

Emotional Eating, Social Anxiety and Depression among Normal-weight and Obese Adolescents: A Comparative Study

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Abstract

Background: Emotional eating is eating in reaction to the emotion that may increase during early adolescence, a time of heightened emotionality, and increased prevalence of emotional disorders. **Aim:** to compare emotional eating, social anxiety, and depression among normal-weight and obese adolescents. **Subjects and Method: Design:** Current study followed a design of cross-sectional comparative descriptive research design. **Subjects:** The subjects consisted of 92 obese adolescents and 92 normal-weight adolescents. **Setting:** The study was carried out in the pediatric endocrinology outpatient clinic of the Mansoura University Children's Hospital, Egypt, and in two randomly selected preparatory and secondary schools affiliated to Mansoura District, Egypt. **Tools:** Tools of data collection included tool I: Socio-demographic Interview Schedule, tool II: Emotional Eating Scale, tool III: Liebowitz Social Anxiety Scale, and tool IV: Beck Depression Inventory-II. **Results:** 90.2%, 72.8%, and 75% of the obese adolescents experienced high emotional eating, moderate to severe social anxiety, and severe depression respectively, compared to 63%, 9.8%, and 6.5% respectively of normal-weight adolescents. **Conclusion:** there was a statistically significant relationship between social anxiety, emotional eating, and depression among obese adolescents. **Recommendation:** Patient or Public Contribution: Social anxiety, depression, and emotional eating, as obesity risk factors, should be part of an integrated strategy to prevent and manage obesity among adolescents.

Keywords: Adolescents, Depression, Emotional Eating, Normal-weight, Obesity, Social Anxiety

Introduction

Adolescence is the age in a person's life when their body is quickly growing, and their dietary needs are increasing. It includes the unpleasant physical and psychological effects of pubertal changes. It's also linked to a strong desire for freedom and self-expression. Adolescents can gain experience making their own decisions by making individualized meal selections. Nutritional deficits are a result of poor eating habits⁽¹⁾.

According to the World Health Organization (WHO), pediatric obesity is

one of the most important community health concerns of the twenty-first century of the WHO in both industrialized and developing countries. Obesity can lead to major medical disorders such as hypertension, diabetes, and cardiovascular diseases. In addition to psychosocial problems such as anxiety, depression, behavioral and emotional disorders, and social anxiety. It also hurts adolescents' academic success, self-esteem, social interactions, and adult work-life⁽²⁻⁴⁾.

Emotional eating is described as eating to relieve negative emotions such as depression, frustration, and loneliness rather than hunger, eating as a form of emotional relief, or eating when negative emotions are handled in harmful ways⁽⁵⁾. It is frequently linked to the eating of more energy-dense meals in reaction to unpleasant emotions⁽⁶⁾, and as a result, it is a habit that can lead to obesity in both adults and adolescents. Overeating in reaction to emotion is quite widespread in adolescence, especially among females⁽⁷⁾, with evident patterns of elevated sensitivity to emotional overeating in certain individuals compared to others⁽⁸⁾. Furthermore, emotional eating looks to be more prevalent among middle to late teens than children across studies^(9,10).

Emotional eating, in line with Psychosomatic theory and affect regulation models, is the outcome of insufficient affect regulation mechanisms, in which people have learned that eating relieves unpleasant emotions. However, escape theory mentioned that emotional eating is undertaken to escape or redirect attention away from painful self-awareness and resultant bad affect⁽¹¹⁾. Food is thus utilized to avoid or mitigate unpleasant effects in each of these theories. The escape theory incorporates a reason for emotional eating as a distraction from negative self-appraisal. Affecting symptoms, such as depression and anxiety symptoms, are directly implicated as risk factors for elevated emotional eating, and social situations that elicit negative affect may be risk factors for emotional eating⁽¹²⁾.

Social anxiety is commonly defined as uncomfortable feelings and nervousness experienced in either imagined or real social situations. It can be divided into two types: fear of negative evaluation by others (FNE), which is described as the distress caused by the fear of being

negatively judged, the avoidance of circumstances in which one might be evaluated, or the expectation of being poorly evaluated by others. and social avoidance and distress (SAD) which is described as having had a distressing experience and hence actively avoiding or desiring to avoid a social environment. Unlike FNE, which focuses solely on the cognitive part of social anxiety, SAD includes physical, emotional, and cognitive aspects⁽¹³⁾. When dealing with unpleasant feelings in social circumstances, socially anxious teenagers may use a variety of coping techniques, including behavioral detachment, problem-solving, seeking social support, and distracting of self. Different actions are associated with each of these methods. Overeating is a way of a self-distraction coping mechanism for coping with the emotional anguish that arises as a result of the situation⁽¹⁴⁾. Emotional eating as a response to self-distract from distress may appear to be a harmless coping approach, but it increases the risk of obesity in vulnerable adolescents^(15,14).

