Progress in Nutrition 2020; Vol. 22, N. 4: e2020074 DOI: 10.23751/pn.v22i4.9773

Original article

Intuitive Eating, Diet Quality, Body Mass Index and Abnormal Eating: A Cross-Sectional Study in Young Turkish Women

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Abstract. Intuitive eating is an eating style that promotes a healthy attitude towards food and body image. Intuitive eaters would have more nutritious dietary intake and more positive eating patterns than non-intuitive eaters. The aim of this cross-sectional study was to examine the association between intuitive eating, body mass index (BMI), abnormal eating behaviour and quality of dietary intake among young women in Turkey. The study was conducted in Istanbul on a total of 548 women aged 19 to 32 years who volunteered to participate in the study. Healthy Eating Index (HEI) score was 29.96±10.39, 58.77±6.83 and 84.59±3.89 points for healthy eating index category, respectively. In the "poor" eating category, body mass index values were significantly higher than the "needs improvement" and "good" categories ($p<0.05$). Also, the total scores and subscale scores of Intuitive Eating Scale-2 (IES-2) [except for Unconditional Permission to Eat (UPE)] were significantly higher than the "needs improvement" and "good" categories ($p<0.05$). The analyses showed significant correlation between the HEI score of participants and body mass index ($r= -0.264$; $p<0.01$), total score of IES-2 ($r= 0.636$; $p<0.01$), Eating Attitudes Test (EAT-26) ($r= -0.186$; $p< 0.01$). The total score of IES-2 was significantly inversely correlated with body mass index ($r= -0.282$; $p < 0.01$) and EAT-26 score ($r= -0.297$; $p<0.01$) in participants. In addition, the correlation analyses showed significant correlation between all the subscales of IES-2 and HEI scores ($p<0.05$). As a conclusion, our findings reveal that intuitive eating is positively related to diet quality, weight status and abnormal eating among young Turkish women; and also that women who have more intuitive dietary choices respond better to their physiological needs. Despite its cross-sectional design, the findings of this study are in accordance with the idea that intuitive eating can offer a more holistic and long-term weight control approach compared to other traditional body weight manage-ment strategies. However, considering the insufficient number of studies on the topic, further prospective studies that use probability sampling methods to minimize the sampling bias are needed to examine the rela-tionships between intuitive eating, body mass index (BMI), abnormal eating behaviour and quality of dietary intake for this target group.

Keywords: Intuitive eating, diet quality, body mass index, abnormal eating behaviour

Introduction

As humans grow older, many dietary habits change (1), some occur due to the advice of physicians or nutritionists, but most do not (2,3). The eat-ing behaviour in humans is affected by emotions (such as anxiety, anger, joy, depression, sadness) and food choices, quantity and frequency of meals are not solely dependent to physiological needs (4). The traditional approach to weight loss has been to restrict food intake and to exercise more; however, it has generally

been unsuccessful in decreasing body mass in the long term (5).

Intuitive eating (IE), as an adaptive eating style, has been founded in 1995 by Evelyn Tribole and Elyse Resch, based on 10 principles: (i) reject the diet, (ii) recognise one's hunger, (iii) make peace with food, (iv) challenge the food police, (v) respect one's fullness, (vi) discover the satisfaction factor, (vii) cope with one's feelings without using food, (viii) respect one's body, (ix) exercise and feel the difference, and (x) honor one's health with gentle nutrition (6, 7). IE meshed two polar ideas of non-diet approach, which requires full body acceptance regardless of size or shape, but not addressing health risks; and the community health approach, which stresses the importance of minimizing health risks, including body mass index (BMI), without mentioning the acceptance of the personal weight and shape differences (8).

