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The effects of the COVID-19 lockdown on adolescents with an eating disorder and identifying factors predicting disordered eating behaviour

Sinem Akgül[1] | Devrim Akdemir[2] | Kevser Nalbant[2] | Orhan Derman[1] | Burcu Ersöz Alan[2] | Zeynep Tüzün[1] | Nuray Kanbur[1]

[1]Ihsan Dogramaci Children's Hospital, Department of Pediatrics, Division of Adolescent Medicine, Hacettepe University, Ankara, Turkey

[2]Department of Child and Adolescent Psychiatry, Hacettepe University, Ankara, Turkey

Correspondence
Sinem Akgül, Hacettepe University, Ihsan Dogramaci Children's Hospital, Department of Pediatrics, Division of Adolescent Medicine, Ankara, Turkey.
Email: sinemhusnu@gmail.com

Abstract

Aim: To evaluate the impact of the COVID-19 lockdown on adolescents with eating disorders (ED) and identify factors predicting ED behaviour.

Method: This study took place during an age-stratified lockdown for those under 20 years in Turkey. Participants completed a survey developed to evaluate the effects of the lockdown on ED behaviour, well-being and quality of life (QoL) and additionally the eating disorder examination questionnaire (EDE-Q), and scales for depression, anxiety and obsessive-compulsive behaviour. The relationship between the EDE-Q-global score and other variables related to ED was examined. Linear regression analysis was performed to examine the predictive power of these variables on ED behaviour.

Results: Thirty-eight ED patients with a mean age of 15.12 ± 1.56 years were included in the study. Of participants, 42.1% reported feeling an improvement in ED symptomatology, 71.0% reported none or rare conflict with parents due to eating, 39.5% reported often or always complying with their meal plan. Of participants, 92.0% agreed to 'understanding the value of being healthy' and stated realizing that 'they were in control' due to the pandemic. Of participants 36.9% scored 'bad' for both overall and ED related QoL. In the stepwise regression analysis depression score had the highest predictive value for ED behaviour.

Conclusion: Almost half of the participants felt an improvement in their ED and a majority reported rare parental conflict. However, less than half reported meal plan compliance. As depression had the highest positive predictive value for ED behaviour additional screening for depression during the pandemic maybe warranted in ED patients.

KEYWORDS
adolescent, COVID-19, eating disorder, lockdown, quarantine

1 | INTRODUCTION

Since the coronavirus disease 2019 (COVID-19) was declared a pandemic by the World Health Organization, many countries around the world have implemented various preventative measures to slow the spread of the virus (WHO, 2020). In Turkey, as of 16 March 2020, schools and universities were closed. Furthermore, a unique age-stratified lockdown was implemented for children and youth under

the age of 20 years between the period of 21 March 2020–11 June 2020 (Kanbur & Akgül, 2020). The subsequent effects these preventative measures are having on the physical and mental health of adolescents is emerging. Studies have shown that as restrictions increase so have levels of post-traumatic stress disorder, depression and anxiety in teens (Guessoum et al., 2020).

The effect of the pandemic on adolescents with eating disorders (ED) is currently unknown. Preliminary data and expert views have hypothesized that the pandemic may aggravate ED behaviour (Touyz et al., 2020). It has primarily been suggested that confinement and the disruption of daily routines may make meal planning and compliance to a meal schedule more difficult. The pandemic has also led to constraints in outdoor activity due to imposed quarantining. It has been argued that the lack of physical activity may heighten shape and weight concerns and when combined with the lack of daily structure, this could lead to disordered eating behaviour (Rodgers et al., 2020). Secondarily, social isolation requirements and the fear of contracting the virus may also constitute barriers to receiving necessary medical treatment and care for such disordered behaviours. Additionally, social remoteness may also decrease access to social support such as family, friends or support groups (Fernández-Aranda et al., 2020; Rodgers et al., 2020). Finally, a majority of parents have also been quarantining with their children, which may increase tension at home related to ED behaviour.