During adolescents, the self-perception of being overweight is the most significant cause of a diversity of mental health alarms (including anxiety, depression, and eating disorders). As a result, obesity prevention is the first step in the battle against obesity. Training and counseling on adapting eating habits, organizing physical activity, and developing coping skills are all useful therapy in the inhibition of obesity⁽¹⁶⁾.

The nurses play a vital role in eating disorder recovery through the delivery of adolescent-centered care, the provision of a supportive and therapeutic relationship⁽¹⁷⁾. The nurses' goal is to have a manageable multidisciplinary, holistic approach to care, monitor nutritional status, electrolyte balance, weight, and activity. They also should

give emotional support to the adolescents, as they face deep pain and traumatic thoughts. Nurses can gain trust through active listening, empathy, and positive reinforcement. Furthermore, they can foster independence and educate them through loving care, establishing goals to ensure that the adolescent maintains awareness, practices healthy coping techniques, and adopts a positive body image and sense of self-worth ⁽¹⁸⁾.

Significance of the study:

Adolescents frequently suffer from mental illness and obesity. At any given moment, over 8% of teenagers are diagnosed with depression, also 25% had social anxiety. One-third of teenagers are overweight or obese, with approximately 6% having severe obesity ⁽¹⁹⁾. Depression and/or social anxiety may have a role in the development of more severe types of obesity, or conversely, anxiety and/or depression may lead to more severe forms of obesity. One of the numerous possible intermediaries between anxiety and/or depression and obesity is emotional eating. Overeating as a coping method to control and diminish unpleasant moods is referred to as emotional eating ⁽²⁰⁾. Identifying valid psychological predictors of who is most probable to writhe from obesity would signify an appreciated step concerning the development of prophylactic approaches for guarding adolescents before disease onset as well as enhancing their psychological wellbeing ^(21,22). Because the adolescents who described extra emotional eating sensed more prohibited and persecuted by their peers, felt additional teased about their looks and were greater signs of social anxiety and depression; this study emerged to compare emotional eating, social anxiety, and depression among normal weight and obese adolescents.

Aim of the study

Comparing the emotional eating, social anxiety, and depression among normal-weight and obese adolescents.

Research question: Is there a difference in the levels of emotional eating, social anxiety, and depression between obese and normal-weight adolescents?

Subjects and Method

Research Design:

A cross-sectional comparative descriptive research design was applied in the current study.

Setting:

The study was conducted in the pediatric endocrinology outpatient clinic of the Mansoura University Children's Hospital, Egypt, and in two randomly selected preparatory and secondary schools, namely Jadila Preparatory Combined School and Shaha Secondary Combined School. Both schools are affiliated with Dakahlia District, Egypt.

Subjects

The sample size was projected using G-power software V.3.1.9.7 (Psychonomic Society, Madison, Wisconsin, USA) Faul et al. (2007) ⁽²³⁾. The effect size $g = 0.47$ was calculated based on a study "emotional eating, social anxiety and depression among normal-weight and obese adolescents: a comparative study" Efe, et al. (2020) ⁽²⁴⁾. Supposing power analysis results for the variance among the two independent groups and 0.95 % of confidence level, 0.80 of the statistical power, and reasonable division, the required sample size was to be 71 clients in each group. An added 21 individuals need to be recruited to recompense for a projected dropout rate of 30% Krysik and Finn (2007) ⁽²⁵⁾. The final sample size is 92 adolescents in each group.

A convenience sample of (184) adolescents was recruited. 92 of them were obese adolescents and visited the pediatric endocrinology outpatient clinic every three months for follow-up considering the following inclusion

criteria: adolescents diagnosed with obesity (body mass index (BMI) equal or more than 95th percentile) for at least one year and not having another chronic disease. and 92 of the sample were normal-weight adolescents and recruited from randomly selected one preparatory school and one secondary school, considering the following inclusion criteria: having no chronic disease and being with BMI 5th percentile to less than the 85th percentile. Both two groups are similar in gender, equal age, and socioeconomic status.

Tools of Data Collection

The following four instruments were applied for the collection of data:

Tool I: Socio-demographic Interview included: Adolescent's socio-demographic data such as age, sex, birth order, residence, income, family size, and adolescent living.

