Understanding Emotional Eating in Bipolar Disorder: Self-Reports vs. Objective Assessments

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Abstract

Aim: Understanding emotional eating nuances in Bipolar Disorder (BD) is crucial for developing targeted interventions to effectively manage mental health and nutritional needs. This study aims to explore the relationship between BD with emotional eating behavior, as well as the disparities between self-reported appetite tendencies and objective measurements.

Method: This cross-sectional, descriptive study was conducted with 43 patients diagnosed with BD. The Information Form, Bipolar Depression Rating Scale (BDRS), Bipolar Disorder Functioning Questionnaire (BDFQ) and Emotional Eating Scale (EES) were administered through face-to-face interviews.

Results: Of the 43 BD patients, 58.1% were male, with a mean age of 26.93±10.29 years and a mean body mass index (BMI) of 25.01±6.06 kg/m^2. Gender, age, BMI, physical activity, or sleep duration were not significant factors for EES sub-dimensions in BD patients ($p>0.05$). BD patients self-reported less eating tendency during negative emotions such as anxiety and depression and a higher tendency to eat during positive emotions like happiness. However, contrary to these self-reports, according to the BDRS, mixed symptoms (manic episodes) were positively correlated with "Control Against Stimuli" ($p=0.003$) and "Eating when Nervous" was positively correlated with both somatic ($p=0.002$) and psychological depression ($p=0.005$).

Conclusion: This study highlights differences between self-reported and objective assessments of eating behaviors in BD patients. While patients reported reduced food intake during negative emotions and increased intake during positive ones, objective measures showed contrasting results. These findings emphasize the importance of using objective methods to assess eating behaviors linked to emotional states in individuals with bipolar disorder.

Keywords: Bipolar disorder, emotional eating, feeding behavior, feeding and eating disorders, obesity management.

Bipolar Bozuklukta Duygusal Yemenin Anlaşılması: Öz-Bildirimler ve Objektif Değerlendirmeler

Öz

Amaç: Bipolar Bozukluk'ta (BB) duygusal yeme davranışlarının incelenmesi, ruh sağlığı ve beslenme ihtiyaçlarını etkili bir şekilde yönetmek için hedefe yönelik müdahaleler geliştirmek açısından önemlidir. Bu çalışma, BB ile duygusal yeme davranışı arasındaki ilişkiyi ve öz-bildirim ile nesnel ölçümler arasındaki farklılıkları araştırmayı amaçlamaktadır.

Yöntem: Kesitsel ve tanımlayıcı nitelikteki bu çalışma, BB tanısı almış 43 hasta ile gerçekleştirilmiştir. Bilgi Formu, Bipolar Depresyon Derecelendirme Ölçeği (BDDÖ), Bipolar Bozukluk İşlevsellik Ölçeği (BBİÖ) ve Duygusal Yeme Ölçeği (DYÖ) yüz yüze görüşme yöntemiyle uygulanmıştır.

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Bulgular: Çalışmaya katılan 43 BB hastasının %58,1'i erkek olup, yaş ortalaması 26,93±10,29 yıl ve Beden Kütle İndeksi (BKİ) ortalaması 25,01±6,06 kg/m²'dir. Cinsiyet, yaş, BKİ, fiziksel aktivite veya uyku süresi, BB hastalarında DYÖ ve alt boyutları için ayırt edici faktörlerden değildir (p>0,05). BB hastaları, kaygı ve depresyon gibi olumsuz duygular esnasında daha az yeme eğiliminde olduklarını ve mutluluk gibi olumlu duygular esnasında ise daha fazla yeme eğiliminde olduklarını beyan etmişlerdir. Ancak bu öz-bildirimlerin aksine, BDDÖ'ye göre karma belirtiler (manik dönemler) "Uyaran Karşısında Kontrol" ile pozitif korelasyon göstermiştir (p=0,003) ve "Gerginlik Durumlarında Yeme" hem somatik depresif belirtiler (p=0,002) hem de psikolojik depresif belirtiler (p=0,005) ile pozitif korelasyon göstermiştir.