On the other hand, family-based therapy (FBT) is the mainstay evidence-based treatment for adolescents with an ED (Couturier et al., 2013). FBT utilizes the family as the primary resource during the initial re-feeding and nourishment of the adolescent (Lock & Le Grange, 2015). The method empowers families in their effort to bring about recovery and requires parents to take full charge of the disorder during the acute phase, therefore the constant presence of family members is of utmost importance for the method to work. Therefore, taking charge of their child's eating until the ED minimally recedes may be easier when they are all together in a closed and controlled environment such as the one that has occurred during the pandemic. For parents whom have more experience with EDs, a majority learn how to identify signs and symptoms of the ED, hence constantly being at home may make the follow-up easier and in turn keep relapse at bay.

Based on the contradictory viewpoints above, this study aimed to evaluate adolescents with an ED and assess which factors were predictive of disordered eating behaviour in this patient population. Furthermore, we believe this to be the first study to evaluate ED patients that were under strict lockdown.

2 | METHODS

2.1 | Participants and procedure

Patients between the ages of 12 and 18 years, followed during the past year at the Division of Adolescent Medicine and the Department of Child and Adolescent Psychiatry at Hacettepe University were included in the study. Patients were eligible to participate if they met Diagnostic and Statistical Manual of Mental Disorders, 5th (DSM-5) criteria for an ED. The Institutional Review Board at Hacettepe University approved the study (GO 20/428).

As of note, irrespective to whether they did or did not enrol in the study when the mandatory lockdown was announced, all patients that were medically unstable were followed in the out-patient clinic until medically stable. The others were contacted via telephone at regular intervals by a division physician from Adolescent Medicine and asked about meal plan compliance, compensatory behaviour and general health and seen in person if necessary. Special permission to leave their homes was granted for patients needing medical assistance. Psychiatric follow-ups during the lockdown were done primarily via telephone.

Adolescents and their parents/legal guardians were contacted by telephone and given information concerning the study. Those that accepted were then sent written consent forms which were obtained from both the participants and their parents/legal guardians and the online survey link via email. The study took place between 13 May 2020 and 11 June 2020. Between these dates, a mandatory lockdown was in practice for those under the age of 20 years in Turkey. For cases that did not fill in the questionnaire, two reminders were sent via email and they were also called via telephone once.

A total of 64 ED cases were followed between March 2019 and March 2020 and an attempt was made to contact all patients. We were not able to reach five participants via telephone. Three patients did not give consent. Although the remaining did agree to participate verbally on the phone, only 38 (59.4%) completed the online survey.

2.1.1 | Electronic medical record review

The electronic medical records of participants were reviewed. Clinical information included: Date of birth, gender, DSM-5 diagnosis, age at diagnosis, BMI at diagnosis, rate of weight loss, minimum and maximum weight, need for hospitalization, other mental health diagnoses and use of medication.

2.2 | Measures

The initial part of the online survey was developed by researchers and was made up of three parts.

2.2.1 | Effects of the lockdown on ED behaviour

The first part aimed to look at ED symptoms during the lockdown. The participants were asked whether their ED symptoms were affected and if so how, if they were able to abide by their meal plan, whether meal plans had caused friction at home with parents if they had difficulty seeking medical care, and if so how.

2.2.2 | Knowledge concerning COVID-19, precautions taken and coronophobia

This part aimed to evaluate patients' knowledge concerning COVID-19 and precautions taken. Patients were asked if they were abiding by the rules of social isolation and taking preventative measures (such as wearing a mask, hand washing, use of disinfectants etc.). They were then asked if they were following the news concerning the virus and continued with questions looking at knowledge concerning the virus. DSM-5 diagnostic criteria for specific phobia were adapted for coronavirus phobia and the presence of coronophobia in the participants was evaluated.

2.2.3 | The impact of the lockdown on well-being and quality of life

This part aimed to evaluate the patients' general well-being during the lockdown. Well-being was evaluated by asking the recovery criteria dimensions of ED mentioned in a qualitative study by de Vos et al. (de Vos et al., 2017). Items of emotional, psychological and social well-being with self-adaptability dimensions which also seemed to be related with the well-being during pandemic and lockdown were selected and adapted into 11 questions in a three-point likert type scale. In addition, two questions were asked to evaluate quality of life (QoL) in the past month. The first aimed to evaluate overall quality of life during the lockdown whereas the second aimed to evaluate health related quality of life when considering the impact of their ED during the lockdown. A likert scale with smiley faces from 1 to 5 were shown to participants. Five smiley faces were shown that ranged from very bad to very good which have been shown in Figure. Lower scores symbolizing bad quality of life.