Tool II: Emotional Eating Scale (EES):

The EES included 25 self-reported items that evaluate the desire to eat by the effect of negative emotions, including anxiety, anger, and little mood state (Arnouk et al. 1995) ⁽²⁶⁾. Adolescents amount their answers using a 5-point Likert scale going from "0; no desire to eat to 4; an overwhelming urge to eat". The whole score is considered by summing the marks of all the included items and can vary from 0–100", with the elevated scores representing a dependence on using food in managing emotions. The EES has been recognized in clinical also, non-clinical samples (Waller and Osman, 1998) ⁽²⁷⁾. No cutoff is existing for EES; therefore, z-scores were used to yield three group categories. Values greater than the mean were treated as high EE, while values lower than the mean were treated as low EE, while values between these two identified values were considered moderate values. The subsequent cutoffs were formed: scores less than or equal 27.5 indicated low EE, scores between

27.6 to 43.6 indicated moderate EE, and scores higher than or equal to 43.7 indicated high EE. The total of the items that matched each EE item were summed to provide a composite score for the total scale. The original EES scale had respectable test-retest reliability ($r=0.79, p<0.001$) and a satisfactory internal consistency Cronbach alpha = 0.81. The EES was translated into Arabic in a previous study with an acceptable internal consistency (Cronbach alpha = 0.957) (Zeidan et al. 2019) ⁽²⁸⁾. In the current study, Cronbach's alpha was 0.862.

Tool III: Liebowitz Social Anxiety Scale (LSAS):

The LSAS is a self-rating scale established by Liebowitz, (1987) ⁽²⁹⁾ to degree of fear or anxiety and avoidance of about 24 usually feared performance or social conditions. It consists of 13 performance-related items and 11 social-related things that are graded on a scale of 0 (none/rarely) to 3 (severe/frequently). It has an acceptable internal consistency and assesses the severity of fear and avoidance in common social conditions. The scores of ≤ 54 indicated mild social anxiety, 55–64 = moderate social anxiety, 65–79 = marked social anxiety, 80–95 = severe social anxiety, and ≥ 96 = very severe social anxiety. The LSAS was found to have excellent internal consistency (Cronbach's $\alpha=0.95$) and test-retest reliability over 12 weeks ($r=0.83$). The use of LSAS that was validated in the Arabic version among adolescents is estimated this would provide minimalized measurement error (Al-Sharbati et al. 2012) ⁽³⁰⁾. In the current study, Cronbach's alpha was 0.811.

Tool IV: The Beck Depression Inventory-II (BDI-II):

The BDI-II was developed by Beck et al. (1996) ⁽³¹⁾ to that can be utilized in both

research and clinical settings because it can measure depression in different groups of people. This instrument has 21 items, with the strength of separate items varying dependent on the severity of the symptoms. A four-point Likert scale was employed in the scoring system. Each Likert scale varied from 0 (which corresponded to mild or no symptoms) to 5 (3; corresponds to severe symptoms). The current tool was translated and validated into Arabic by Ghareeb (2000)⁽³²⁾. Its Cronbach alpha reliability was 0.83 and the t-test re-test reliability was 0.74. Interpretation of scores according to Ghareeb (2000)⁽³²⁾ was as follows; in females, “severe depression, 53:63; moderate depression, 40:52; mild depression, 27:39; and minimal depression, 0:26”, while in males, “severe depression, 50:63; moderate depression, 37:49; mild depression, 24:36; and minimal depression, 0:23”

Method

Validity and Reliability:

The data collection tools will be tested for their content validity by 5 experts in the fields of pediatric and psychiatric and mental health nursing. Reliability checks were also carried out using the Alpha Cronbach test: Emotional Eating Scale $\alpha = 0.862$; Liebowitz Social Anxiety Scale $\alpha = 0.811$ and The Beck Depression Inventory-II $\alpha = 0.83$.

Ethical Consideration:

Approval to implement the study was gotten from the Research Ethics Committee of the Faculty of Nursing – Mansoura University. Also, from directors and the head nurses of Mansoura University Children’s Hospital and the directors of the two selected schools after an explanation of the aim, methods, duration, and the benefits of the study. Consent was obtained from relatives of every adolescent included in the study

after explaining the importance and the aim of the study. Confidentiality of the collected data was assured. The anonymity of the study participants was assured. Participants' voluntary participation and were emphasized their right to draw from the study at any time.

Pilot study:

A pilot study was conducted on 20 adolescents (10 normal-weight and 10 obese) to examine the applicability and clarity of the instruments that were used and to determine the time required to complete the instruments. Minimal changes to the tools were made. Adolescents included in the pilot study have been excluded from the subjects of the study.