Sonuç: Bu çalışma, BB hastalarında yeme davranışlarının öz-bildirim değerlendirmeleri ile objektif değerlendirmeler arasındaki farklılıkları vurgulamaktadır. BB hastaları olumsuz duygular sırasında yeme eğilimlerinin azaldığını ve olumlu duygular sırasında yeme eğilimlerinin arttığını beyan etmiş olsalar da, nesnel ölçümler bu öz-bildirimlerin aksini göstermiştir. Bu bulgular, bipolar bozukluğu olan bireylerde duygusal durumlarla ilişkili yeme davranışlarını değerlendirmek için objektif yöntemlerin kullanılmasının önemini vurgulamaktadır.

Anahtar Sözcükler: Bipolar bozukluk, duygusal yeme, beslenme davranışı, beslenme ve yeme bozuklukları, obezite yönetimi.

Introduction

Bipolar Disorder (BD) is a mood disorder characterized by recurrent depressive, manic, hypomanic, or mixed episodes, resulting in significant impairments in occupational, familial, and social functioning[1]. Functionality, a complex concept involving work capacity, independent living, leisure activities, and interpersonal relationships, is significantly impaired by BD, which persists throughout life, leading to a decline in quality of life[2]. According to the Diagnostic and Statistical Manual of Mental Disorders-5 (DSM-5), BD is classified into several subtypes, including BD type I, BD type II, cyclothfurthymic disorder, substance/medication-induced BD, BD due to another medical condition, specified and unspecified BD and related disorders[3]. The lifetime prevalence of BD was found to be 2.4% based on a community-based study conducted in 11 countries[4] and affecting more than 1% of the population worldwide[5]. According to the Global Burden of Disease Study 2010, BD ranks 46th among 291 diseases and injuries worldwide in terms of disability and death[6]. Additionally, BD is often accompanied by somatic illnesses such as cardiovascular diseases, obesity, and metabolic syndrome, as well as psychiatric conditions including anxiety disorders, substance use disorders, personality/behavioral disorders, and eating disorders[7].

Eating disorders are clinically significant mental health conditions characterized by abnormal eating behaviors, causing medical, psychological, and social issues and a negative impact on quality of life[3]. Eating attitudes of individuals are influenced not only by physiological factors but also by psychological factors[8]. Moreover, emotions are acknowledged to strongly influence food choices and eating behavior, while eating behavior can equally affect emotions[9]. Emotional eating, a response to emotional stimuli or mental fluctuations, is associated with adverse physiological and psychological outcomes. Specific emotions such as anger, fear, sadness, or happiness can influence an individual's eating response and eating behavior[10,11]. Otherwise, the rising prevalence of obesity is a significant global health issue, especially in Western societies. Despite not being classified as a mental disorder, obesity is strongly linked to psychiatric syndromes, according to the DSM-5[3], leading to significant social and economic burdens. The mutual relationship between depression and obesity is highlighted by research indicating that

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depression increases the risk of obesity by 58%, while obesity increases the risk of depression by 55%. The mechanism through which depression increases the risk of obesity involves triggering emotional eating, leading to an increase in adipose tissue[12]. Studies have indeed associated high levels of depressive symptoms with emotional eating behaviors[13-17]. Furthermore, the study demonstrated that mood fluctuations in BD may increase the risk of obesity and eating disorders[18]. Although the prevalence of obesity in BD is well-documented[19], the specific mechanisms of emotional eating in this population remain largely unexplored. Understanding emotional eating nuances in BD is crucial for developing targeted interventions to effectively manage mental health and nutritional needs. This study investigates the relationship between BD and emotional eating, comparing self-reported and objective appetite measures.

Material and Methods

Study Design and Partipicants

This cross-sectional, descriptive study was conducted between September and December 2021 at NPIstanbul Brain Hospital. During this period, all patients diagnosed with Bipolar Disorder (BD) who met the inclusion criteria and were accessible within the clinical setting were invited to participate. A total of 43 patients voluntarily agreed and completed the study, forming the final sample. Participants were selected through a non-probability, voluntary response sampling method.