IE, also referred to as adaptive eating, wisdom eating, normal eating or conscious eating, is a harmonious diet behaviour that emphasizes eating in response to physiological hunger (i.e. the basic eating behaviour in which the individual can stop eating without having enough saturation after providing sufficient nutrient intake) and saturation cues (9, 10) rather than emotional or externally triggered eating (9, 11); or eating according to a food or calorie restrictive diet (12). There is no restriction on the variety of food consumption; and the individual, unless s/he has any chronic diseases (e.g. diabetes, food allergies), instinctively chooses to maintain the nutritional balance (10, 13), which may help them achieve a healthy weight and also lead to long-term weight loss without the negative effects associated with dieting (12). Higher levels of IE are associated with greater levels of enjoyment and positive associations with food, and reduced levels of food anxieties and dieting behaviors (14).

The basic principle of IE is to gain body wisdom (9, 10), i.e. the body will instinctively know the amount and variety of food to maintain both nutritional health and an appropriate weight (5). IE shifts the focus from body weight to well-being, and promotes unconditional permission to eat in response to internal physiological hunger signals and the food that is desired at the moment (6), without classifying food into acceptable and nonacceptable categories and avoiding food in the latter category (10). Therefore it develops a healthy relationship between food, mind and body, and encourages the mindfulness of emotions and the pleasure derived from eating (9), encourages body acceptance and promotes attitude changes that honor personal health and gentle nutrition (10). In addition, intuitive eating is associated with more regular nutrition, more positive body image, more emotional functioning, and some other psychosocial factors that are examined less extensively (15). Previous studies have suggested that people who are more aware of their hunger and fullness cues are less likely to engage in behaviors that result in weight gain, such as binge eating and emotional eating (10, 16).

Although the intuitive eaters are expected to have a more nutritious dietary intake and more positive eating patterns than non-intuitive eaters, the evidence for this contention is mixed (5); some studies investigating this association find support for this hypothesis (17, 18), whereas some do not (19, 20, 21). For example, Hawley et al. (18) reported that all three groups participating in variations of an intuitive eating programme improved their nutritional intake as measured by the nine-item Dietary Quality Score. Madden et al. (17) found positive associations between intuitive eating and vegetable intake, yet no association between intuitive eating and other nutritional intake. It is stated that when individuals are able to choose freely, their choices will consist of nutritious, healthy foods (16); but due to the many nutritional restrictions while dieting, a tendency to binge follows these restrictive periods and as a result, dieters are not consistently eating nutritiously (22). Bacon et al. (23) compared diet and Health at Every Size (HAES) approaches in obese females and reported that both groups maintained weight and BMI throughout the study and during the follow-up period. However, another study reported that intuitive eating was ineffective in the management of dietary intake and hunger cues in African-American women with type 2 diabetes (24).

This study aims to fill the void of research regarding the association between intuitive eating, body mass index, abnormal eating behaviour and quality of dietary intake. There are very few studies in the global literature, and yet no published studies in Turkey, with the exception of a few dissertations about intuitive eating

among Turkish people in the recent years. Therefore, this present study will be the first to address this association among young Turkish women, who are specifically known to be more aware of their body image.

Methods

Participants and procedures

This cross-sectional study was conducted between December 2017 to May 2018 on a total of 548 women aged 19 to 32 years (M = 20.3, SD = 1.8) who lived in Istanbul and volunteered to participate in the study. Only healthy women with no diagnosed disease, no use of pharmaceutical drugs, special diets or eating disorders were included in the study. The study focused on this specific age group of women because they are known to be more aware of their body image; and more studies are needed to inquire about the relationship between intuitive eating and the quality of their dietary intake. The participants were required to attend a one-hour class of verbal instructions prior to data collection date. The data was collected during face-to-face interviews conducted by two dietitians, who collected the dietary data (i.e. the food consumption) of the participants by using the 24-hour dietary recall. The participants were also asked to report their physical activity status during the previous week to be grouped as follows: always (≥4-5 times/30 minutes), rare (1-3 times/30 minutes) and never. All participants provided written informed consent. The study protocol conformed to the ethical guidelines of the 1975 Dec-laration of Helsinki; and the study was approved by the Human Research Ethics Committee at Acıbadem Mehmet Ali Aydınlar University.