Fieldwork:

The preparation of data collection methods was performed over approximately three months from November 2021 to the end of January 2022. Official approvals were obtained from the directors and the head nurses of Mansoura University Children’s Hospital and the directors of the selected two schools who were knowledgeable about the study aim, data collection time, and details to acquire their cooperation during the process of data collection. The Collection of data took place two days a week (Sundays and Wednesdays) from 10.00 a.m. to 12.00 pm either in the outpatient clinic or the school where the researchers distributed themselves to fill out the data. Each adolescent was questioned separately to acquire the necessary information. At the start of the interview, the researchers introduced themselves to the adolescent and outlined the study's purpose. In this study, among normal-weight adolescents' height and weight values were obtained by measuring the BMI (weight/height²). Adolescents with a Body Mass Index (BMI) equal to or more than 95th are deemed obese,

whereas adolescents with BMI = 5th percentile to less than the 85th percentile are considered normal, according to reference values provided by the U.S Preventive Services Task Force.

Statistical Design

Data were analyzed using SPSS program version 23. Categorical variables were revealed as numbers and percentages. Chi-square was performed to test for significant differences between groups. The crude odds ratio (COR) and their confidence intervals of 95% (95%CI) were calculated. Factors that were associated significantly with obesity were entered into a multivariate logistic regression model using Wald stepwise forward method. Adjusted OR (AOR) and their 95% CI were calculated. Results were considered statistically significant at $P \leq 0.05$.

Results

Table (1): shows that nearly two-thirds of normal weight and obese adolescents (63%, 68.5% respectively) were females and from rural areas (71.7%, 69.6% respectively). Also, for birth order, being firstborn is associated with an increased risk of obesity (COR= 2.8). However other studied associations do not show a significant increase in the risk of obesity.

Table (2): revealed that there was a significant difference between normal weight and obese adolescents regarding emotional eating, social anxiety, and depression ($X^2 = 18.97, 75.41, \text{ and } 92.13$ respectively) and $P \leq .001$.

Table (3): represented in multivariate logistic regression analysis that the independent significant predictors of obesity were being with high emotional eating, moderate/marked social anxiety, and mild, moderate, severe depression (AOR= 5.26, 27.27, and 93.6; respectively).

Table (1): Prevalence of normal weight and obesity among study adolescents and their variation with the socio-demographic factors (n=184)

		Normal weight (92)		Obese (92)		Test of Sig.		COR (95% CI)
		No	%	No	%	χ^2	P	
Adolescents age	12: 14 years	44	47.8	33	35.9	2.702	.102	1(r)
	15: 18 years	48	52.2	59	64.1			1.6 (.9-3)
Adolescents sex	Male	35	38	29	31.5	.863	.353	1(r)
	Female	57	62	63	68.5			1.3 (.7-2.5)
Birth order	First one	18	19.6	39	42.4	8.713**	.003	2.8 (1.4-5.5)
	Last one	19	20.7	10	10.9			.7 (.3-1.6)
	Middle	55	59.8	43	46.7			1(r)
Residence	Rural	66	71.7	64	69.6	.139	.710	1(r)
	Urban	26	28.3	28	30.4			1.1 (.6-2.2)
Income	Satisfactory	69	75	67	72.8	.061	.804	1(r)
	Not satisfactory	23	25	25	27.2			1.1 (.6-2.1)
Family size	Three members	11	12	16	17.4	1.09	.299	1.6(.68-3.6)
	Four to seven members	81	88	76	82.6			1(r)
Adolescents living	with mother and father	77	83.7	73	79.3	.577	.447	1(r)
	with mother only	15	16.3	19	20.7			1.3 (.6-2.8)

COR=Adjusted odds ratio, CI=Confidence Interval, r=reference category, χ^2 = Chi-square test

Table (2): Prevalence of normal body weight and obesity among study adolescents and their variation with the studied variables (n=184)

		Normal weight (92)		Obese (92)		Test of Sig.		COR (95% CI)
		No	%	No	%	χ^2	P	
Emotional eating	Low / Moderate emotional eating	34	37	9	9.8	18.97	≤.001	1(r)
	High emotional eating	58	63	83	90.2			5.41 (2.4-12.1)
Social anxiety	Mild social anxiety	83	90.2	25	27.2	75.41	≤.001	1(r)
	Moderate / Marked social anxiety	9	9.8	67	72.8			24.7 (10.8-56.5)
Depression	Minimal depression	86	93.5	23	25	92.13	≤.001	1(r)
	Mild / Moderate / severe depression	6	6.5	69	75			43 (16.5-111.5)

COR=Adjusted odds ratio, CI=Confidence Interval, r=reference category, χ^2 = Chi-square test

Table (3): Multivariable logistic regression analysis of independent predictors of obesity