A formal power analysis was not conducted due to the exploratory nature of the study and the limited number of eligible patients available during the data collection timeframe. However, the sample size was considered sufficient for preliminary investigation, consistent with the sample sizes employed in comparable clinical studies under similar conditions.

Due to the COVID-19 pandemic measures, the study commenced in September 2021. Participants with BD were provided with detailed explanations regarding the purpose and scope of the study, and voluntary informed consent was obtained before data collection. Data collection instruments were administered through face-to-face interviews while ensuring patients' privacy and confidentiality. This study was conducted in accordance with the principles of the Helsinki Declaration and research and publication ethics.

The inclusion criteria for the study were being over 18 years of age and having a diagnosis of Bipolar I or II Disorder according to DSM-5 criteria3. Exclusion criteria included not meeting the inclusion criteria, being pregnant or lactating, and having a comorbid psychiatric diagnosis.

In the present study, the term *"self-reports"* refers to participants' spontaneous and unstructured verbal statements provided during clinical interviews, including subjective reflections such as "I tend to eat more when I'm happy" or "I lose my appetite when I feel anxious". These responses reflect individuals' personal perceptions of their eating behaviors in the absence of standardized measurement tools. In contrast, *"objective assessments"* denote data collected using standardized, psychometrically validated instruments. Specifically, the Bipolar Depression Rating Scale (BDRS), Bipolar Disorder Functioning Questionnaire (BDFQ), and Emotional Eating Scale (EES) were utilized as

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data collection instruments in this study. Each of these scales has demonstrated robust reliability and validity. Accordingly, the data obtained through these tools are classified as objective assessments within the scope of this research.

Data Collection Instruments

Information Form: Comprising 12 questions prepared by the researcher after reviewing the literature, this form queries demographic characteristics, anthropometric measurements, and dietary habits.

Bipolar Depression Rating Scale (BDRS): The scale, developed by Berk et al. [20] was adapted into Turkish by Batmaz et al.[21]. Due to its sensitivity to characteristic features of depressive episodes in bipolar disorder, such as mixed and atypical symptoms, it differs from classical depression scales. The scale consists of 20 items and 3 subscales: psychological depression (anhedonia, worthlessness, helplessness, and guilt), somatic depression (reduced concentration and activity, disrupted sleep, and appetite), and mixed symptoms (characterizing a period of excessive activity, energy, talkativeness, recklessness, and feeling powerful, which is indicative of a manic episode). Responses are measured on a four-point Likert scale. Scores on this scale can range from 0 to 60, with higher scores indicating more severe depressive episodes. The Cronbach's alpha coefficient for the scale is reported as 0.786.

Bipolar Disorder Functioning Questionnaire (BDFQ): Developed by the Scientific Study Unit of Mood Disorders of the Turkish Psychiatric Association in 2007[22], the questionnaire has undergone validation and reliability testing. It is utilized to determine and assess the level of functioning exhibited by individuals with bipolar disorder across various domains. The questionnaire comprises 11 subfactors and consists of 52 items measured on a three-point Likert scale. A higher score on the scale indicates better functionality (Cronbach's alpha = 0.91).

Emotional Eating Scale (EES): Developed by Bilgen in 2018[23], the scale aims to assess individuals' emotional eating behaviors. The scale consists of 30 items, divided into four subscales. Responses are rated on a 5-point Likert scale. A higher score on the scale indicates a higher level of emotional eating behavior. The Cronbach's alpha value for the scale is 0.959.

Ethical Statement

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Statistical Analysis

Descriptive statistics for categorical variables are presented as frequency and percentage. The normality of numerical variables was assessed using the Shapiro-Wilk test. Descriptive statistics for numerical variables were presented as mean (±) standard deviation for those showing normal distribution and median, minimum-maximum values for those not showing normal distribution. Independent two-group comparisons were conducted using the Independent Samples t-test when the data met the

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assumptions of parametric tests and the Mann-Whitney U test when they did not. The relationships between scales were examined using Spearman's Rank Correlation Coefficient. Statistical analysis was performed using SPSS v26 (IBM Inc., Chicago, IL, USA) statistical software package.