Measures

Intuitive eating

The IES-2 is a 23-item (11), 5-point Likert scaled instrument that addresses the four major com-ponents of intuitive eating: unconditional permission to eat (UPE; 6 items; e.g., "If I'm craving a certain food, I allow myself to have it"), eating for physical reasons (EPR; 8 items; e.g., "I mostly eat foods that make my body perform efficiently (well)"), reliance on hunger and satiety cues (RHSC; 6 items; e.g., "I rely on my hunger signals to tell me when to eat"), and body-food choice congruence (B-FCC; 3 items; e.g., "I mostly eat foods that give my body energy and stamina") (11). Items are rated on a 5-point scale (1 = strongly disagree; 5 = strongly agree) and averaged to generate total IES-2-score and subscale scores, with higher values indicating greater intuitive eating. The subscale scores of IES-2 are calculated, as recommended, by dividing the total scores obtained from the sum of 1–5 from each item by the total number of items in each subscale (EPR by 8, B-FCC by 3, UPE by 6 and RHSC by 6), leading to a possible subscale score between 1 and 5. The Turkish version of IES-2 was translated into Turkish by Bas et al. (25). Reliability for this study was determined using the Cronbach's alpha score which is 0.789.

Eating attitudes

Tylka's (10) original Intuitive Eating Scale (IES) was based on ten principles of IE which were clustered into three domains: (i) Unconditional Permission to Eat (UPE); (ii) Eating for Physical Rather Than Emotional Reasons (EPR); and (iii) Reliance on Hunger and Satiety Cues (RHSC). A number of subsequent studies have supported the scale's construct validity with women, finding that the scale is negatively associated with disordered eating symptomatology (26) and BMI (27, 28, 29) and positively associated with various measures of psychological well-being (26). The Intuitive Eating Scale-2 (IES-2) (11) is a twenty-three-item instrument developed to improve the original IES (10). Changes to the original IES include: adding seventeen positively worded items; integrating an additional component of Intuitive Eating, namely Body–Food Choice Congruence; and testing the new scale with men as well as women. Exploratory and confirmatory factor analyses upheld its four-factor structure, with the four subscales loading on a higher-order Intuitive Eating factor. IES-2 scores are positively related to body appreciation, self-esteem and satisfaction with life; inversely related to eating disorder symptomatology, poor introspective awareness,

body surveillance, body shame, BMI and internalisation of media appearance ideals; and negligibly related to social desirability. Incremental validity is shown by its prediction of psychological well-being above and beyond eating disorder symptomatology (5).

The Eating Attitudes Test (EAT) is a widely used self-report measure for eating disorders in both clinical and non-clinical settings. The original version of the EAT was published in 1979, designed to assess symptoms of anorexia nervosa, with 40 items each rated on a 6-point likert scale (30). The EAT-26 is a refinement of the original EAT-40, where Garner and colleagues modified the original version to create an abbreviated 26-item test. Total scores on the EAT-26 are derived as a sum of the composite items, ranging from 0 to 53 where 20 is used as the "cut-off" score (31); i.e. scoring 20 or more on the test is indicative of an ED (32). The EAT-26 consists of the same three-factors as the EAT-40: (F1) dieting- i.e. the degree of avoidance of fattening foods and preoccupation with being thinner; (F2) bulimia and preoccupation with food; and (F3) oral control- i.e. the degree of self-control around food and perceived pressure from others to gain weight (31). The Turkish version of EAT-40 (33) measures disturbance in eating attitudes and behaviors. In this study, EAT-26, the reliability of which was determined by Bas et al. (34) is used. Reliability for this study was determined using the Cronbach's alpha score which is 0.874.