	Satisfaction with life		
	β	P	AOR (95% CI)
Emotional eating			
Low / Moderate emotional eating	-	-	1(r)
High emotional eating	1.71	.022	5.26 (1.29-23.8)
Social anxiety			
Mild social anxiety	-	-	1(r)
Moderate / Marked social anxiety	3.31	≤.001	27.27 (8.2-90.2)
Depression			
Minimal depression	-	-	1(r)
Mild / Moderate / severe depression	4.54	≤.001	93.6 (21.9-400.9)
Constant	-4.1		
Model χ^2	160.3, P≤0.001		
% Correctly predicted	90.2		

AOR=Adjusted odds ratio, CI=Confidence Interval, r=reference category, β =Standardized coefficient (values for each variable are converted to the same scale so they can be compared).

Discussion

Adolescence is a period of physical and mental development. Higher levels of anxiety and obesity can hurt the mental and physical development of adolescents. The governmental and non-governmental institutions are conducting many awareness programs, which need to identify their impact (Roy et al. 2021) (33). Adolescents who are involved in disorderly eating behavior find their body mass index (BMI) at a higher level (Yoon et al. 2020) (34). Increased BMI in the

adolescence period is strongly linked with morbidity and mortality in adulthood (WHO, 2022) (35). So, this study emerged to compare the effect of emotional eating on social anxiety and depression among healthy and obese adolescents.

The present study revealed that more than half of normal weight and nearly two-thirds of obese adolescents were 15 to 18 years old. Moreover, near to more than two-thirds of normal weight and obese were females. Moreover, the

current study showed that being firstborn is associated with an increased risk of obesity (COR= 2.8). This result agrees with **Potter et al. (2021)**⁽³⁶⁾ who stated in their study that compared to non-first-born children, first-born children were about twice as likely to have a faster eating rate (P = .040) (**Potter et al. 2021**)⁽³⁶⁾. These indicated that first-born children eat at a faster rate than non-firstborn (i.e, youngest and middle) children do.

The findings of the current study represented that most obese adolescents have high emotional eating, moderate or marked social anxiety, and mild, moderate, or severe depression compared to normal weight (COR = 5.41, 24.7, and 43; respectively) and this means that adolescents are not able to deal with undesirable emotions and are overeating. Like the results of the study, **Efe et al. (2020)**⁽²⁴⁾ stated in their study that adolescents with obesity had a higher level of emotional eating and social anxiety than normal-weight colleagues (p ≤ 0.001). Also, several studies specified that mood, anxiety, somatoform, and eating disorders in adolescents with obesity and overweight are higher than in normal-weight (**Efe et al. 2020**⁽²⁴⁾; **Farhangi 2019**⁽³⁷⁾). Also, **Yönder Ertem and Karakaş (2021)**⁽³⁸⁾ found out in their study that overweight students exhibited a more depressing attitude and a less optimistic than normal-weight students. It was also determined that overweight adolescents compared to fit and normal weighted ones are more likely to display binge eating during anxiety and negative moods (**Yönder Ertem and Karakaş 2021**)⁽³⁸⁾.

Furthermore, **Tan and Chow (2014)**⁽³⁹⁾ emphasized that adolescents with high levels of stress had problems controlling the amount of food intake which was directly related to emotional eating. This issue may be considered that eating in the

face of stress can distract acute stress similar to eating to deal with negative emotions like depression and anxiety (**Tan and Chow 2014**)⁽³⁹⁾. Concordantly, a study by **Debeuf et al. (2018)**⁽⁴⁰⁾ revealed that daily stress was significantly associated with trajectories of desire to eat motives and hunger eating motives. Numerous studies pointed out that emotion-based coping strategies led to dieting, binge eating, and impaired eating attitudes of individual differences in coping strategies between men and women, leading to a higher number of women exhibiting emotional eating than men (**Debeuf et al. 2018**)⁽⁴⁰⁾. Disagreeing with this result, there are also some studies showing that there is no correlation between emotional eating and the BMI mean of adolescents with obesity (**Işgün et al. 2015**)⁽⁴¹⁾.

From the researchers' point of view, the current study results can be explained by considering emotional eating may be more likely to eat higher energy-dense foods and have far too many chances to indulge in this energy-dense food. This may be a result of the accessibility of these items at school or the home. Which in turn, correlated with an increase in body mass index and contributes to obesity. On the other hand, obesity results from overeating may be more likely to be associated with negative affective states, including social anxiety and depression. While normal-weight adolescents could have more adaptive coping mechanisms besides do not eat in response to emotional stress.

