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Summary

Evaluation of COVID-19 Stress as a Predictor of Obsessive Compulsive Symptoms in the General Population and the Mediating Roles of Difficulty in Emotion Regulation, Obsessive Beliefs, and Disgust in This Relationship

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The COVID-19 pandemic has been a significant source of trauma due to the infection risk, disability and death it causes, as well as the initial unpredictability of the process, strict quarantine measures and material, moral and social losses (Taylor et al., 2020; Taylor, 2021). Studies conducted in March 2020 and beyond have revealed that the epidemic has a deep psychosocial burden, as well as its physiological effects, on people. Especially in the first days of the pandemic (2020-2021) the rapid spread of the epidemic, the restrictions, and the unpredictability of the process affected people psychologically. A common finding of studies is that the common response to the pandemic is intense stress (Çağdaş, 2021; Nash, 2023; Taylor et al., 2020). Although some stress is important for survival, it is known that high stress has negative effects on physical and psychological health. Stress rates, which were high at the beginning of the pandemic process, had significant effects especially on psychological health; an increase in the prevalence of psychiatric disorders has been reported (Eg., Challen et al., 2021; Montano, & Acebes, 2020). In this respect, it is very important to address the effects of the epidemic and the stress culture it creates on psychological health.

One of the psychiatric conditions affected by the pandemic process is Obsessive-compulsive disorder (OCD). OCD is a disorder characterized by disturbing, resistant thought processes called obsessions and behaviors called compulsions to relieve them (Adams et al., 2018; Cisler, Brady, Olatunji, & Lohr, 2010). It is known from the literature that OCD can be triggered or worsened due to stressful conditions. In this respect, it seems possible that OCD prevalence rates are affected by the stress culture brought about by the pandemic process. Supporting this result, studies have reported strong positive relationships between pandemic stress and OCD symptomology (Abba-Aji et al., 2020; Bhardwaj, Bhardwaj, & Parkash, 2020; Nash, 2023). It has been shown that pandemic-related stress has effects on symptom exacerbation (Abba-Aji et al., 2020). Mazhar, Khaliq, & Arshad (2021) also reported results regarding sudden symptom onset. In this respect, OCD becomes a very important phenomenon in the context of the pandemic.

Despite exceptions (Eg., Jelinek, Göritz, Miegel, Morritz, & Kristin, 2021), studies on the pandemic OCD relationship have generally been continued including participants diagnosed with OCD (Eg., Tanir et al., 2020). Although it has increased today, the results obtained from community-based studies are relatively limited. However, from the literature, the prevalence of undiagnosed OCD (%25-30) is higher than the prevalence of clinical OCD (%2-3). Indeed It is known that people have a high risk of developing OCD at some point in their lives, even if it is not diagnosed (Mataix-Cols, Vallejo, & Sanchez-Turet, 2000; Ruscio, Stein, Chiu, & Kessler, 2010). It is known that the risk of OCD is high in an environment dominated by a traumatic and intense stress culture, such as a pandemic. Including only diagnosed participants in studies during this period may lead to ignoring sensitive groups at risk. In addition, focusing on existing symptoms and symptom worsening may create limitations in understanding the mechanism of symptom development in terms of the pandemic (Abba-Aji et al., 2020; Owji et al., 2022).

It is stated that there are similarities between security measures to prevent the disease and compulsive symptoms in terms of the pandemic period, that there is a very thin line between them, and that these behaviors can easily get out of control under intense stress (Darvishi, Golestan, Demehri, & Jamalnia, 2020; Shafighi, Atashzadeh-Shoorideh, Ebadi, & Ghadirian, 2023).

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OCD prevalence rates in March 2020 and beyond also support this situation (WHO, 2024a). However, it would not be rational to think that everyone is at risk of OCD in this period. Some groups may be at greater risk. As previous pandemic processes have shown,(Eg., Shultz, Baingana, & Neria, 2015), many individual, social, psychological factors may play a role as risk factors here. Recently, it has been shown that many factors, especially cognitive misconceptions, distorted thoughts, and cognitive flexibility capacity, have effects on OCD (Obsessive Compulsive Cognitions Working Group, 1997; O'Leary et al., 2009). In addition, in recent years, emotions and their effects on emotion regulation have become a frequently researched topic. The role of emotions in the etiology of OCD is becoming increasingly established (Eg., Ewing, Hamza, & Willoughby, 2019; Yap et al., 2017).

