Original Research Article

Prevalence of State Trait Anxiety and Binge Eating Disorder in Overweight Individuals: A Cross Sectional Study

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Abstract

Background: Overweight is a growing public health global epidemic that affects over 600 million people worldwide and leads to the development of multiple metabolic, mechanical, and mental health disorders associated with fatality. Binge eating disorder (BED) is a kind of eating entity associated with excessive weight. Nearly, 80% of those with BED have higher risk of psychopathology, including mood, anxiety, and sleep problems. Anxiety has repeatedly been associated with overweight and eating disorders. So, the aim of this study was to find the prevalence rate of state trait anxiety and binge eating disorder in overweight individuals.

Method: A self-administered questionnaire was prepared which consisted of survey related questions from State Trait Anxiety Inventory and Binge Eating Scale. Total 51 individuals were selected on the basis of selection criteria and the questionnaire was distributed amongst them. Data analysis using scientific calculation showed that there was high prevalence rate of high level of state anxiety, moderate level of trait anxiety with moderate level of binge eating in overweight individuals.

Conclusion: The study supported the alternative hypothesis and indicated that there was significant prevalence of state anxiety, trait anxiety as well as binge eating disorder in overweight individuals.

Keywords: State Trait Anxiety Inventory, Binge Eating Scale

Introduction

Overweight is defined by the World Health Organization (WHO) as an abnormal or excessive accumulation of fat in the body that can cause various changes in body functions and even behavior.[1] By 2025, it is envisaged that 2.3 billion adults around the world will be overweight, with 700 million individuals at risk for obesity.

The dominant pathogenesis is the imbalance in the processes involved in energy homeostasis, with an energy intake greater than energy expenditure, leading to energy storage.[2] Numerous problematic eating behaviors (viz. binge eating episodes, loss of control over eating) and mood (viz. anxiety or stress) have shown an association with increased weight.[3] Overweight is a major public health concern worldwide, with rates having nearly tripled since 1975. Worldwide, 37.4% of the adult population is overweight, while 23.7% of adults suffer from obesity.[4]

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Binge-eating disorder (BED) is defined by several criterias. Individuals must report consuming an unusually large quantity of food in a short span of time (compared to what others may consume in a similar situation) in addition to experiencing a loss of control over one's eating behavior during this period. In addition, at least three of the following features must also be present: consuming food much more rapidly than normal, eating food until uncomfortably full, consuming large quantity of food when not hungry, eating food alone to avoid embarrassment, or feeling frustrated, depressed, or guilty after eating.

Those with BED have a high prevalence of physical and psychological comorbidities. Nearly 80% of those with lifetime BED have suffered from disorders such as mood, anxiety, substance use, and eating disorders.[5,6] In addition to psychiatric concerns, BED is independently associated with increased risk of physical comorbidities including chronic diabetes, hypertension, back/neck pain, chronic headaches, and other types of chronic pain.[5]

Anxiety has repeatedly been associated with overweight and eating disorders. It has a complex impact on food consumption and can increase [6-9] or decrease food intake.[10] Emotional eating is an inclination to eat in response to positive or negative emotions, with the foods chosen predominantly being energy-dense and appealing.[11] This type of eating can result from numerous causes, such as using food to deal with negative feelings or confusing internal appetite and satiety with physiological changes connected with feelings.

Kehan Bao et al. in 2022 found that the greater food addiction symptoms were more strongly associated with greater objective binge eating and with higher levels of anxiety in youth.[12] There was also a small and significant positive correlation between food addiction symptoms and greater BMI in youth. So, excess weight with greater BMI is an important contributing factor for non-communicable chronic diseases (NCCD), as well as cardiovascular diseases (mainly coronary artery disease and cerebrovascular disease). From physiotherapy management point of view, it is necessary to know the prevalence and alleviate the levels of anxiety and binge eating by psychotherapeutic education, counseling and treatment to prevent complex clinical entities.

State Trait Anxiety Inventory (STAI): Anxiety is evaluated by the State-Trait Anxiety Inventory[13], which consists of two scales, one of trait anxiety, which requires subjects to describe how they generally feel, and a scale of state anxiety, for which the subjects are instructed to indicate how they feel at that moment. These scales are independent, have different connotations, and can be calculated as indicators of a single type of anxiety.