Conclusion

Based on the results of the current study, it can be concluded that obese adolescents experienced a higher level of emotional eating, social anxiety and depression compared to normal weight adolescents and there was a statistically significant

relationship between social anxiety, emotional eating, and depression among obese adolescents. So, these results provide an indicator that emotional eating, social anxiety, and depression are predictors of obesity among adolescents.

Recommendations

- 1- Detecting social anxiety, depression, and emotional eating, amongst other obesity risk factors, should be part of an integrated strategy to prevent and manage obesity.
- 2- School guidance services must provide negative emotion and stress coping training to teenagers with social anxiety and intervene early by detecting emotional eating habits.
- 3- Proposing an approach for coping with undesirable moods by eating healthier meals.
- 4- Effective and unending training curricula for an adequately balanced diet will bring changes in faulty habits and behaviors, prevent adolescent health-threatening difficulties and practices, and translate knowledge into attitude.
- 5- Adolescent counseling on stress factors that increase the risk of obesity, enhance the chances for play and recreation, and more support from educators and parents could be effective.
- 6- Further intervention studies should be accomplished to evaluate the effect of counseling on adolescent obesity.

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References

1. El-Shaheed A. A, Mahfouz N. N, Moustafa S. I, Elabd M. A. Alarming eating behaviours among adolescents in Egypt. *Open Access Macedonian Journal of Medical Sciences*. 2019; 7(13): 2189–2193. Available from: <https://doi.org/10.3889/oamjms.2019.583>
2. Rankin J, Matthews L, Cobley S, Han A, Sanders R, Wiltshire D, et al. Psychological consequences of childhood obesity: Psychiatric comorbidity and prevention. *Adolescent Health, Medicine and Therapeutics*. 2016; 7(1): 125–146. <https://doi.org/10.2147/AHMT.S101631>
3. Sagar R, Gupta, T. Psychological aspects of obesity in children and adolescents. *Indian Journal of Pediatrics*; 2018; 85(7): 554–559. <https://doi.org/10.1007/s12098-017-2539-2>
4. Sanyaolu A, Okorie C, Qi X, Locke J, Rehman S. (2019). Childhood and adolescent obesity in the United States: A Public Health Concern. *Global Pediatric Health*. 2019; 6(1): 2333794X19891305. Available from: <https://doi.org/10.1177/2333794X19891305>
5. Reichenberger J, Schnepfer R, Arend A.-K, Blechert J. Emotional eating in healthy individuals and patients with an eating disorder: Evidence from psychometric, experimental and naturalistic studies. *The Proceedings of the Nutrition Society*. 2020; 79(3): 290–299. Available from: <https://doi.org/10.1017/S002966512007004>
6. Frayn M, Livshits S, Knäuper B. (2018). Emotional eating and weight regulation: A qualitative study of compensatory behaviors and concerns.

- Journal of Eating Disorders. 2018; 6(1): 23. Available from: <https://doi.org/10.1186/s40337-018-0210-6>
7. Jääskeläinen A, Nevanperä N, Remes J, Rahkonen F, Järvelin M.-R, Laitinen, J. Stress-related eating, obesity and associated behavioural traits in adolescents: A prospective population-based cohort study. *BMC Public Health*. 2014; 14, 321. <https://doi.org/10.1186/1471-2458-14-321>
 8. Zimmer-Gembeck M. J, Webb H. J, Kerin J, Waters A. M, Farrell L. J. (2021). Risk factors and temporal patterns of disordered eating differ in adolescent boys and girls: Testing gender-specific appearance anxiety models. *Development and Psychopathology*. 2021; 33(3): 856–867. Available from: <https://doi.org/DOI:10.1017/S0954579420000188>
 9. Herle M, Fildes A, Llewellyn H. Emotional eating is learned not inherited in children, regardless of obesity risk. *Pediatric Obesity*. 2018; 13(10), 628–631. Available from: <https://doi.org/10.1111/ijpo.12428>
 10. Steinsbekk S, Barker D, Llewellyn C, Fildes A, Wichstrøm L. Emotional feeding and emotional eating: Reciprocal processes and the influence of negative affectivity. *Child Development*. 2018; 89(4): 1234–1246. <https://doi.org/10.1111/cdev.12756>
 11. Mikhail M. E, Keel P. K, Burt S. A, Sisk C. L, Neale M, Boker S, Klump K. L. Trait negative affect interacts with Ovarian Hormones to predict risk for emotional eating. *Clinical Psychological Science*. 2020; 9(1): 114–128. Available from: <https://doi.org/10.1177/2167702620951535>
 12. Webb P, Benton T. G, Beddington J, Flynn D, Kelly N. M, Thomas S. M. The urgency of food system transformation is now irrefutable. *Nature Food*. 2020; 1(10): 584–585. <https://doi.org/10.1038/s43016-020-00161-0>
 13. Godor B. P, Uysal R, van Der Poel A, Jansen P. Exploring potential differential relationships between social anxiety and emotional eating amongst normative vs. academically gifted students. *Gifted and Talented International*. 2020; 35(2): 100–109. <https://doi.org/10.1080/15332276.2021.1880302>
 14. Kohlboeck G, Heitmueller D, Neumann C, Tiesler C, Heinrich J, Heinrich-Weltzien R, et al. Is there a relationship between hyperactivity/inattention symptoms and poor oral health? Results from the GINIplus and LISApplus study. *Clinical Oral Investigations*. 2013; 17(5): 1329–1338. <https://doi.org/10.1007/s00784-012-0829-7>
 15. Iguacel I, Gasch-Gallén Á, Ayala-Marín A. M, De Miguel-Etayo P, Moreno L. A. Social vulnerabilities as risk factor of childhood obesity development and their role in prevention programs. *International Journal of Obesity*. 2021; 45(1): 1–11. <https://doi.org/10.1038/s41366-020-00697-y>
 16. National Institute for Health and Clinical Excellence. NIMH » eating disorders: About More Than Food. 2022. Retrieved March 17, 2022, Available from: <https://www.nimh.nih.gov/health/publications/eating-disorders>.
 17. Davies, N. (2017): The role of the nurse in eating disorder recovery. *Independent Nurse*, 2017(5), 25-27.
 18. Dugan J. Nurse’s Guide to Caring for Patients with Eating Disorders. 2017. Available at: <https://nursejournal.org/resources/caring-for-patients-with-eating-disorders/>