2.2.4 | Study measurement tools

The following measurement tools were conducted on all participants:

a. The eating disorder examination questionnaire (EDE-Q) is a survey adapted from the eating disorder examination created by Cooper and Fairburn (Fairburn & Beglin, 1994). EDE-Q assesses the frequency of ED behaviours (e.g., binge eating, self-induced vomiting), as well as the severity of ED psychopathology (i.e., dietary restraint, eating concern, shape concern and weight concern). The scale consists of four subscales and 28 items. The subscales measure restraint, eating concerns, shape concerns and weight concerns, and the items evaluate the eating attitudes of the individual over the last 4 weeks. Participants were classified as having clinically impaired eating behaviour when they scored greater than 2.3 on the EDE-Q global score (Mond et al., 2005), higher scores indicate greater levels of symptomatology and a score greater than four is indicative of severely impaired eating behaviour (Lavender et al., 2010; Luce et al., 2008). The internal consistency of the Turkish version of this scale was found high (Cronbach $\alpha = .93$) and the Cronbach α was found as .70 or above for each subscale (Yucel et al., 2011).
b. Beck depression inventory (BDI) (Beck, 1961) is a widely used 21 item self-report inventory aim to evaluate the presence of the symptoms of depression. The cut-off point of the Beck Depression Scale suggesting depression is 17 and above. The psychometric properties of the instrument (1978 version) were examined in the Turkish population by Hisli (1988) and Cronbach's alpha was reported as .74. (Hisli, 1988).
c. State–trait anxiety inventory (STAI) is also a widely used two-scale inventory that provides a separate measure for both state (specific to the time of test assessment) and trait (general feeling) anxiety. Each scale consists of 20 items that assesses the presence of anxiety symptoms and were developed by Spielberger et al. (1970). The validity and reliability study of the Turkish version was conducted by Ozusta (1995). Higher scores indicate greater levels of symptomatology.
d. The maudsley obsessive–compulsive inventory (MOCI) developed by Hodgson and Rachman (1977) is a self-assessment scale used to assess the type and prevalence of obsessive–compulsive symptoms. There are four subscales (i.e., cleaning, checking, doubting and slowness) that are coded as true or false. A seven-item rumination subscale from the Minnesota multiphasic personality inventory (MMPI) (Hathaway & McKinley, 1951) was added to the Turkish adaptation form. The Turkish version of the scale was determined to have sufficient validity and reliability values and was conducted by Erol and Savasir (1989).

2.3 | Evaluation of the data and statistical analysis

Statistical analysis of the data was performed using the Statistical Package for the Social Sciences (SPSS) 23.0 software. The normality of the data was assessed using the Kolmogorov–Smirnov test and Skewness and Kurtosis statistics. Pearson's correlation analysis was performed to investigate the relationships between two continuous variables in the group. A linear regression model was used to identify the variables predicting the EDE-Q. p values were expected to be less than .05 for statistical significance in all analyses.

3 | RESULTS

3.1 | General demographics and electronic medical record review

A total of 38 patients diagnosed with an ED were included in the study. A majority of participants were female ($n = 36$, 94.7%) and the mean age of patients was 15.12 ± 1.56 years. AN-restricting (AN-R) type was the most common diagnosis ($n = 26$, 68.4%), followed by AN binging purging type (AN-BP) type ($n = 5$, 13.3%), Atypical AN ($n = 3$, 7.6%), bulimia nervosa (BN) ($n = 3$, 7.6%) and unspecified

feeding or eating disorder ($n = 1$, 2.6%). Of these participants, 7 (18.4%) had a previous history of in-patient hospitalization. No patients were hospitalized during the study period. Mental health co-morbidity was diagnosed in 9 (23.7%) patients. One (2.6%) had an anxiety disorder, 3 (7.9%) had depression, 4 (10.5%) had obsessive–compulsive disorder (OCD) and one (2.6%) had attention deficit hyperactivity disorder. Of the participants, 26 (68.4%) had been prescribed a selective serotonin reuptake inhibitor, 5 (13.1%) an atypical antipsychotic and 1 (2.6%) methylphenidate. Details of the electronic medical records of participants have been given in Table 1.