Dietary assessment

Food consumption of the participants was measured using the 24-hour dietary recall method, which is known as a subjective, retrospective method that requires a direct face-to-face or telephone interview which consists of precisely recalling, describing and quantifying the intake of foods and beverages consumed in the 24-hour period prior to, or during the day before the interview, from the first intake in the morning until the last foods or beverages consumed at night (35). The type and amount of foods consumed were recalled using recall aids such as abstract food models, special charts, measuring cups, and rulers to help in quantifying the amounts consumed; and special probes were used to help the recall of commonly forgotten items such as condiments, accompaniments, and fast foods, etc. The two dietitians collected the dietary data through an open-ended, interviewer-administered dietary recall. Nutrition Information Systems (Beslenme Bilgi Sistemi-BeBiS) which is a food software program in compliance with Turkish food was used for assessment of nutrients, food and food groups.

Healthy eating index

Diet quality was assessed by The H ealthy E ating Index-2010 (HEI-2010). HEI-2010 is an updated tool for assessing diet quality and can also be used to better understand the relationships between nutrients, foods, and/or dietary patterns and health related outcomes (36). It consists of 12 components: 9 adequacy components (higher scores indicating higher consumption), namely total fruit (5 points), whole fruit (5 points), total vegetables (5 points), greens and beans (5 points), whole grains (10 points), dairy (10 points), total protein foods (5 points), seafood and plant proteins (5 points) and fatty acids (the ratio of polyunsaturated and monounsaturated fatty acids to saturated fatty acids) (10 points). The remaining 3 moderation components (lower scores showing higher consumption) include refined grains (10 points), sodium (10 points) and energy from solid fat, alcohol and added sugars (SoFAAS) (20 points) (37). Possible scores range from 0 to 100, with 100 points referring to perfect diet quality and lower results indicating larger deviations from the recommended intakes. According to the scores, participants' diets can be categorized as "poor" (≤50), "needs improvement" (from 51 to 80), and "good" (> 80) (38).

Weight status

Body Mass Index (BMI) was used to evaluate the weight status of the participants. BMI was calculated by self-reported height and weight (kg/m^2) and grouped based on the World Health Organization (WHO) classification system (39).

Statistical analysis

The distribution of the data was determined by the Kolmogorov-Smirnov test. As our variables were nor-mally *distributed*, the Pearson Correlation test was used

to determine the relationship between healthy eating index, body mass index, eating attitudes and intuitive eating. For descriptive characterization of demographic and anthropometric data and physical activity characteristics, frequencies and means (± standard deviation) were calculated, respectively. One-way ANOVA with Bonferroni post hoc test was used to examine differences in BMI, scores of IES-2 total and subscales, score of EAT-26 across to classifications of HEI score. A p-value of < 0.05 was considered statistically significant. The data analyses were carried out using SPSS version 20.0 software (SPSS Inc., Chicago, IL, USA).

Results

Table 1 indicated some characteristics of the participants. The mean age of participants was 20.3±1.8 years. The mean BMI for the sample was 23.1±4.5, with 55.3% of the sample reporting a normal BMI, 17.3% reporting an overweight BMI, 13.1% reporting an obese BMI, and 14.2% reporting an underweight BMI. In addition, 22.6% of the participants were physically active.

The participants' diets were categorized as "poor","needs improvement", and "good" based on the HEI scores in order to examine if it shows any difference between intuitive eaters. HEI score was 29.9±10.4, 58.7±6.8 and 89.1±10.4 points for healthy eating index category, respectively. The analyses revealed significant HEI category differences in BMI $F(2, 545)= 18.72$, $p=0.000$; IES-2 total score $F(2, 545)= 210.87$, $p<0.001$; UPE score $F(2, 545)= 45.76$, $p=0.045$; RHSC score $F(2, 545)= 35.98$, $p<0.001$; B-FCC score $F(2, 545)=$

Table 1 Characteristics of the participants (n=548)

	Mean (SD) or %
Age (year)	20.3 (1.8)
Body mass index (BMI)	23.1 (4.5)
Underweight (BMI < 18.5)	14.2%
Normal weight (BMI 18.5 – 24.9)	55.3%
Overweight (BMI 25.0 – 29.9)	17.3%
Obese (BMI ≥ 30)	13.1%
Physical activity (≥150 minutes / per week)	
Never	23.6%
Rarely	53.8%
Always	22.6%

Table 2 Means and standart deviations of study variables by HEI categorization (n=548)