19. Lindberg L, Danielsson P, Persson M, Marcus C, Hagman E. Association of childhood obesity with risk of early all-cause and cause-specific mortality: A Swedish prospective cohort study. *PLOS Medicine*. 2020; 17(3): e1003078. Retrieved from: <https://doi.org/10.1371/journal.pmed.1003078>
20. Fox C. K, Gross A. C, Rudser K. D, Foy M. H, Kelly A. S. Depression, anxiety, and severity of obesity in adolescents: Is emotional eating the link? *Clinical Pediatrics*. 2016; 55(12), 1120–1125. Available from: <https://doi.org/10.1177/0009922815615825>
21. Abdellatif S. A, Hussien S, Hamed W. E, Zoromba M. A. Relation between emotional intelligence, socio-demographic and clinical characteristics of patients with depressive disorders. *Archives of Psychiatric Nursing*. 2017; 31(1). <https://doi.org/10.1016/j.apnu.2016.07.009>
22. Zoromba M. A, EL-Gazar H. E, Salah A, El-Boraie H, El-Gilany H, El-Monshed A. H. (2022). Effects of emotional intelligence training on symptom severity in patients with depressive disorders. *Clinical Nursing Research*. 2022; 15(1): 10547738221074064. Available from: <https://doi.org/10.1177/10547738221074065>
23. Faul F, Erdfelder E, Lang A.-G, Buchner A. G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*. 2007; 39(1): 175–191. Faul, Franz: Institut für Psychologie, Christian-Albrechts-Universität, Olshausenstr. 40, Kiel, Germany, D-24098, ffaul@psychologie.uni-kiel.de: Psychonomic Society. <https://doi.org/10.3758/BF03193146>
24. Efe Y. S, Özbey H, Erdem E, Hatipoğlu N. A comparison of emotional eating, social anxiety and parental attitude among adolescents with obesity and healthy: A case-control study. *Archives of Psychiatric Nursing*. 2020; 34(6): 557–562. <https://doi.org/10.1016/j.apnu.2020.09.007>
25. Krysik J, Finn J. *Research for Effective Social Work Practice*. McGraw-Hill. 2007. Retrieved from: <https://books.google.com.eg/books?id=KZwbAgAACAAJ>
26. Arnow B, Kenardy J, Agras W. S. The emotional eating scale: The development of a measure to assess coping with negative affect by eating. *International Journal of Eating Disorders*. 1995; 18(1): 79–90. Available from: [https://doi.org/10.1002/1098108X\(199507\)18:1<79::AIDEAT2260180109>3.0.CO;2-V](https://doi.org/10.1002/1098108X(199507)18:1<79::AIDEAT2260180109>3.0.CO;2-V)
27. Waller G, Osman S. Emotional eating and eating psychopathology among non-eating-disordered women. *International Journal of Eating Disorders*. 1998; 23(4): 419–424. [https://doi.org/https://doi.org/10.1002/\(SICI\)1098108X\(199805\)23:4<419::AID-EAT9>3.0.CO;2-L](https://doi.org/https://doi.org/10.1002/(SICI)1098108X(199805)23:4<419::AID-EAT9>3.0.CO;2-L)
28. Zeidan R. K, Haddad C, Hallit R, Akel M, Honein K, Akiki M, Obeid S. Validation of the Arabic version of the binge eating scale and correlates of binge eating disorder among a sample of the Lebanese population. *Journal of Eating Disorders*. 2019; 7(1): 40. Available from: <https://doi.org/10.1186/s40337-019-0270-2>
29. Liebowitz M. R. *Social Phobia. Modern problems of pharmacopsychiatry*. 1987. 22, 141–173. Switzerland: S Karger AG. <https://doi.org/10.1159/000414022>
30. Al-Sharbati M, Al-Adawi S, Petrini