Results

The study included 43 patients diagnosed with bipolar disorder (BD), of whom 58.1% were male, with a mean age of 26.93±10.29 years and a mean BMI of 25.01±6.06 kg/m². Approximately 46.5% of the patients engage in regular exercise according to World Health Organization and American Heart Association recommendations (>150 minutes/week). Walking (45.0%) and fitness activities (35.0%) are the most preferred types of exercise. The average daily sleep duration is 8.03±1.63 hours, with 81.4% of patients consuming three main meals, while 51.2% do not consume any snacks. In the evaluation using the 0-10 point Visual Analog Scale (VAS), the mean appetite score of the patients was 5.93 ± 2.15, and the mean score for perceiving adequate and balanced nutrition was 5.58 ± 1.99 (Table 1).

Table 1. Demographic characteristics and health behaviors of Bipolar Disorder Patients

Demographic Characteristics		**n**	**%**
Gender	**Female**	18	41.9
	Male	25	58.1
Age (Mean±SD)		26.93±10.29	
BMI (kg/m²) (Mean±SD)		25.01±6.06	
BMI Class	**Normal (18.5 – 24.9 kg/m²)**	24	55.8
	Overweight (25.0 – 29.9 kg/m²)	9	20.9
	Obese (<30.0 kg/m²)	10	23.3
Education	**Middle School**	6	14.0
	High School	17	39.5
	University and Above	20	46.5
Sleep Duration (hours/day) (Mean±SD)		8.03±1.63	
Physical Activity Status (>150 min/week)	**Yes**	20	46.5
	No	23	53.5
Number of Main Meals	**2 meals**	8	18.6
	3 meals	35	81.4
Number of Snacks	**None**	22	51.2
	1 snack	9	20.9
	2 snacks	5	11.6
	3 snacks	7	16.3
Skipping Meals Status	**Yes**	16	37.2
	No	25	58.1
	Sometimes	2	4.7
Appetite VAS Assessment (Mean±SD)		5.93±2.15	
Perception of Adequate and Balanced Nutrition VAS Assessment (Mean±SD)		5.58±1.99	

BMI: Body Mass Index; VAS: Visual Analog Scale

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According to the evaluation of BD patients' BDRS, the average score for "Somatic Depression" is higher than the average scores for "Psychological Depression" and "Mixed Symptoms". According to the evaluation of BDFQ, patients' highest functional dimension is “Participation to Social Activities”, while the lowest functional dimension is “Emotional Functioning”. According to the evaluation of EES, patients' average scores for the sub-dimensions of “Eating when Nervous” and “Eating to Cope with Negative Emotions” higher than the average scores for “Self-Control” and “Control Against Stimuli” (Table 2).

Table 2. Assessment of data collection instruments scores in Bipolar Disorder Patients

	n	Min	Max	Mean	SD
BDRS					
Somatic Depression	43	0.00	21.00	7.74	5.50
Psychological Depression	43	0.00	18.00	5.02	5.19
Mixed Symptoms	43	0.00	12.00	5.21	3.67
BDFQ - Total	43	61.00	131.00	94.79	14.99
Emotional Functioning	43	3.00	8.00	5.12	1.42
Intellectual Functioning	43	4.00	10.00	7.16	1.63
Sexual Functioning	43	0.00	12.00	5.58	4.80
Feelings of Stigmatization	43	4.00	12.00	9.56	2.72
Social Withdrawal	43	3.00	9.00	6.33	1.89
Household Relations	43	6.00	18.00	12.35	3.89
Relations with Friends.	43	5.00	15.00	10.63	3.29
Participation to Social Activities	43	8.00	24.00	15.33	5.19
Daily Activities and Hobbies	43	8.00	22.00	13.37	3.60
Taking Initiative and Self Sufficiency	43	3.00	9.00	5.12	2.04
Occupation	43	0.00	12.00	4.26	3.48
EES					
Eating when Nervous	43	12.00	53.00	26.60	11.93
Eating to Cope with Negative Emotions	43	11.00	43.00	20.72	9.64
Self-Control	43	5.00	21.00	13.84	3.77
Control Against Stimuli	43	2.00	10.00	5.58	2.50

