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Emotional eating in relation to gastrointestinal symptoms and burnout among young women during the pandemic

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ABSTRACT

BACKGROUND

The emergence of the coronavirus disease (COVID-19), created unique constraints in everyday life. Emotional eating is a known phenomenon in disasters and is markedly associated with gastrointestinal symptoms. In this study, the aim was to assess the relationship of gastrointestinal symptom severity and COVID-19 burnout with emotional eating among young women during the pandemic disaster.

METHODS

A cross-sectional study approach was used to allow 462 young women participants in this study. The design of the questionnaires was based on demographics, health behaviors, Gastrointestinal Symptom Severity Scale, Emotional Eating Scale and COVID-19 Burnout Scale. Data were analyzed using percentages, mean values, independent t-test, chi-squared test. The hierarchical multiple regression analysis was performed for predicting risk factors of emotional eating. Significance levels were set at the 5% level.

RESULTS

Of the women, 73.8% were emotional eaters. The level of COVID-19 burnout was moderate with mean score of 29.4 ± 11.1 and emotional eating total score was 21.0 ± 8.1 . Increased number of meals, increased weight gain and shorter sleep time were significantly associated with emotional eating ($p < 0.05$). Participants with more than three meals per day were more likely to be emotional eaters ($\text{Beta} = 4.26$). The regression model showed that indigestion and COVID-19 burnout were strong risk factors of emotional eating ($p < 0.05$).

CONCLUSIONS

This study demonstrated that indigestion and COVID-19 burnout were strong risk factors of emotional eating. Emotional eating could pose an additional health burden to young women in the form of poor food choices.

Keywords: Gastrointestinal symptom, emotional, eating, COVID-19, burnout, women

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INTRODUCTION

Emotional eating (EE) is an eating habit that occurs in response to a set of emotions characterized by increased food intake or overeating, also often associated with poor diet and obesity.⁽¹⁻⁴⁾ It has been shown that impaired eating behavior in the general population can be triggered by feelings of stress experienced after a disaster.⁽⁵⁾ The most devastating disaster that humanity has faced at the end of 2019 has been the new coronavirus disease (COVID-19).⁽⁶⁾ Social interactions and daily routines have been limited by government policies to prevent transmission during the pandemic that has exceeded two years.^(7,8) On the other hand, increased deaths, the emergence of new variants, fear of being infected, isolation practices, stress, disrupted lives, and negative effects from economic disruption are likely to increase emotional eating.⁽⁹⁾ Indeed, current research on eating habits during the COVID-19 pandemic reveals a shift in self-reported eating habits toward increased appetite and an increase in overall food consumption and between-meal snacking.⁽¹⁰⁻¹²⁾

Dietary changes caused by emotional eating are often associated with increased consumption of energy-dense foods.⁽¹³⁾ These eating habits put extra strain on the digestive system.⁽¹⁴⁾ The gastrointestinal tract and nervous system are closely linked through bidirectional signaling mechanisms characterized by neural, endocrine and immune pathways in a context known as the “gut-brain axis”.⁽¹⁵⁾ Specifically, the central stress circuit is the neural network that receives input from the somatic and visceral afferent systems, as well as the visceral motor cortex, and generates the stress response.⁽¹⁶⁾ The changes caused by COVID-19 in daily life have the potential to increase levels of stress, anxiety, burnout, fear and frustration.^(17,18) All these conditions can increase gastrointestinal motility and visceral sensitivity.^(19,20)

In general, it is stated that gastrointestinal symptoms (65.6%)⁽²¹⁾ and emotional eating (41.4%)⁽²²⁾ are common among women in populations. It is reported that during the COVID-19 period, the prevalence of emotional eating varies between 52.8%-62.0% in women.^(23,24) This high prevalence in women suggests COVID-19 burnout. Burnout is defined as a person’s response to persistent, unresolved stress over a long period of time. It is not a medical condition; but is characterized by physical, emotional or mental exhaustion.⁽²⁵⁾

The pandemic process can be a source of heavy stress, especially for women, and can trigger emotional eating and accompanying gastric symptoms. A study regarding the most critical phase of the first Italian lockdown shows a substantial prevalence of emotional eating in the population, in particular among those that reported feeling depressed or anxious.⁽²⁶⁾ Similarly, a Chinese study on emotional eating and gestational weight gain amid the pandemic found that women who worried about COVID-19 had higher emotional eating scores.⁽²⁷⁾