Based on the demonstrated roles of cognitive and emotional factors in the etiology of OCD, it was decided to evaluate the effects of emotions and difficulties in the regulation of emotions in the pandemic period, disgust in the context of the disease, and obsessive beliefs as a transition step to OCD. It is thought that these factors will play a role in a highly stressful and traumatic environment such as a pandemic and may be risk factors for symptom development. Again, due to the multifaceted nature of the pandemic (Taylor, 2021), it is thought that it can create a context for existing relationship patterns. In the relevant literature, there are common opinions and similar study findings, although not directly in the context of OCD (Cruwsy, Stevens, & Greenaway, 2020; Gao et al., 2020; Zanjani et al., 2023).

Based on this, the current study aimed to evaluate the stress level and OCD symptom severity of participants from the general population due to COVID-19, to examine the relationship between pandemic stress and participants' OC symptoms, and to investigate the effects of some cognitive and emotional factors on this relationship. It is also aimed to test a 5-variable model that includes all these factors and can explain the development of symptoms during the pandemic period.

Method

Participants

The research was conducted with 320 people residing in Turkey during the COVID-19 pandemic period.The average age of the participants, whose ages vary between 18-60, is $\bar{X}$=33.78 (min=18; *max*=62 *SD*=11.37).175 of the participants were women and their average age was determined as $\bar{X}$= 28.41 (*SD* = 7.74).145 of the participants are men. The average age of male participants is $\bar{X}$=40.27 (*SD*=11.69).

Materials and Procedure

Demographic Information Form, COVID-19 Stress Scales, Difficulty in Emotion Regulation Scale-Short Form, Obsessive Beliefs Scale-Short Form, Disgust Proneness and Sensitivity Scale and Vancouver Obsessive Compulsive Inventory were used to collect data from the participants.Study data were collected online via the Qualtrics platform.Participants' consent for the process was also obtained online.Following the consent page in the online link, participants completed the scales by answering them sequentially.

Analysis

SPSS 22.0 and AMOS 23.0 package programs were used in the data analysis process. Missing data analysis and normality analyzes were performed before data analysis.In line with the objectives, descriptive analyzes were used to evaluate the stress level and OCD severity of the participants.Independent samples t test and one-way ANOVA methods were used to examine the changes of variables according to age and gender groups. Relationships between variables were calculated by correlational analysis. Mediation relationships between variables were examined on the basis of serial mediation analysis using Hayes' PROCESS Macro. Finally, structural equation modeling was used to evaluate the fit of the presented model to the data.

Results

Descriptive Statistical Analyzes

In our study, descriptive statistical analyzes were used to evaluate the stress levels and OCD symptom severity of the participants in terms of the pandemic period. The average score received by the participants from the COVID-19 Stress Scale is $\bar{X}$=90.11 (*SD*=23.82). Accordingly, the participants' stress levels during the pandemic period ranged from medium to high. Again, the average score the participants received from the Vancouver Obsessive Compulsive Inventory is $\bar{X}$=59.71. (*SD*=19.79) Accordingly, it can be said that the participants showed obsessive-compulsive symptoms at moderate and severe levels.

Group Differences According to Age and Gender

According to the independent groups t test results, the stress levels of the participants differ according to gender. It was found that women ($\bar{X}$=93.01, *SD*=24.23) had higher stress rates than men ($\bar{X}$=86.62, *SD*=22.91). However, there is no significant difference in terms of OC scores according to gender (p>.05). According to

the results of one-way ANOVA, in which age was divided into 3 groups, the stress levels of the participants are affected by their age levels. Younger adults ($\bar{X}$=91.82, *SD*=23.78) appear to have much higher levels of stress. There is no significant difference according to age in terms of OC scores ($p>.05$).