Binge Eating Scale (BES): This tool is used to raise data about binge eating, evaluates the severity of binge eating in overweight people, being considered a valid tracking device. The BES is a 16-item questionnaire assessing the presence of certain binge eating behaviors which may be indicative of an eating disorder.[14]

Materials and Method

Study Design: A Cross-Sectional study

Study Population: Overweight individuals

Study Setting: Fitness centres in Vadodara city

Study Duration: One time (longitudinal) study

Study Period: 6 months (November 2022 – April 2023)

Sampling Design: Convenience sampling method

Sample size: 51 individuals

Inclusion criteria:

- Age group - 20 to 59 years
- Gender - both male and female
- Individuals having BMI 25 to 29.9 kg/m^2
- Individuals who were able to comprehend commands
- Willingness to participate in the study

Exclusion criteria:

- Individuals on medication that may have altered gastrointestinal motility, appetite or absorption within the last 6 months including anti-anxiety drugs.
- Individuals undergoing psychological or psychiatrist treatment and not participating in any systematic weight loss programs.
- Disorder or condition that may affect appetite or weight viz. Type II diabetes mellitus, hyperthyroidism etc.

Materials used:

- Stadiometer
- Weighing machine
- State trait anxiety inventory (STAI)
- Binge eating scale (BES)

Outcome Measures:

1. State Trait Anxiety Inventory (STAI):

Spielberger, Gorsuch, Lushene, Vagg & Jacobs stated that it is a commonly used measure of state and trait anxiety. It is used in clinical settings to assess anxiety and to differentiate from depressive syndromes. It is also often used in research as an indicator of caregiver distress as mentioned by Ugalde et al. in 2014 and Greene et al. in 2017.

Anxiety Form Y, the most popular version, has 20 items for diagnosing state anxiety and 20 items for trait anxiety.[10]

State anxiety items comprise of: "I am tense; I am worried" and "I feel calm; I feel secure." Trait anxiety items consists of: "I worry too much over something that really doesn't matter" and "I am content; I am a steady person." All items are rated according to 4-point scale (e.g., from "Almost Never" to "Almost Always"). Higher scores indicate greater anxiety.

Scoring:

a) 20-34: Low Anxiety

b) 35-49: Moderate Anxiety

c) 50-64: High Anxiety

d) 65-80: Very High Anxiety

2. Binge eating scale (BES):

The BES comprises of 16 items measuring key behavioral (e.g., rapid eating, eating large amounts of food), and affective/cognitive symptoms (e.g., guilt, feeling out of control or unable to stop eating) that precede or follow a binge. Each item contains 3 to 4 statements that are weighted response options, which reflect a range of severity for each measured characteristics.[11]

The scale's possible total scores range between 0 to 46, with higher scores indicating symptoms of severe binge eating. Marcus, Wing, & Lamparski stated that individuals may be categorized into three groups as defined by established cut scores of binge eating severity: no or minimal binge eating (score ≤ 17), mild to moderate binge eating (score 18-26) and severe binge eating (score >27).

A self-administered questionnaire was prepared which consisted of survey related questions from State trait anxiety inventory (STAI) and Binge eating scale (BES).Total 51 individuals (aged between 20-59 years) were selected (convenience sampling) on the basis of inclusion and exclusion criteria from various fitness centres in Vadodara. Proper knowledge & education regarding the study was provided to the participants prior to the commencement of the study. After taking consent from the participants, study was executed. The questionnaire was distributed amongst the participants selected for this study and the responses were recorded for further data analysis.

Results and Discussion

- Data was analyzed by Microsoft Excel 2019. Prior to the statistical test, data was screened for normal distribution by Shapiro-Wilk test. After normal distribution of the data, scientific calculation was applied for data analysis.

Table 1: Frequency of different age groups (in years)

Age (Years)	Frequency	Percent	Cumulative Percent
20-24	37	72.5	72.5
25-29	1	2	74.5
30-34	5	9.8	84.3
35-39	2	3.9	88.2
40-44	1	2	90.2
45-49	2	3.9	94.1
50-54	2	3.9	98
55-59	1	2	100
Total	51	100	

Table 2: Mean Age (in years)

N	51
Mean	39.5
Std. Deviation	12.24

Interpretation: The above table shows that mean age of participants was 39.5 ± 12.24 years taken for this study.