	Healthy Eating Index Score			*p value*
	Poor (n=364)	Needs improvement (n=112)	Good (n=72)	
HEI score	29.96 ±10.39 [a]	58.77 ± 6.83 [b]	84.59 ± 3.89	0.000
BMI (kg/m^2)	23.94 ± 4.61 [a]	21.67 ± 3.59 [b]	21.36 ± 4.01	0.000
IES-2 total score	3.15 ± 0.28 [a]	3.32 ± 0.27 [b]	3.84 ± 0.17 [c]	0.000
UPE subscale score	3.23 ± 0.43 [a]	3.29 ± 0.49	3.76 ± 0.34	0.000
EPR subscale score	3.07 ± 0.43	3.09 ± 0.44	3.57 ± 0.43	0.000
RHSC subscale score	3.09 ± 0.89 [a]	3.56 ± 0.64 [b]	4.11 ± 0.47 [c]	0.000
B-FCC subscale score	3.31 ± 0.81 [a]	3.49 ± 0.73 [b]	4.14 ± 0.63 [c]	0.000
EAT-26 score	13.89 ± 9.57 [a]	12.51 ± 8.84 [b]	9.87 ± 9.34	0.003

HEI=Healthy eating index, BMI=Body mass index, IES-2 = Intuitive Eating Scale-2, UPE = Unconditional permission to eat, EPR = Eating for physical rather than emotional reasons, RHSC = Reliance on hunger and satiety cues, B-FCC = Body-food choice congruence, EAT-26=Eating attitudes test. Possible range for all IES-2 variables 1–5.

*p-values obtained by one-way ANOVA tests for continuous variables.

a,b,c Different superscript letters indicate significant differences following posthoc analyses

[a]Significant differences between poor and needs improvement category on the basis of *Bonferonni test*

[b]Significant differences between poor and good category on the basis of *Bonferonni test*

[c]Significant differences between needs improvement and good category on the basis of *Bonferonni test*

58.57, p<0.001 and EAT-26 score F(2, 545)= 34.52, p<0.001. A follow-up post hoc analysis (Bonferroni test) examining the differences in diet quality category indicated that participants in the "poor" diet quality category had higher BMI (23.94 ± 4.61 kg/m^2), lower IES-2 score (3.15 ± 0.28), lower UPE subscale score (3.23 ± 0.28), lower EPS score (3.07 ± 0.43), lower RHSC subscale score (3.09 ± 0.89), lower B-FCC subscale score (3.31 ± 0.81) and higher EAT-26 score (13.89 ± 9.57) than participants in the "needs improvement" and "good" diet quality category.

The Pearson product-moment correlation coefficients were computed among the HEI scores, IES-2 total score, BMI, EAT-26 and subscales of IES-2 for participants. Also, the results of the correlation analyses showed significant correlation of the HEI score of participants with BMI (r= -0.264; p < 0.01), IES-2 score (r= 0.636; p < 0.01), EAT-26 (r= -0.186; p < 0.01). IES-2 scores were significantly inversely correlated with BMI (r= -0.282; p < 0.01) and EAT-26 score (r= -0.297; p < 0.01) in participants. In addition, the results of the correlation analyses were significantly correlated with all the subscales of IES-2 scores and HEI score (p<0.05).

Small to moderate correlational relationships were observed for the IES-2 total score and food intake. The results of the correlation analyses showed significant correlation of the UPE score of participants with total vegetables intake (r= 0.84; p < 0.01), whole grain intake (r= 0.111; p < 0.01), seafood intake (r= 0.236; p < 0.01) and energy from soFAAS (r= -0.139; p < 0.01). For the EPS score, small inverse associations were found with the energy from soFAAS (r= -0.25; p < 0.01), and small positive associations were found with the total vegetables intake (r= 0.192; p < 0.01), whole grain intake (r= 0.175; p < 0.01) and seafood intake (r= 0.222; p < 0.01). The RHSC score was significantly related only to whole fruit intake (r= 0.152; p < 0.01). Also, the results of the correlation analyses showed small inverse significant correlation of the B-FCC score of participants with total fruit intake (r= -0.130; p < 0.01), dairy intake (r= -0.107; p < 0.05) and energy from soFAAS (r= -0.084; p < 0.05).