Relationships Between Study Variables

Correlations between study variables are statistically significant. There is a positive, moderately significant relationship between COVID-19 stress and OCD symptoms ($r=.63$, $p<.01$). COVID-19 stress also has positive, moderately significant relationships with variables such as difficulty in emotional regulation ($r=.46$, $p<.01$), obsessive beliefs ($r=.37$, $p<.01$), and disgust ($r=.56$, $p<.01$). Additionally, OC symptoms have moderately significant relationships with difficulty in emotion regulation ($r=.39$, $p<.01$), obsessive beliefs ($r=.48$, $p<.01$), and disgust ($r=.63$, $p<.01$).

Analysis of Mediating Variables

According to the results of serial mediation analysis conducted to evaluate the effects of emotion regulation difficulty, obsessive beliefs and disgust on the relationship between COVID-19 stress and OC symptoms; COVID-19 stress has a statistically significant effect ($p<.05$) on difficulty in emotion regulation *(b*=0.261, t=9.18), obsessive beliefs (b=0.104, t=6.77) and disgust (b=0.162, t=7.58). Again, the OC variable is significantly ($p<.01$) positively affected by emotion regulation difficulty (b=0.111, t=2.62), obsessive beliefs (b=0.224, t=5.31) and disgust (b=0.611, t=7.36). The direct effect of COVID-19 stress on OC symptoms is also significant (c'=.264, $p<.05$). According to the indirect effects evaluated by taking into account bias corrected confidence intervals (BCCIs); COVID-19 stress, difficulty in emotional regulation (*bootstrap*=.0150, $p<.05$), obsessive beliefs (*bootstrap*=.0196, $p<.05$) and disgust (*bootstrap*=.0580, $p<.05$) significantly affects OC symptoms.

Structural Equation Modeling

A 5-variable model assuming relationships between COVID-19 stress, emotion regulation difficulties, obsessive beliefs, disgust, and OC symptoms was tested with path analysis. It was determined that the model fit the data well (χ=2.859, $p<.001$, *RMSEA*= .08, *CFI*= .92, *SRMR*= .16, *GFI*= .87, *AGFI*= .83). When the coefficients of the direct and indirect paths are examined, the direct effect of COVID-19 stress, whose effects on the development of OC symptoms were tested, on emotion regulation difficulty, obsessive beliefs and disgust is also significant. When indirect relationships were examined, statistically significant results were also obtained. The 5-variable model has the power to explain 77% (*Adjusted* R^2=.768, $p<.05$) of the variance related to OC symptoms.

Discussion

The current study aims to evaluate the relationship between stress due to COVID-19 and OCD symptomology in terms of the pandemic period. Community-based studies conducted during the pandemic period have shown that a common response to the pandemic is intense stress. Studies conducted on different populations have reported high rates of stress (Abba-Aji et al., 2020; Yan et al., 2021). Our findings regarding the moderate to high stress responses of the participants during the pandemic period support the findings of previous studies. Our results are reasonable in the context of the extraordinary and stringent security measures created by the pandemic process and the culture of anxiety it has caused. Apart from the risk of death and infection (WHO, 2024a), material, moral and social losses are likely to have an impact on negative emotions and high stress levels. Again, within the scope of our study, it was determined that the participants showed moderate OC symptoms in the COVID-19 pandemic period, which is expected considering the relationship between previous pandemics and OCD (Eg., Shultz et al., 2015). Our findings are also compatible with similar studies on the increase in OCD severity (Al Husseini et al., 2021; Nash, 2023). In this respect, our findings provide support for the relationship between the COVID-19 pandemic and OCD symptomology.

In our study, it was determined that the stress levels of female participants were higher than men. Although there are exceptions in the relevant literature (Eg., Cao et al., 2020), our findings are in line with previous studies (Eg., Ozdin & Bayrak-Ozdin, 2020). It is also compatible. Findings that women are more affected by traumatic situations and have more difficulty in regulating their emotions may form the basis of our results. There are opinions in the literature that increased workload for women based on pandemic and quarantine measures may also have an impact on stress levels (Eg., Abba-Aji et al., 2020). Again, within the scope of our study, it was determined that younger adults had higher stress levels than older groups. According to World Health Organization (2020) data, although it was reported that death and disability rates were higher in the elderly at the beginning of the pandemic process, our study results are interesting. It is possible that different risk and protective factors have an impact here for different age groups. The fact that young adults can access misinformation more quickly due to social media use and lose more job, social

and relationship due to closures and quarantine measures may also be effective here. Our study findings are compatible with previous studies (Çağdaş, 2021; Nwachukwu et al., 2020).