To date, no published studies have investigated the impact of the COVID-19 pandemic on EE, gastrointestinal symptoms, and burnout, especially among women of child-bearing age. Compared with men, women are more likely to develop abnormal eating patterns as well as mental health disorders, therefore, women have a higher risk of developing health problems related to eating disorders that may be precipitated or exacerbated by this pandemic.⁽²⁸⁾

However, in Turkey, which is under the obesity epidemic, 29.2% of women aged 19 years and over are overweight and 42% suffer from obesity.⁽²⁹⁾ The combination of these two factors may aggravate the obesity epidemic in young women and trigger the development of chronic health problems in the future. The aim of this study was to determine the level of emotional eating, gastrointestinal symptom severity and COVID-19 burnout among young women during the pandemic disaster.

METHODS

Research design

This cross-sectional study was an analysis of outpatients of the family medicine clinic of a university hospital in Çorum city, Turkey, during May-June 2021.

Research subjects

The size of the female population registered at the family health center was 1170, including 630 women aged 20-49 years. The inclusion criteria were being 20-49 years of age, being women and willing to participate in the study (521 women). Patients were excluded if they had a diagnosed COVID-19 infection, gastrointestinal disorder or psychiatric disorder. In total, 483 individuals agreed to participate in the study, and among these, 462 completed the questionnaire items relevant to this study. Therefore the final sample consisted of 462 women.

Measurement tools

The study data were collected using 4 questionnaires, namely the patient identification form and forms for the Gastrointestinal Symptom Rating Scale (GSRS), Emotional Eating Scale (EES) and COVID-19 Burnout Scale (COVID-19-BS). The design of the patient identification form was based on age, education level, marital status, employment status and some health behaviors.

For the purpose of defining their smoking status, women were asked whether they smoked. The answers were as follows: i) I still smoke, ii) I don't smoke and iii) I quit smoking. In order to determine daily water consumption, the question of "how many glasses of water do you drink per day?" was asked. Responses were open-ended and grouped as less than eight glasses and eight glasses and more. The questions about the number of main meals were also open-ended. When participants' sleep hygiene was questioned, the responses were grouped as i) <7 hours, ii) 7-9 hours, iii) ≥9 hours,

in line with the recommendations of the American Sleep Society.⁽³⁰⁾ In order to determine their weight gain, the participants were asked how much weight they gained during the pandemic, and the answers were i) none, ii) 1-4 kg, and iii) ≥5 kg. Body mass index was calculated by recording the height and weight of the participants according to their own declarations.

Gastrointestinal symptom rating scale (GSRS)

The scale was developed to evaluate the symptoms widely reported in gastrointestinal system disorders. The reliability and validity of the GSRS were established by Revicki et al. and the Turkish version was evaluated by Turan et al.⁽³¹⁾ The GSRS assesses how the individual felt within the previous week with regard to gastrointestinal symptom clusters. The scale consists of 15 items divided into 5 subdimensions: reflux (2 items), indigestion (4 items), diarrhea (3 items), constipation (3 items), and abdominal pain (3 items). A higher score indicates more severe symptoms. Turan et al. determined a Cronbach alpha value of 0.82.⁽³¹⁾ In the present study, the Cronbach alpha value of the GSRS was found to be 0.89.

Emotional eating scale (EES)

The EES, which was developed to evaluate the emotional eating behaviors of obese and overweight people,⁽³²⁾ consists of 10 items and three sub-dimensions (disinhibition, food types, guilt). The questions in the scale are answered on a Likert-type scale with 4 options ("0" Never, "1" Sometimes, "2" Usually and "3" Always). There is no reversed item in the scale. The lowest "0" and the highest "30" points are taken from the scale. High scores indicate a high level of emotional eating behavior. Scores were categorized into "non-emotional eater (0-5 points)", "low emotional eater (6-10 points)", "emotional eater (11-20 points)" and "very emotional eater (21-30 points)".⁽³³⁾

COVID-19 burnout scale (COVID-19-BS)