Discussion

On a global level, the number of studies regarding the association between intuitive eating and diet quality is very limited; and there are yet no published studies in Turkey, with the exception of a few dissertations about intuitive eating among Turkish people in the recent years. Some of the existing relevant studies in Turkish population are mentioned below.

Although the frequency of eating disorders in Turkey is not clearly known, unhealthy eating behaviors

Table 3 Pearson correlations between intuitive eating, healthy eating score, eating attitudes and body mass index (n=548)

	BMI	IES-2	UPE	EPR	RHSC	B-FCC	EAT-26
HEI score	-,264**	,636**	,338**	,299**	,423**	,310**	-,186**
BMI (kg/m^2)		-,282**	-,051	-,006	-,340**	-,120**	,146**
IES-2 total score			,487**	,469**	,664**	,536**	-,297**
UPE subscale score				,197**	-,008	,153**	,002
EPR subscale score					-,138**	,014	-,021
RHSC subscale score						,254**	-,387**
B-FCC subscale score							-,111**

**Correlation is significant at the 0.01 level

HEI=Healthy eating index, BMI=Body mass index, IES-2 = Intuitive Eating Scale-2, UPE = Unconditional permission to eat, EPR = Eating for physical rather than emotional reasons, RHSC = Reliance on hunger and satiety cues, B-FCC = Body-food choice congruence, EAT-26=Eating attitudes test.

Table 4 Pearson correlations between intuitive eating and food intake (n=548)

	IES-2 total score	UPE subscale score	EPR subscale score	RHSC subscale score	B-FCC subscale score
Fatty acid ratio	-,010	-,027	,006	-,021	,046
Refined grains	-,027	,043	-,034	-,026	-,022
Sodium	,080	,056	,049	,068	-,017
Total fuit	,040**	,031	,032	,078	-,130**
Whole fruit	,153**	,062	,049	,152**	,018
Total vegetables	,336**	,184**	,192**	,179**	,189**
Greens and beans	-,072	-,074	-,016	-,052	-,017
Whole grain	,288**	,111**	,175**	,187**	,131*
Dairy	-,070	-,113**	-,080	,062	-,107*
Total protein foods	,046	,031	-,066	,101*	,010
Seafoods	,388**	,236**	,222**	,245**	,123**
Energy from soFAAS	-,095*	-,139**	-,125**	,063	-,084*

**Correlation is significant at the 0.01 level
*Correlation is significant at the 0.05 level
IES-2 = Intuitive Eating Scale-2, UPE = Unconditional permission to eat, EPR = Eating for physical rather than emotional reasons, RHSC = Reliance on hunger and satiety cues, B-FCC = Body-food choice congruence, SoFAAS= Energy from solid fat, alcohol and added sugars

are quite commonly seen in the young population (40).

engl and Hekimoğlu (41) conducted a study to assess the relationship between BMI and EAT-40 scores of adult individuals, and a positive correlation was found in females (p=0.000). In a study by Keskin et al. (42) in 136 young adult individuals, of whom 58.5% are women, eating disorder was diagnosed significantly higher in females (p<0.001); however, no between-group difference was found in terms of BMI and the risk of eating behaviour disorder (p > 0.05).

The study by Oğur et al. (43), conducted in a sample of 294 young adult individuals, found the risk of eating disorder in 11.9% of women and 14.9% of men; and 7.8% of slim young adults, 13.6% of normal individuals and 15.5% of overweight individuals were found to be susceptible to eating disorder. In another study by Kaya et al. (44) on adult obese individuals, a positive and significant correlation was found between EAT-40 score and BMI (p = 0.001). Beyaz Coşkun (45) conducted a study with the participation of 450 young adults, and 36.6% of women and 15.7% of men were identified to be at risk of eating disorders.