When the relationships between variables were examined, it was determined that there was a positive significant relationship between COVID-19 stress and OC symptoms. In light of the information mentioned in the introduction of our study, this result does not seem surprising. The current finding is also compatible with the literature (Nash, 2023; Owji et al., 2022). Again, the increase in COVID-19 stress scores was significantly associated with the increase in emotion regulation difficulty, obsessive beliefs and disgust scores. These findings may seem reasonable when considered on the basis of the primary (infection and death risk) and secondary consequences of the pandemic (quarantine measures, restrictions, social, economic losses, etc.) (Taylor, 2021). It is known that people may experience confusion regarding cognitive and emotional processes as a result of losses experienced during infectious and epidemic periods, extraordinary security conditions and the negative consequences of epidemics, and their more intense participation in negative emotions such as anxiety, fear and confusion. It has also been reported that during these periods, they may have difficulties in cognitive and emotional flexibility capacity (Blakey, & Abramowitz, 2017; Brand et al., 2013; Taylor, 2021).

Another finding of our study is that anxiety and stress due to COVID-19 are important predictors of the development of symptoms. In the relevant literature, Owji et al (2022) reported OC symptomology as a natural manifestation of pandemic and infectious disease periods. Similarly, there are studies showing that COVID-19 has a direct effect on other symptom subtypes, especially washing (Darvishi et al., 2020; Samuels et al., 2021). In this respect, our study findings are compatible with the literature. It also reveals the negative impact of infectious diseases such as pandemics on psychological health. Within the scope of our study, we evaluated the mediating effects of emotion regulation difficulty, obsessive beliefs, and disgust in the relationship between COVID-19 stress and OC symptomology. The underlying reason for this aim was based on the relationship of both cognitive and emotional processes with OCD symptomology (Eg., O'Leary et al., 2009; Yap et al., 2017) and the view that COVID-19 is an important predictor of psychological health. Mediation analysis results showed that COVID-19 stress had an indirect effect on OC symptoms through the mediating role of factors such as emotion regulation difficulties, obsessive beliefs, and disgust. In this respect, our study makes a valuable contribution to studies in the context of OC etiology. Although studies directly examining existing relationships are limited in the literature (Eg., Trak, & Inözü, 2022; Zanjani et al., 2023), our findings have similar results to studies examining the effects of emotional and cognitive factors on the relationship between pandemics and psychological health.

Within the scope of our study, a 5-variable model was proposed to include COVID-19 stress, difficulty in emotional regulation, obsessive beliefs, disgust and OC symptoms. The role of the current model in the development of symptoms in terms of the pandemic period was investigated. The 5-variable model provides a good fit to the data; Direct and indirect relationships related to the model are statistically significant. Our results do not seem surprising in light of the literature and the information mentioned in the introduction (Banarjee, 2020; Çağdaş, 2021; Toh et al., 2021). In addition, the relevant model is capable of explaining a large portion of 77% of the variance in symptoms in terms of the pandemic period. It is thought that the multifaceted nature of the COVID-19 process may be effective on the current result. The broader context of the COVID-19 pandemic may have enabled relationships between variables and increased the fit of the model. In this respect, our findings provide insight into the development of symptoms in terms of the pandemic and provide valuable contributions to the literature.

Although our findings provide important contributions to the literature, some limitations are worth considering. One of these relates to the sample, which limits generalizability. Although our sample size is statistically sufficient, larger samples can provide more valuable contributions. The use of self-report scales is another limitation. Although the use of total scores of variables is sufficient in our study, it may be limiting in terms of broader findings. In this respect, future studies may also take subscores into consideration. Finally, the cross-sectional nature of our study may limit causal relationships between variables. Longitudinal studies may be more useful in confirming these causal relationships.

As a result, our study is important in elucidating the relationship between COVID-19 and OCD and the factors that may play a role in the structure of this relationship. Our study provided very illuminating evidence regarding the role of the multifaceted effects of the epidemic in the development of OCD symptoms. These results provide important contributions to the literature on OCD and treatment intervention and comprehensively.