The COVID-19-BS consists of ten items, adapted from the Burnout Measure-Short Version, being a modified scale developed in Turkey. A sample question is “When you think about COVID-19 overall, how often do you feel hopeless?” Participants were asked to respond using a 5-point Likert scale ranging from 1 (never) to 5 (always), the total scores ranging from 10 to 50. Higher scores indicate higher levels of burnout associated with COVID-19.⁽³⁴⁾

Data analysis

All analyses were carried out using SPSS, version 20. Skewness and kurtosis values indicated a normal distribution. The data were described and analyzed using percentages, mean values, independent t-test, chi-squared test. The hierarchical multiple regression analysis was performed for predicting preventive behavior. The unstandardized regression coefficients (β) and 95% confidence intervals (CIs) were used to quantify the associations between variables. Significance levels were set at the 5% level.

Ethics statement

Ethics committee approval of this study, which was planned in accordance with the Helsinki Principles, was obtained from Hitit University (2021/143/25).

RESULTS

Demographic data

In the research group, 51.9% were in the 20-39-year age group, 53.5% were university graduates and 50.6% were married. When their health behaviors were examined, 27.9% were current smokers. Daily water consumption was less than eight glasses in 52.6% of the participants. The proportion of three-main-meal consumers was 17.8%. Night sleep duration was between 7-9 hours in 52.6% of the respondents, 58% gained weight (5 kg and over) during the pandemic, and 40.7% were overweight/obese.

The distributions of demographic characteristics, GSRS, and mental distress are given in Table 1. The mean total GSRS score of the patients was 46.5 ± 22.9 , indicating a moderate level of symptom severity. The highest mean score was found in the indigestion (12.7 ± 6.1) sub-dimension, and the lowest score was in the reflux (6.2 ± 4.3) sub-dimension. The level of COVID-19 burnout was moderate, with mean score of 29.4 ± 11.1 , while emotional eating total score was 21.0 ± 8.1 .

Multiple linear regression analysis to predict emotional eating according to socio-demographics and health behaviors is given in Table 2. Number of meals, weight gain and sleep time were significantly associated with emotional eating ($p < 0.05$). Participants with more than three meals per day were more likely to be emotional eaters (Beta= 4.26).

In Table 3 are shown the results of multiple linear regression analysis to predict emotional eating according to GSRS and mental distress. The regression model showed that indigestion and COVID-19 burnout were strong predictors of emotional eating ($p < 0.05$).

Table 1. Demographic characteristics, GSRS, and mental distress in the research subjects

Characteritics	n (%)
Age (years)	33.00 \pm 9.9
Education	
\leq High school	206 (44.5)
University	256 (53.5)
Married	234 (50.6)
Current smokers	129 (27.9)
Sleeping duration	7.0 \pm 1.6
Gained weight (≥ 5 kg)	268 (58.0)
GSRS total	46.5 \pm 22.9
Reflux	6.2 \pm 4.3
Abdominal pain	8.2 \pm 5.1
Diarrhea	7.2 \pm 5.5
Indigestion	12.7 \pm 6.1
Constipation	10.1 \pm 6.1
COVID-19-BS	29.4 \pm 11.1
Emotional eating	21.0 \pm 8.1
(Emotional eaters)	341 (73.8)

Note: Data presented as Mean \pm SD and n (%). GSRS = gastrointestinal symptom rating scale

Table 2. Multiple linear regression analysis to predict emotional eating according to socio-demographics and health behaviors

Variables	β (regression coefficient)	Beta	p value
Weight gain ≥ 5 kg	-0.857	0.425	0.007
Sleep time >7 h/d	-0.546	0.579	0.012
Number of daily meals >3	1.450	4.263	0.009

*Age, education, marital and working status, smoking status, daily water consumption were included the simple linear regression and variables with $p < 0.25$, were included in the model of multivariate regression analysis

DISCUSSION

Unlike natural disasters, the COVID-19 pandemic is a disaster that can have advanced layers, which are surrounded by increased mental problems, stress, burnout and worsening nutrition, and which may reveal the invisible part of the iceberg - medical and social problems in the future. A strong relationship between emotional eating and disaster has been reported in the literature.⁽⁵⁾ The present study was designed to determine the effect of the pandemic on emotional eating, gastrointestinal symptoms and burnout among young women.