In a study by Yıldırım et al. (46) to examine the relationship between exercise addiction and eating attitudes and behaviours in 375 regularly exercising indi-viduals, the average EAT-26 points of women is found to be 17.88 ± 13.23, while it is 15.35 ± 13.55 points for men (p <0.05); and it is also found that 31.47% of the participants had a risk of eating disorder.

Another study by Yayan and Karaca (47) to evaluate the effect of intuitive eating behaviour on body composi-tion and some biochemical parameters on a total of 172 individuals, the relationship between intuitive eating total scores and depression scale scores was evaluated, and a statistically significant negative relation was found (p <0.05). Statistically significant negative relationships were found between intuitive eating total, eating for physical rather than emotional reasons and eating, reli-ance on internal hunger and satiety cues (p <0.05).

To our knowledge, our study is the first study to inquire into the relationship between intuitive eating and diet quality among young women in Turkey, and the results showed that high intuitive eating is related to high diet quality in this target group. Similarly, in

a recent general population-based study, Camilleri et al. (48) found that IE scores were inversely associated with BMI. Nevertheless, previous studies reveal varied results regarding associations, both positive and negative, between intuitive eating and diet quality. Madden et al. (17), in a cross-sectional survey, found positive associations between intuitive eating and vegetable intake and time taken to eat main meal, and negative associations with binge eating and self-reported rates of eating; yet observed no association between intuitive eating and other nutritional intake, including consumption of fruit and several types of foods with high levels of saturated/trans fats and/or refined carbohydrates. A recent study by Horwath et al. (49) reported that unconditional permission to eat was moderately correlated with poorer diet quality scores, whereas the other three aspects of intuitive eating showed only a few small positive correlations with food intake, including small positive associations of diet quality scores with EPR and RHSC in women. In our study, the UPE, EPR, RHSC and B-FCC aspects of intuitive eating showed only few positive correlations with the diet quality in women. Contradicting to our study, the results of a cross-sectional study by Borelli et al. (50) in a college sample do not support that intuitive eating is correlated with diet quality and increased scores of UPE subscale of IE were correlated with a lower diet quality. Also, studies by Cole and Horacek (19) and Banks (21) found no association between intuitive eating and dietary intake. Actually, there is not enough evidence to explain this variation. The UPE may not be associated with lower consumption of healthy foods over time, as illustrated in a study by Carbonneau et al. (51) where the association between UPE and diet quality was negative at baseline, but was positive and marginally significant at the end of a 13-week HAES-based intervention. Therefore, longitudinal evidence for UPE and other subscales of IES is needed, as well as other intuitive eating dimensions which are linked to health and well-being indicators in the long term. Plante et al. (52) reported that women who had higher total intuitive eating scores and higher eating for physical rather than emotional reasons achieved adequate gestational weight gain in the first trimester; and similarly, women who had adequate gestational weight gain in the third trimester expressed higher levels of eating for physical rather than emotional reasons compared to the women who exceeded gestational weight gain recommendations. Contrary to our study, Tylka and Kroon Van Diest (11) indicated a negative inter-relationship between unconditional permission to eat and body–food choice congruence. It was suggested that intuitive eaters balance their intakes between those two components. In other words, women might respond to cravings by choosing unhealthier food items, but otherwise tend to make healthier choices in response to their physiological needs (53). In our study, we found that there is a positive correlation between diet quality and unconditional permission to eat, body–food choice congruence and other subscales of intuitive eating scale. This is not surprising since, by definition, individuals who allow themselves to eat a wide variety of foods and the food desired do not follow any dieting rules. Similarly, those who eat for physical rather than emotional reasons avoid using food to soothe emotions and are less prone to indulge in overeating (11, 10).