BDRS: Bipolar Depression Rating Scale; BDFQ: Bipolar Disorder Functioning Questionnaire; EES: Emotional Eating Scale

It was determined that gender, BMI, or physical activity were not significant factors for BDRS sub-dimensions in BD patients ($p>0.05$). On the other hand, as age increased, there was a 30.3% decrease in "Mixed Symptoms" score ($p=0.048$); as sleep duration increased, there was a 34.7% increase in "Somatic Depression" score ($p=0.023$) and a 32.2% increase in "Psychological Depression" score ($p=0.035$). With increasing age of BD patients, there was a 38.3% increase in BDFQ score ($p=0.011$) and as sleep duration increased, there was a 51.1% decrease in BDFQ score ($p=0.000$). Gender, age, BMI,

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physical activity, or sleep duration were not significant factors for EES sub-dimensions in BD patients (p>0.05) (Table 3).

Table 3. Evaluation of data collection instruments scores according to some demographic variables of Bipolar Disorder Patients

	BDRS Somatic Depression	**BDRS** Psychological Depression	**BDRS** Mixed Symptoms	**BDFQ-Total**	**EES** Eating when Nervous	**EES** Eating to Cope with Negative Emotions	**EES** Self-Control	**EES** Control Against Stimuli
	Medyan (min-max)	**Medyan (min-max)**	**X±SS**	**X±SS**	**Medyan (min-max)**	**Medyan (min-max)**	**X±SS**	**Medyan (min-max)**
Gender								
Female	7.5 (2-21)	5 (0-18)	5.56±4.1	92.72±14.31	25 (12-53)	16 (11-39)	14.28±3.58	6 (2-10)
Male	6 (0-20)	3 (0-15)	4.96±3.4	96.28±15.58	23 (12-52)	17 (11-43)	13.52±3.95	5 (2-9)
t - *U*	*U=187*	*U=178*	t=0.520	t=-0.764	*U=207*	*U=215.5*	t=0.645	*U=211.5*
p	*p=0.348*	*p=0.243*	p=0.606	p=0.449	*p=0.657*	*p=0.814*	p=0.522	*p=0.737*
Age	s=-0.204	s=-0.208	**s=-0.303**	**s=0.383**	s=-0.002	s=0.060	s=0.076	s=-0.023
	p=0.190	p=0.181	**p=0.048***	**p=0.011***	p=0.991	p=0.702	p=0.630	p=0.882
BMI	s=-0.070	s=-0.053	s=-0.007	s=0.000	s=0.032	s=0.007	s=-0.043	s=0.043
	p=0.657	p=0.735	p=0.965	p=1.000	p=0.839	p=0.965	p=0.786	p=0.785
Physical Activity								
Yes	6 (0-17)	2.5 (0-18)	3 (0-12)	102.5±13.48	22.5 (12-53)	15 (11-38)	15.5 (5-21)	4 (2-10)
No	7 (0-21)	4 (0-18)	6 (2-12)	88.09±13.08	24 (12-52)	19 (11-43)	13 (5-21)	6 (2-9)
t - *U*	*U=227.5*	*U=-1.191*	*U=-1.725*	**t=3.553**	*U=-0.659*	*U=-1.101*	*U=-1.394*	*U=-1.207*
p	*p=0.951*	*p=0.234*	*p=0.084*	**p=0.001****	*p=0.510*	*p=0.271*	*p=0.163*	*p=0.227*
Sleep Duration	**s=0.347**	**s=0.322**	s=0.244	**s=-0.511**	s=0.009	s=-0.126	s=-0.149	s=0.060
	p=0.023*	**p=0.035***	p=0.116	**p=0.000*****	p=0.953	p=0.421	p=0.342	p=0.702

BDRS: Bipolar Depression Rating Scale; BDFQ: Bipolar Disorder Functioning Questionnaire; EES: Emotional Eating Scale; BMI: Body Mass Index

t: Independent Sample T Test, U: Mann-Whitney U Test, s: Spearman's Rank Difference Correlation Coefficient, *:<0,05; **:<0,01; ***:<0,00

When examining the effects of emotions on appetite, it was found that 25.6% of BD patients reported eating less when feeling anxious, while 25.6% reported eating less when feeling depressed, and 32.6% reported eating more when feeling happy, based on patients' self-reports (Table 4).