- K, Bait Amer A. S, Al-Suleimani A, Al-Lawatiya S, et al. Two-phase survey to determine social anxiety and gender differences in Omani adolescents. *Asia-Pacific Psychiatry: Official Journal of the Pacific Rim College of Psychiatrists*. 2012; 4(2): 131–139. Available from: <https://doi.org/10.1111/j.17585872.2012.00181.x>
31. Beck A. T, Steer R. A, Brown G. Beck Depression Inventory–II. APA PsycTests. 1996. Retrieved from: <https://psycnet.apa.org/doiLanding?doi=10.1037%2F00742-000>
32. Ghareeb G. Psychometric characteristics of the Beck Depression Inventory – II with Egyptian subjects. *Derasat Nafseyah*. 2000; 10(4): Retrieved from: https://www.researchgate.net/profile/Ghareeb-Ghareeb/publication/288935688_Psychometric_characteristics_of_the_Beck_Depression_Inventory_-_II_with_Egyptian_subjects/links/583f10f308aeda69680a1e52/Psychometric-characteristics-of-the-Beck-Depression-Invento
33. Roy S. K, Jahan K, Alam N, Rois R, Ferdaus A, Israt S, et al. Perceived stress, eating behavior, and overweight and obesity among urban adolescents. *Journal of Health, Population, and Nutrition*. 2021; 40(1): 54. Available from: <https://doi.org/10.1186/s41043-021-00279-2>
34. Yoon C, Mason S. M, Hooper L, Eisenberg M. E, Neumark-Sztainer D. Disordered eating behaviors and 15-year Trajectories in Body Mass Index: Findings from project eating and activity in teens and young adults (EAT). *The Journal of Adolescent Health: Official Publication of the Society for Adolescent Medicine*. 2020; 66(2). 181–188. Available from: <https://doi.org/10.1016/j.jadohea>
35. WHO. Adolescence: A period needing special attention - recognizing-adolescence. Retrieved March 17, 2022. Available from: <https://apps.who.int/adolescent/second-decade/section2/page1/recognizing-adolescence.html>
36. Potter C, Gibson E. L, Ferriday D, Griggs R. L, Coxon C, Crossman M, et al. (2021). Associations between number of siblings, birth order, eating rate and adiposity in children and adults. *Clinical Obesity*. 2021; 11(3): e12438. <https://doi.org/https://doi.org/10.1111/cob.12438>
37. Farhangi, M. A. (2019). Night eating syndrome and its relationship with emotional eating, sleep quality and nutritional status among adolescents' boys. *Community Mental Health Journal*. 2019; 55(8): 1411–1418. Available from: <https://doi.org/10.1007/s10597-019-00395-8>
38. Yönder Ertem M, Karakaş M. Relationship between emotional eating and coping with stress of nursing students. *Perspectives in Psychiatric Care*. 2021; 57(2): 433–442. Available from: <https://doi.org/https://doi.org/10.1111/ppc.12599>
39. Tan C. C, Chow C. M. Stress and emotional eating: The mediating role of eating dysregulation. *Personality and Individual Differences*. 2014; 66, 1–4. Available from: <https://doi.org/https://doi.org/10.1016/j.paid.2014.02.033>
40. Debeuf T, Verbeken S, Van Beveren M. L, Michels N, Braet C. Stress and eating behavior: A daily diary study in youngsters. *Frontiers in Psychology*. 2018; 9(DEC): 1–13. <https://doi.org/10.3389/fpsyg.2018.02657>
41. Işgın K, Pekmez CT, Çetin C, Kabasakal A, Besler H. T. Adölesanlarda Duygusal Yeme, Kontrolsüz Yeme ve Bilişsel Yeme Kısıtlaması Davranışları ile Vücut Bileşimi Arasındaki İlişkinin Değerlendirilmesi. *Beslenme ve Diyet Dergisi*. 2015; 42(2), 125–131.