3.2 | Effects of the lockdown on ED behaviour

When asked the effect of the lockdown on ED symptomatology 16 (42.1%) reported feeling an improvement, 14 (36.8%) reported no change and 8 (21.1%) reported that they felt their ED was worse. Of the participants, 71.0% reported none or rare conflict with parents due to eating, 39.5% reported that they often or always complied with their meal plan. When patients were asked if the lockdown effected their access to ED related healthcare, 23.7% felt it often did. The reason for this was stated as 'being due to the lockdown rules concerning teens' for 7 (18.4%), 'being afraid of contacting the virus' for 8 (21.1%), 'not being able to get an appointment from the hospital' for 4 (10.5%) patients. Effects of the lockdown on ED behaviours have been given in Table 2.

3.3 | Knowledge concerning COVID-19, precautions taken and coronaphobia

Although 78.9% agreed or strongly agreed that the virus was very contagious only 23.7% believed it to be lethal, only 26.3% always paid attention to social distancing and 39.5% often or always followed the news concerning the virus. Of participants, 44.7% agreed that it would not affect children and teenagers and 36.8% believed the virus had more severe effects in ED patients. When the questions including the diagnostic criteria for coronavirus phobia were analysed, it was found that no participants met the diagnostic criteria for coronaphobia.

3.4 | The impact of the lockdown on well-being and quality of life

When questioned during the lockdown, 92.1% agreed to understanding the value of being healthy and again 92.1% stated realizing that they were in control. The questions and answers of the impact on well-being have been given in Table 3. The patients were then questioned about their overall quality of life and health-related quality of life when considering the impact of their ED during the lockdown. The results were similar for both situations in that 37.0% of participants scored 1 or 2 (bad QoL) for both overall and ED related QoL and 31.0% and 37.0% scored 4 or 5 (good QoL) for overall and ED related QoL, respectively. Results have been given in Figure 1.

3.5 | Study measurement tool

The results of the study measurement scores have been given in Table 4. According to the cut-off point for the EDE-Q global score, 17 (44.7%) participants were found to have impaired eating behaviour, of these 9 (23.7%) had severe impaired eating behaviour.

According to the BDI, 20 (52.6%) participants were at or above the cut-off point. The mean state and trait anxiety scores were 37.4 ± 8.1 and 39.2 ± 10.5, respectively. The mean score of MOCI was 14.4 ± 6.4.

3.6 | Variables predicting ED behaviour

Linear regression analysis was performed to examine the predictive power of the variables investigated in our study on ED behaviour

TABLE 1 Review of the electronic medical records

	AN-R	AN-BP	OSFED atypical-AN	BN	UFED
DSM-5 diagnosis n (%)	26 (68.4%)	5 (13.2%)	3 (7.6%)	3 (7.6%)	1 (2.6%)
BMI at diagnosis (kg/m^2)					
Mean ± *SD*	16.2 ± 2.2	18.0 ± 2.3	22.3 ± 4.9	25.2 ± 2.2	32.6
(Min-max)	(13.7–24.0)	(14.9–20.7)	(18.0–27.8)	(23.8–27.8.)	
Minimum weight (kg)					
Mean ± *SD*	42.3 ± 6.3	47.7 ± 5.9	54.6 ± 11.2	52.0 ± 9.5	77
(Min-max)	(30.0–57.0)	(42.0–55.0)	(45.0–67.0)	(43.0–62.0)	
Maximum weight (kg)					
Mean ± *SD*	55.9 ± 10.1	65.0 ± 11.5	79.3 ± 6.4	65.0 ± .7	103
(Min-max)	(42.0–81.0)	(50.0–78.0)	(72.0–84.0)	(65.0–66.0)	

Abbreviations: AN-BP, anorexia nervosa binging purging type; AN-R, anorexia nervosa restrictive type; BMI, body mass index; BN, bulimia nervosa, OSFED, other specified feeding or eating disorder; UFED: unspecified feeding or eating disorder.