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Table 4. Mood effects on eating behavior among bipolar disorder patients: self-reported data

Effects of Mood on Eating Behavior		**n**	**%**
Sadness	**Eat More**	10	23.3
	Eat Less	10	23.3
	Not Sure/Unknown	23	53.4
Stress	**Eat More**	10	23.3
	Eat Less	10	23.3
	Not Sure/Unknown	23	53.4
Anxiety	**Eat More**	7	16.3
	Eat Less	11	25.6
	Not Sure/Unknown	25	58.1
Depression	**Eat More**	9	20.9
	Eat Less	11	25.6
	Not Sure/Unknown	23	53.5
Happiness	**Eat More**	14	32.6
	Eat Less	5	11.6
	Not Sure/Unknown	24	55.8

A moderate positive correlation (r=0.457; p<0.01) was found between "Somatic Depression" and "Eating when Nervous". Similarly, "Psychological Depression" showed a moderate positive correlation (r=0.418; p=0.005) with " Eating when Nervous", and a weak positive correlation (r=0.337; p=0.027) with "Control Against Stimuli". Additionally, "Mixed Symptoms" correlated moderately positively (r=0.438; p=0.003) with " Control Against Stimuli". Conversely, there was a weak positive correlation (r=0.371; p<0.05) between "Self-Control" in BDFQ and EES (Table 5).

Table 5. Correlation coefficients between data collection instruments

EES		**BDRS Somatic Depression**	**BDRS Psychological Depression**	**BDRS Mixed Symptoms**	**BDFQ**
Eating when Nervous	**s**	**,457**	**,418**	,255	-,170
	p	**,002****	**,005****	,099	,275
Eating to Cope with Negative Emotions	**s**	,249	,234	,215	-,019
	p	,107	,131	,167	,901
Self-Control	**s**	-,294	-,249	-,148	**,371**
	p	,056	,107	,343	**,014***
Control Against Stimuli	**s**	,265	**,337**	**,438**	-,205
	p	,086	**,027***	**,003****	,187

BDRS: Bipolar Depression Rating Scale; BDFQ: Bipolar Disorder Functioning Questionnaire; EES: Emotional Eating Scale; s: Spearman's Rank Difference Correlation Coefficient; *:<0,05; **:<0,01; ***:<0,001

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Discussion

Among the 43 patients diagnosed with BD (41.9% female), it was found that 4 out of every 5 patients consumed three main meals, while half of the cohort reported no consumption of snacks. In self-reported evaluations, BD patients indicated moderate levels for both appetite, with a mean score of 5.93 ± 2.15, and perception of adequate and balanced nutrition, with a mean score of 5.58 ± 1.99 (Table 1). According to the BDRS (Bipolar Depression Rating Scale) assessment, the mean scores for somatic depression exceeded those for psychological depression and mixed symptoms (manic episode) (Table 2). No significant differences or correlations were identified between the emotional appetites of BD patients and demographic variables such as gender, age, BMI, physical activity status, or sleep patterns (Table 3). Similarly, no relationship was established between the emotional appetites of BD patients and variables such as gender, BMI[24], exercise, and dietary habits[25].

