical package for the social sciences (IBM, Armonk, NY, USA). Descriptive

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