TABLE 2 Effects of the lockdown on ED behaviours

	Never	Rarely	Sometimes	Often	Always
Did you experience conflict with your parents due to eating during the lockdown?	13 (34.2%)	14 (36.8%)	7(18.4%)	1(2.6%)	3(7.9%)
Were you able to comply with your meal plan during the pandemic?	7 (18.4%)	10 (26.3%)	6 (15.8%)	13 (34.2%)	2 (5.3%)
Did the lockdown negatively affect your access to ED healthcare?	5 (13.2%)	13 (34.2%)	11 (28.9%)	9 (23.7%)	0
		Disagree	**Somewhat agree**		**Totally agree**
During the lockdown, I spent less time thinking about my weight/appearance		17 (44.7%)	11 (8.9%)		10 (26.3%)
During the lockdown, I spent less time tracking my weight		17 (44.7%)	6 (15.8%)		15 (39.5%)
During the lockdown, I spent less time doing things to try and control my weight		14 (36.8%)	10 (26.3%)		14 (36.8%)

TABLE 3 The impact of the lockdown on well-being

	Disagree	Somewhat agree	Totally agree
I understand the value of being healthy	3 (7.9%)	12 (31.6%)	23 (60.5%)
My self-confidence has increased	14 (36.8%)	12 (31.6%)	12 (31.6%)
I accepted myself as I am	14 (36.8%)	16 (42.1%)	8 (21.1%)
I realized I am in control	3 (7.9%)	13 (34.2%)	22 (57.9%)
A new era has begun in my life	8 (21.1%)	14 (36.8%)	16 (42.1%)
I realized I have the right to decide and choose	10 (26.3%)	14 (36.8%)	14 (36.8%)
I feel more mature	11 (28.9%)	12 (31.6%)	15 (39.5%)
My goals in life have changed	9 (23.7%)	20 (52.6%)	9 (23.7%)
I realized that I have things to do with the society I live in	10 (26.3%)	12 (31.6%)	16 (42.1%)
I started to understand my family better	10 (26.3%)	19 (50.0%)	9 (23.7%)
My family has started to better understand me	17 (44.7%)	11 (28.9%)	10 (26.3%)

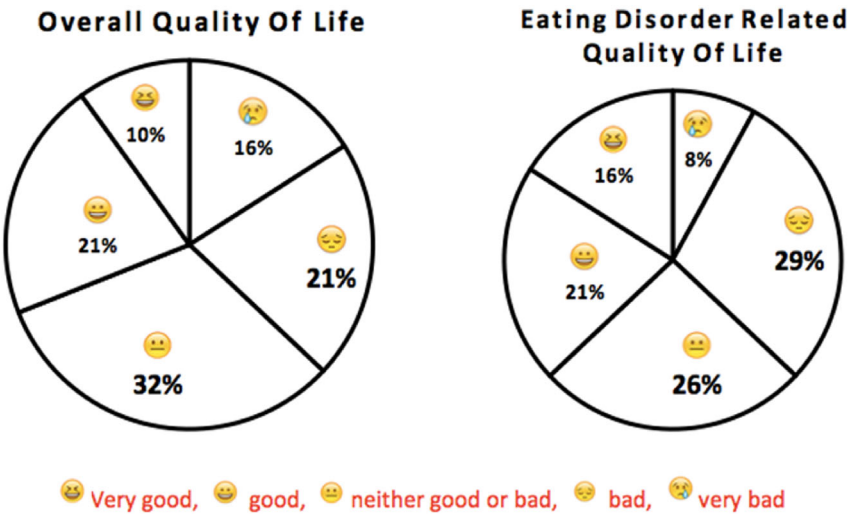

FIGURE 1 Overall quality of life and ED related quality of life

during the lockdown. The BMI at diagnosis, the effect of the lockdown had on eating behaviours, the diet compliance behaviours during the lockdown, the quotes 'increased self-confidence during the lockdown', 'realisation of control during the lockdown' and the scores of the BDI which have correlation coefficients higher than 0.5 and no multicollinearity between them were taken as predictive variables (Table 5). With this model, all the assumptions of linear regression analysis were met, and the model explained 78.1% of the variance of ED behaviour (R^2: .781, p: .000). In the stepwise regression analysis; In Model 1, BDI predicted 53.7% of the variance of ED behaviour (R^2:

.537, *p*: .000) and in Model 2, BDI + diet compliance behaviours during the lockdown predicted 71.2% (R^2: .712, *p*: .000), in Model 3, the effect of BDI + dietary compliance behaviours during the lockdown + effect of the lockdown on eating behaviours predicted 78.1% (R^2: .781, *p*: .000).