In the literature, there are studies reporting a higher tendency for emotional eating in positive mood states among healthy individuals[15,16], as well as studies indicating a greater inclination for emotional eating in negative mood states[13,14]. Additionally, Hamurcu & Arslan's study suggests similarities in eating tendencies in both positive and negative mood states[17]. Consensus has not been reached in the literature regarding the augmenting or diminishing effects of positive or negative emotions on appetite. In this study, the majority of BD patients self-reported decreased eating in response to negative emotions, such as anxiety and depression, while indicating an increased tendency to overeat during periods of happiness (Table 4). However, contrary to these self-reported findings, analysis using the Emotional Eating Scale (EES) revealed positive correlations between somatic depression and psychological depression with Eating When Nervous. Additionally, psychological depression, along with mixed symptoms (manic episode—positive mood states), exhibited positive correlations with Control Against Stimuli, reflecting external eating behavior control (eating behavior triggered by visual, olfactory, or environmental cues) and hedonic hunger control (the ability to resist the urge to eat driven by the sensory appeal of food rather than physiological energy needs) such as resisting the urge to consume a food item triggered by visual or olfactory cues. Although not statistically significant, self-control (cognitive restriction of food intake—consciously limiting how much food a person eats, usually to control weight or follow a diet) demonstrated a negative correlation with all dimensions of the BDRS, encompassing both positive and negative mood states (Table 5). In other words, emotional eating behavior correlates with heightened uncontrolled eating, particularly in the presence of negative mood states among BD patients. Additionally, the study reveals that BD patients experience a decrease in their ability to control food intake as emotional eating behavior intensifies. Consequently, increased emotional eating undermines patients' capacity to resist the urge to eat. This observation aligns with the outcomes of Tuncer and Duman's study, indicating that patients with severe mental disorders are susceptible to emotional eating behavior[25]. These findings suggest that, contrary to the self-reported behaviors of patients with BD, overeating behavior increases in response to negative mood, while external eating behavior decreases in the presence of both negative and positive moods. Additionally, BD patients avoid cognitive restriction of food intake, regardless of

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positive/negative emotional states. Highlighting the observation that the average scores of the patients' Eating when Nervous and Eating to Cope with Negative Emotions sub-dimensions were higher compared to the mean scores of Self-Control and Control Against Stimuli, as per the EES assessment, further corroborates this evaluation (Table 2). In Tuncer and Duman's study, patients with severe mental disorders declared that negative emotions, distressing thoughts, inability to manage leisure time, and initiating factors served as triggers for their emotional eating[25]. These findings collectively underscore the intricate interplay between mood states and eating behaviors in BD patients. The controlled response to external stimuli (such as visual or olfactory food cues) irrespective of depressive or manic episodes could be interpreted as their relationship with food is more associated with emotions than with hedonic hunger. Additionally, according to BDFQ (Bipolar Disorder Functioning Questionnaire), this discovery is reinforced by the observation that the highest functional dimension was Participation in Social Activities, whereas the lowest functional dimension was Emotional Functioning (Table 2).

A key and conceptually significant finding of the present study is the notable contradiction between participants' subjective self-reports and their scores on the Emotional Eating Scale (EES). During clinical interviews, many participants expressed a tendency to eat less when experiencing negative emotional states such as sadness, anxiety, or distress. These spontaneous verbalizations reflected a pattern of appetite suppression during emotional downturns. However, in contrast to these narratives, scores obtained from the EES revealed a marked increase in emotional eating associated with negative emotions. This divergence suggests a potential disconnection between individuals' perceived and actual eating behaviors in the context of bipolar disorder. It may reflect limited emotional insight, difficulties in affective self-monitoring, or underlying cognitive distortions—phenomena commonly reported in bipolar populations. From a clinical perspective, this misalignment highlights the risk of relying solely on patient narratives when assessing emotional eating tendencies. It underscores the importance of incorporating standardized, validated instruments alongside qualitative evaluations to achieve a more accurate and comprehensive understanding of behavioral patterns. Furthermore, this inconsistency represents a novel contribution to the literature, emphasizing that self-perception and objective behavior may not always align in mood disorders. To our knowledge, no previous studies have directly examined the specific contradiction between self-reported and objectively assessed emotional eating within a bipolar disorder sample. Although emotional eating has been investigated in individuals with mood disorders, including BD, most studies have relied exclusively on self-reported data. For example, a 2022 narrative review highlights emotional eating tendencies in this population but does not address potential discrepancies between subjective reports and psychometric assessments[26]. Similarly, studies such as Tuncer and Duman[25] have documented elevated emotional eating in individuals with severe mental illness; however, they primarily reflect perceived behaviors without validation through standardized tools. The present study contributes uniquely by directly comparing self-perceived appetite changes with scores from a validated scale—the Emotional Eating Scale (EES). This approach revealed a notable mismatch between participants' subjective accounts and objective findings, potentially indicating limited emotional insight. These

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results underscore the importance of integrating both qualitative and quantitative methods in the assessment of eating behaviors in BD and suggest the presence of a cognitive-affective disconnection that may not be captured through self-report alone.