Intuitive eating involves consuming food in accordance with internal cues of hunger and satiety (11). According to previous studies, intuitive eating is negatively correlated with BMI in early adolescents, young adults, college students, and adults (53, 54, 55). A recent review by Warren et al. (56) reported that studies on intuitive eating generated mixed results regarding the association with weight loss or weight maintenance; however they also indicate that intuitive eating showed promise in positively influencing complex relationships with food and eating behaviours. Furthermore, randomized controlled trials in overweight and obese populations promoting IE have demonstrated weight maintenance (23, 57) or weight loss (58).

In our study, BMI showed medium negative correlations with the IES-2 total score and RHSC, and small negative correlations with B-FCC, but was unrelated to UPE and EPR, similar to studies which found a negative association between RHSC and BMI (48, 59), or showed a reduced interoceptive sensitivity with greater BMI in participants with overweight and obesity (60); and contradicting to Ruzanska and Warschburger (61) who reported that RHSC was not associated with BMI in their study. On the other hand, Horwath et al. (49) reported that total IES-2 scores had a moderate inverse correlation with BMI,

and three IES-2 subscales (UPE, EPR, RHSC) were inversely related with BMI in both men and women.

Intuitive eating as a flexible pattern of eating that involves: trust in and reliance on internal hunger and satiety cues, eating for physical (rather than emotional) reasons, granting unconditional permission to eat, and choosing foods that support health and body functioning (i.e., body-food choice congruence) (11), may promote weight stabilization and has been integrated into select ED interventions (62, 63). For example, intuitive eating is a component in size acceptance interventions designed for higher-weight women with ED symptoms; these women stabilized their weight, reduced ED symptoms, and improved body image and metabolic fitness at postintervention and follow-up (23, 64). In a review by Bruce and Ricciardelli (15), the UPE subscale demonstrated the highest negative correlation with disordered eating; EPR subscale and RHSC subscale demonstrated small to medium negative correlations with disordered eating; while the B-FCC subscale was unrelated with disordered eating; thus suggesting that these three aspects of intuitive eating were more conceptually distinct from disordered eating. In our study, EAT-26 score was inversely correlated with IES-2, RHSC and B-FCC scores. Linardon and Mitchell (65) found that the relationship between intuitive eating and disordered eating was mediated by low levels of dichotomous thinking and the relationship between intuitive eating and body image was mediated by high levels of body appreciation. Flexible control predicted higher levels of body image concerns and lower levels of disordered eating only when rigid control was accounted for. Their findings suggest that until the adaptive properties of flexible control are further elucidated, it may be beneficial to promote intuitive eating within public health approaches to eating disorder prevention. In addition, in a study in a German-speaking population with eating disorder, the IES-2 total score and most subscale scores were negatively related to eating disorder symptomatology, problems in appetite and emotional awareness, body dissatisfaction, and self-objectification (59). Findings from our study regarding the association between trusting one's body to tell one how much to eat and disordered eating behaviors are in line with the findings of previous studies in young women (23, 14, 26).

This study has some limitations. The main limitation is its cross-sectional design, which prevents drawing conclusions regarding the causality between intuitive eating, diet quality, body mass index and abnormal eating in women. Another key limitation is that the study only included a single self-reported 24-hour recall performed during the face-to-face interviews conducted by two dieticians; however, a single 24-hour recall is not considered to capture the usual dietary intakes of an individual. Also, since it is a retrospective method of diet assessment, participants may have been biased and under- or over-reported weight, height, serving sizes and/or foods consumed. Final limitation is that the study was conducted only in women population between the age of 19-32 who volunteered.

As a conclusion, the findings of this study reveal that intuitive eating is positively related to diet quality, weight status and abnormal eating in young Turkish women and that women who were more intuitive made dietary choices that respond to their physiological needs. Although our study is a cross-sectional anal-ysis, the findings are in accordance with the idea that intuitive eating can offer a more holistic and long-term weight control approach compared to other traditional body weight management strategies. Further prospec-tive studies, which use sampling methods to ensure that they are representative of the population they are examining as well as to minimize potential sampling bias are needed to verify these cross-sectional findings.

Declaration of conflicting interests

The authors declare that there are no potential conflicts of interest with respect to the research, au-thorship, and/or publication of this article.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

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