4 | DISCUSSION

To the best of our knowledge, this is the first study to examine ED behaviour and factors predictive of disordered eating in a group of adolescents with an ED not only during the early phase of the COVID-19 outbreak, but also during a mandatory lockdown for teens.

Contrary to what we were anticipating, the results did not show as adverse an effect on ED behaviour as we were expecting, as 42.1% of participants reported an improvement in their ED symptomatology whereas only 21.1% reported feeling it was worse. Similarly, 63.1% reported totally or somewhat agreeing that they were spending less time doing things to try to control their weight during the lockdown.

TABLE 4 Study survey measures ($N = 38$)

Characteristic	Mean	*SD*	Minimum	Maximum
EDE-Q (global)	2.0	1.8	.0	5.2
Restraint subscale	1.7	1.8	.0	5.6
Eating concern subscale	1.4	1.4	.0	4.4
Shape concern subscale	2.7	2.3	.0	6.0
Weight concern subscale	2.4	2.1	.0	6.0
BDI	20.2	14.7	2.0	53.0
SAI	37.4	8.1	21.0	55.0
TAI	39.2	10.5	22.0	59.0
MOCI	14.4	6.4	2.0	29.0

Abbreviations: BDI, beck depression inventory; EDE-Q, eating disorder examination questionnaire; MOCI, The maudsley obsessive compulsive inventory; SAI, state anxiety inventory; TAI, trait anxiety inventory.

In a pilot study from Spain, Fernández-Aranda et al. (2020) looked at the impact of the first 2 weeks of confinement in adults with an ED. Contrary to our study, they found a higher rate (38.0%) of impairment in ED symptomatology. Similarly, a study by McCombie et al. (2020) looked at a group of people with life-time ED and evaluated how ED symptoms and coping strategies had been affected by the Covid-19 pandemic. They too found that most respondents reported that their ED worsened or resurfaced. One of the reasons for this disparity could be due to the age difference of participants in the two studies. Navigating school while living with an ED is undeniably challenging. With school comes the stress of having to perform, social pressures, eating in front of peers and sports—all of which can trigger ED behaviour. The fact that these patients are now home and are attending school online may have alleviated school-related stress and in turn ED symptomatology. The study by Fernández-Aranda et al. also showed that most of the patients presented worries about increased uncertainties in their lives, again these may be age-specific as we expect that the worry of financial security during the pandemic will be felt more by adults. During the pandemic, many adults have temporarily or permanently lost their jobs, many are working from home. Those that are still working may have an increased anxiety of contracting the virus and becoming ill.

The COVID-19 pandemic sets up a home situation with remarkable potential for generating conflict as families spend nearly unlimited hours together in a limited physical space while confronting a stressful event. An interesting and unexpected result from our study was that 71.0% of participants reported none or rare conflict with parents concerning their ED. This was surprising as it is well-known that parental conflict is high in the ED population (Erriu et al., 2020). Studies have even shown EAT scores to be associated with conflict and over-protection in a non-clinical sample of adolescents (Mujtaba & Furnham, 2001). The low rate of conflict reported in the study may have also had a positive effect on ED symptomatology as research shows family unity to be a protective factor that can mitigate negative outcomes associated with stressful life events (Hobfoll & Spielberger, 1992).

TABLE 5 Variables predicting eating disorder behaviour

Predictive variable model	B	t	*p*	95% confidence interval
1				
BDI	.091	6.372	.000	−0.486/.975
2				
BDI	.061	4.587	.000	.034/.088
Dietary compliance behaviours during the lockdown	−.733	−4.540	.000	−1.061/−.405
3				
BDI	.048	3.897	.000	.023/.073
Dietary compliance behaviours during the lockdown	−.531	−3.413	.002	−.848/−.214
Effects of the lockdown on eating disorder behaviour	−.903	−3.242	.003	−1.469/−.336

Note: Linear regression analysis/Stepwise.
Abbreviations: BDI, beck depression inventory; BMI, body mass index; ED, eating disorder.