Table 3: Prevalence rate of State Trait Anxiety (STAI-S) in overweight individuals

	State Trait Anxiety (STAI-S)			
	Low	**Moderate**	**High**	**Very High**
Male	0	2	5	0
Female	1	21	21	1
Total	1	23	26	1

Table 4: Prevalence rate of State Trait Anxiety (STAI-T) in overweight individuals

	State Trait Anxiety (STAI-T)			
	Low	**Moderate**	**High**	**Very High**
Male	0	5	2	0
Female	1	21	20	2
Total	1	26	22	2

Table 5: Prevalence rate of Binge Eating (BES) in overweight individuals

	Binge Eating (BES)		
	Non-binging	**Moderate Binging**	**High Binging**
Male	1	2	4
Female	2	25	17
Total	3	27	21

The need of the hour is to explore the psychological outlook of individuals living with overweight by taking into account multiple psychological correlates of overweight such as self-esteem, eating self-efficacy, perceived stress, physical hunger and body satisfaction and to compare their anxious symptomatology and levels of binge eating. Therefore, the need arises to quantify the existence of psychological profiles and eating disorders specific to male and female with overweight, as well as to investigate differences in the age, BMI, symptoms of anxiety and binge eating disorders. Thereby, we can know their prevalence and with the help of physiotherapy, we can provide adequate knowledge, counseling and treatment to prevent the occurrence of non-communicable disease and cardiovascular disease.

A British study which aimed at examining the association between sleep disorders, quality of life, anxiety and depression found out that these variables were highly prevalent among excessive weight individuals and more than two thirds of them reported poor sleep quality.[15]

With these evidence based results, a Canadian study compared insomnia symptoms in individuals with BED and in those with no record of eating disorders. The results of this study provided evidence of sleeping difficulties in the presence of BED. Moreover, anxiety and depressive symptoms mediated the relation between the insomnia symptoms and binge eating, showing the significance of mood, anxiety and sleeping difficulties for the comprehension and treatment of binge eating.[16]

Suzimar de Fatima in 2020 found that the prevalence of minimally moderate levels of state anxiety in overweight individuals was 96%. When a comparison was done for anxiety with sleep patterns and binge eating, a positive correlation was found among the overall population and in young adults as well as an inverse relation between age and anxiety in adults who were 45 or older i.e. the higher the age for this category, the lower the anxiety score. No differences were found between sexes regarding scale scores; however 80.8% of the study sample was female and the highest rates of moderate anxiety and poor sleep quality were seen in middle-aged groups whose age coincides with the climacteric period.

Lizeth Cifuentes et al. in 2022 found associations between symptoms of anxiety, eating behaviours, and self-efficacy for eating. Patients with excess weight with symptoms of anxiety showed higher mean scores for emotional eating and uncontrolled eating and low self-efficacy for resisting eating in challenging situations.

In this current study, the dependent variable, Strait Trait Anxiety Inventory was used in the study which measured two types of anxiety; state anxiety and trait anxiety. The other dependent variable used was Binge Eating Scale which assessed the presence of binge eating severity in overweight individuals.

The results of this study (using scientific calculation) showed that there was high prevalence rate of high level (51%) of state anxiety, moderate level (51%) of trait anxiety with moderate level (53%) of binge eating in overweight individuals.

Conclusion

The results of this current study supported the alternative hypothesis and indicated that there was significant prevalence of state anxiety as well as trait anxiety in overweight individuals. Moreover, the findings also showed the significant prevalence of binge eating disorder in overweight individuals. So, it was concluded that there was high prevalence rate of high level of state anxiety, moderate level of trait anxiety with moderate level of binge eating in overweight individuals.

Limitations

- The present study only examined a total of 51 overweight individuals using a convenience sampling method and this sample size is not sufficient for identifying a significant prevalence rate of state trait anxiety and binge eating disorder in overweight individuals.
- This was a one time (observational) study, so no follow-up with the participants was taken.
- Gender distribution was unequal.

Ethical clearance: Ethical clearance was obtained from The Institutional Review Board from Pioneer Physiotherapy College, Vadodara.

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Conflict of interest: Nil

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