The results of the self-assessment of appetite in positive/negative moods (patients' attention) and the results of the analyses using scales that have validity and reliability studies (patients' attitude) point to different findings that could be explained by the proposal in the study by Keng et al., where the attentional and attitudinal components of awareness were suggested to be negatively associated[27]. Similarly, just as individuals with anorexia nervosa often possess knowledge levels about nutrition far above average (attentional aspect), yet may struggle to translate this knowledge into behavior (attitudinal aspect), the discrepancy observed between the self-reported mood-related eating behaviors of patients and the findings from the EES in this study could potentially be attributed to the incongruence of the attentional and attitudinal components in BD patients, likely influenced by chronic depressive and manic episodes. This is corroborated by the significant positive correlation between functioning and EES-Self-Control which attitude-oriented eating behavior, representing cognitive restraint in eating behavior.

Appetite changes are among the diagnostic criteria for major depression. While a decrease in appetite is typically observed, excessive appetite increase, often associated with emotional eating, is frequently seen in cases accompanied by eating disorders[28]. The findings of this study highlight the emotional appetite and eating attitudes in BD patients who experience alternating periods of major depressive and manic episodes (both positive and negative mood states) continuously. This contributes to the literature not only by demonstrating how individuals' eating attitudes are influenced by psychological factors, in addition to physiological factors such as ghrelin and leptin, but also by revealing variations within the same individuals in depressive negative mood states or manic episodes, akin to positive mood states. According to Macht, emotions have an influence of approximately 30% to 48% on appetite, indicating a significant impact of emotional states on food choices and eating behavior[8]. This suggests a bidirectional relationship where not only emotions affect eating behavior, but eating behavior also exerts a substantial influence on emotions (Table 5).

Conclusion

This study reveals discrepancies between self-reported eating behaviors and objective assessments among BD patients. While patients reported reduced food intake during negative emotions and increased intake during positive emotions, objective measures yielded contrasting results. These findings underscore the necessity for employing more objective methods to determine eating behaviors aligned with the emotional states of individuals with BD.

Given the observed discrepancy between self-reported and objectively assessed emotional eating, it is recommended that mental health professionals and dietitians working with BD patients employ a dual-assessment approach. This combined method facilitates a more precise identification of emotional eating patterns, including unconscious behaviors that may be overlooked through self-report alone.

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Overall, addressing emotional eating behaviors in BD patients has the potential to enhance treatment outcomes and improve quality of life for this vulnerable population. Further research and clinical efforts are warranted to effectively address the complex interplay between BD and emotional eating behavior and to develop evidence-based interventions tailored to the unique needs of BD patients.

Limitations

This study has several limitations that should be considered when interpreting the results. First, the sample size was relatively small (n=43 BP patients), which may limit the generalizability of the findings. Second, the cross-sectional design prevents any causal inferences from being drawn regarding the relationships observed. Third, although standardized and validated scales were used for objective assessments, some data relied on self-reports, which may be subject to recall bias or subjective interpretation. These limitations call for larger, long-term studies using more objective measures to better understand eating behaviors in BD.

Statements & Declarations

Ethical Considerations: Numbered 61351342/2020-115 and dated 29.02.2020 was obtained from the Uskudar University Non-Interventional Research Ethics Committee as well as from NPIstanbul Brain Hospital under protocol number 2020/602 and approval date of 05.03.2020. This research was conducted in accordance with the "Helsinki Declaration Principles" and "Research and Publication Ethics".

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Conflict of Interest: No potential conflict of interest was reported by the author.

Data Availability: The datasets generated during the current study are available from the author on reasonable request.

Consent to Participate: Informed consent was obtained from all individual participants included in the study.

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