On the other hand, only 39.5% reported that they often or always complied with their meal plan. In our study, we did not ask the reasons for the change in compliance to their meal plan during the lockdown but irrespective of having an ED, literature concerning dietary changes during a pandemic show poorer dietary intake. It is common that a healthy diet rich in fresh food changes to one containing foods with a long shelf-life due to the difficulties of shopping during the quarantine which may in part explain this result (Mattioli et al., 2020). Another reason for this could be stress related eating which has also been a proposed risk factor for non-compliance to meal plans during quarantine (Rodgers et al., 2020). A study by Philipou et al. looked at eating behaviours in both ED patients and the general population during the COVID-19 pandemic. In the ED group, increased restricting, binge eating and purging behaviour were found, interestingly increased restricting and binge eating behaviours were also reported in the general population (Phillipou et al., 2020).

The study by Vos et al. (de Vos et al., 2017) aimed to identify fundamental criteria for ED recovery according to recovered individuals. In their review, they defined certain items of emotional, psychological and social well-being with self-adaptability dimensions, as these items also seemed to be related with the well-being during the lockdown they were used to evaluate well-being in our patients. The patients from our study generally gave positive answers, the most striking being that 92.0% agreeing to understanding the value of being healthy and stated realizing that they were in control. Vos et al. argue that these are strong predictors for recovery. The pandemic may have given these teens more insight to look at their disorder from a different perspective in that although they do not have control over the COVID-19 pandemic, they may take control over their ED and subsequently their own lives while understanding the importance of being healthy. Studies looking at QoL in ED patients show marked impairment (De la Rie et al., 2005; Mond et al., 2005). An interesting result of this study showed that the overall and ED related QoL reported were similar, suggesting that the additional burden of having an ED did not make QoL worse during the pandemic.

We also looked at variables predicting ED behaviour. Depression had the highest predictive value for ED behaviour and although only 7.9% of this patient population had received a clinical diagnosis for depression before the pandemic, 52.6% of participants scored BDI above the cut-off point for pathology during this study. The initial studies from China have also shown similar levels of depression in children and adolescents from a non-clinical sample (Xie et al., 2020). Although the co-morbidity between EDs and depression has been well studied, we found this to be the most significant predictor of disordered eating behaviour, which underlines the importance of additional screening for depression during the pandemic in ED patients.

It has also been hypothesized that the concerns regarding contagion, the precautions taken to stop the spread of the virus, the unpredictable manner of the pandemic, combined with the disruption of daily activities such as no school may trigger anxiety and OCD behaviour (Guessoum et al., 2020). In our study, we did not find the mean anxiety or OCD scores above the cut-off of pathology, this could be explained by the same disruption mentioned above temporarily alleviate some anxiety symptoms associated with social anxiety, performance anxiety-related to schoolwork or weight related anxiety as they are now at home where nobody can see them.

Lack of access to medical care during the pandemic has also been discussed as a trigger for worsen ED symptomology (Touyz et al., 2020). Although all patients were contacted by telephone and a majority of participants did not feel the lockdown had affected their access to healthcare, close to one-fourth did. The most common two reasons were 'due to the lockdown rules concerning teens' and 'being afraid of contracting the virus'. Although currently the lock-down rule has ceased, depending on the number of cases this legislation may come back into practice within the following months and if it does so we will spend more time on reducing barriers to healthcare in our clinics.

The study must also be considered in the context of its limitations. Firstly, patients were recruited via telephone, not in person with only a 56.0% response rate making the final sample relatively small, this may have limited our power to detect smaller differences. The study was also largely comprised of females, limiting generalizability. Additionally, it was a cross-sectional study so causal conclusions cannot be drawn.

In conclusion, our study has shown almost half of the participants felt an improvement in their ED and a majority reported rare conflict with parents. However, less than half reported meal plan compliance during the quarantine and depression not only seemed to have increased but also, showed the highest predictive value for ED behaviour. These findings are particularly important as they suggest that even in the early stages of the pandemic adolescents with ED were already reporting non-compliance and increased depressive symptoms. For these reasons, we believe special attention should be given to meal plan compliance and screening for depression in the medical and psychiatric follow-up of adolescents with ED during the pandemic.

CONFLICT OF INTEREST

Authors have no conflict of interest to declare.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author.

ORCID

Sinem Akgül https://orcid.org/0000-0001-8203-2337

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