In our study, it was found that emotional eating was a common problem among women during the pandemic, with three out of four women being emotional eaters (Table 1). This also accords with earlier observations, which showed that emotional eating was prevalent among women in the pandemic period.^(24,35)

The results of our study indicated that gastrointestinal symptoms had moderate severity among young women during the pandemic, with especially indigestion and constipation being common symptoms (Table 1). On the question of COVID-19 burnout, this study found that burnout was common among young women (Table 1). Gastrointestinal problems are widespread and the global prevalence of gastrointestinal disease is

about 11.2%.⁽³⁶⁾ Although gastrointestinal complaints are not life-threatening conditions, if they are severe, they are an important public health problem that reduces the quality of life and interferes with daily activities. However, the severity of gastrointestinal symptoms in young women during the pandemic is still unknown and has not previously been described. Prior studies that have noted the importance of burnout for healthcare workers,^(37,38) report that there is no single reason for COVID-19 burnout among young women but that it can be attributed to multiple reasons such as the interaction between social structure, traditional gender roles and working conditions.

In our study, a weight gain of ≥ 5 kg, number of daily meals of more than three, and sleep time of less than seven hours were the main risk factors of emotional eating based on the simple and multiple regression analysis (Table 2). It is clear from the COVID-19 literature that the pandemic has altered the behavior of many people. Increased number of daily meals, increased food intake, snacking, and homemade meals were verified in a number of studies.^(11,39,40) Changes in sleeping habits and physical activity reduction were also observed.⁽¹²⁾ A study from the USA reported that weight gain was more common among women during the COVID-19 pandemic.⁽⁴¹⁾ On the other hand, a Chinese study

Table 3. Multiple linear regression analyses to predict emotional eating according to GSRS and mental distress

Variables	β (regression coefficient)	Beta	p value
Indigestion	-1.677	1.445	0.024
COVID-19 BS	1.421	4.137	0.017

Note: GSRS = gastrointestinal symptom rating scale; *GSRS sub-dimension and COVID-19 BS included in simple linear regression and variables with $p < 0.25$ were included in the model of multivariate regression analysis

found that emotional eating is associated with excess weight gain among pregnant women.⁽²⁷⁾ Insufficient sleep (less than <7 hours per day), presumed to be one of the unconventional key determinants of excess body weight, interferes with emotion regulation through a range of neurobiological, behavioral, and cognitive processes.⁽⁴²⁾ Short sleep may also be associated with irregular eating behavior and can cause stress and high food consumption in emotional eaters.⁽⁴³⁾

In this study, the most important clinically relevant finding was that the severity of gastrointestinal symptoms was higher among women and especially the severity of indigestion was clearly seen. Also indigestion and COVID-19 burnout were more prominent in emotional eaters (Tables 1 and 3). Digestive function is closely related to the daily diet. It is well known that emotional eating behavior can lead to binge eating or eating disorders.^(38,44) However, studies have focused on dietary intake and gastrointestinal reflux disease.^(45,46) Emotional eating has been shown to be positively associated with laryngopharyngeal symptoms.⁽¹⁴⁾ Although the relationship between burnout and eating behaviors has been shown in different studies,^(47,48) no study has been found reporting that the burnout caused by the pandemic disaster disrupts emotional eating and accordingly gastrointestinal motility. The scope of this study was limited to young women admitted to a hospital. These findings raise intriguing questions regarding the nature and extent of emotional eating in a pandemic disaster. Further studies, which take these variables into account, will need to be undertaken. Future research is needed among the understudied to examine the long-term implications of the COVID-19 pandemic on emotional eating and disordered eating behaviors.

CONCLUSIONS

This study has identified a higher prevalence of emotional eating among young women with moderate severity of gastrointestinal symptoms and COVID-19 burnout. Overall, this study

strengthens the idea that the pandemic disaster increases the pressure on the gastrointestinal system by disrupting the eating behavior.

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CONFLICT OF INTEREST

The authors do not have any conflict of interest.

AUTHOR CONTRIBUTION

GY contributed to planning of research, data analysis, writing, and English editing. EK contributed to data collection; NPA contributed to literature review. All authors have read and approved the final manuscript



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