

Summary

Stress, Loneliness, and Compliance with Preventive Measures During the COVID-19 Pandemic in Turkey: Findings From the COVIDiSTRESS Global Survey

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Around the globe, the coronavirus disease (COVID-19) pandemic has been reported to cause a death toll of over 1,5 million during 2020 (Dnya Sađlık rgt, 2021a), becoming an important threat to both the physical and psychological well-being of individuals. Studies on psychological well-being during the pandemic underlined the associations between illness and depression, anxiety, posttraumatic stress, anger, fear, and sleeping problems (Rajkumar, 2020; Torales, O'Higgins, Castaldelli-Maia, & Ventriglio, 2020; Wang et al., 2020a). Also, preventive measures such as forced isolation or quarantine imposed by governments to curb disease spread can negatively impact psychological health (e.g., Brooks et al., 2020).

In the literature, many studies focus on psychological outcomes of the COVID-19 pandemic (e.g., Thombs et al., 2020; Vindegaard & Benros, 2020; Xiong et al., 2020) and/or compliance with preventive measures (e.g., Kachanoff, Bigman, Kapsaskis, & Gray, 2021; Solomou & Constantinidou, 2020). However, these studies rarely address multiple factors, they instead have small sample sizes, and some findings are to be replicated in diverse samples.

The current study was conducted as part of the COVIDiSTRESS Global Survey, which examines individuals' experiences, behaviors, and attitudes during the pandemic (COVIDiSTRESS Global Survey Research Network, 2020; Yamada et al., 2021). This survey is unique with its large sample size ($N = 173,426$), including participants from 179 different countries. Within the scope of our study, data from the Turkish sample was presented. The findings obtained from the COVIDiSTRESS Global Survey would play an important role in understanding the psychological effects of the ongoing

epidemic and identifying the variables related to emotional, cognitive, and behavioral processes such as stress, loneliness, and compliance with preventive measures.

Research questions of the current study were as below:

1. Is there an association between sociodemographic variables including age, gender, education level, employment status, marital status, number of dependents, number of people isolated together, and level of perceived stress, loneliness, and compliance to preventive measures?
2. During the COVID-19 pandemic, is there an association between psychological factors (extraversion and neuroticism, concern over coronavirus, sources of distress, coping, staying informed), social support, trust, stress, loneliness, and compliance to preventive measures?
3. During the COVID-19 pandemic, do interpersonal and institutional trust, and social support mediate the relationship between psychological factors and perceived stress, loneliness, and compliance to preventive measures?

Method

Participants and Procedures

A total of 1199 participants stating that they reside in Turkey while responding to the COVIDiSTRESS Global Survey were included in this study. After data cleaning procedures, analyses were conducted using data from 766 participants. Most of the study participants were single and female individuals in their 20s and 30s, having undergraduate or graduate education, working full-time, or students.

The survey was announced via social media networks, e-mail groups, and personal acquaintances, and Qualtrics™ survey software was used for data collection. The survey, originally in English, was translated to Turkish using the translation-reverse translation method by the researchers within the COVIDiSTRESS Global Survey Network; the suitability of the translations was evaluated by experts who have command of both languages. Ethical approval was obtained from Denmark Aarhus University, Middle East Technical University, and TOBB University of Economics and Technology.

Measures

The COVIDiSTRESS Global Survey included assessments of sociodemographic variables, number of people staying together during isolation, concerns over the pandemic, personality factors of neuroticism and extraversion (Big Five Inventory Short Form; Lang, John, Lütke, Schupp, & Wagner, 2011), coping/decreasing discomfort, stressors, and sources of distress, staying informed, available social provisions (The Social Provisions Scale; Steigen & Bergh, 2019), interpersonal and institutional trust (OECD, 2017), perceived stress (10-Item Perceived Stress Scale; Cohen, Kamarck, & Mermelstein, 1983; Cohen & Williamson, 1988), loneliness (Three Item Loneliness Scale; Hughes, Waite, Hawkey, & Cacioppo, 2004), and compliance with preventive measures. Measures of concerns over the pandemic, coping/decreasing discomfort, stressors and sources of distress, staying informed, and compliance with preventive measures were developed by the COVIDiSTRESS Global Survey Research Network (COVIDiSTRESS Global Survey Research Network, 2020).

Results and Discussion

The relations between perceived stress, loneliness, and compliance with COVID-19 preventive measures and study variables were tested utilizing Pearson product-moment correlation analysis, Kruskal Wallis H test, Dunn's multiple comparison test, and regression analyses with PROCESS macro developed by Hayes (2018).

The observed relationship between perceived stress and loneliness ($r = .52, p < .01$) was consistent with findings of previous studies, including the ones carried out in the COVID-19 context (e.g., Campagne, 2019; Cerami et al., 2020; Horesh, Lev-Ari, & Hasson-Ohayon, 2020; Nowland, Robinson, Bradley, Summers, & Qualter, 2018). It was also found that loneliness and compliance were negatively related ($r = -.11, p < .01$). Due to the lack of a substantial consensus on the nature of this relationship in the literature (Stickley, Matsubayashi, &

Ueda, 2020; Wright, Steptoe, & Fancourt, 2021), future research would focus on the link between individuals' level of loneliness and compliance to preventive measures and on variables which would possibly mediate or moderate this relationship.

In the current study, age, gender, education level, number of people isolated together, marital status, and employment status were significantly related to perceived stress, loneliness, and compliance. Perceived stress was related to being young ($r = -.26, p < .01$), and single ($\chi^2(3) = 28.41, p < .01$). Also, women ($M = 3.19, SD = .69$) perceived more stress than men ($M = 2.96, SD = .69$), $t(764) = 3.89, p < .001$. Similar patterns of relationships between these variables and elevated stress levels were observed previously (e.g., Feizi, Aliyari, & Roohafza, 2012; Horesh et al., 2020; Kowal et al., 2020; Limcaoco, Mateos, Fernandez, & Roncero, 2020; Wang et al., 2020c). Findings also suggested that younger people ($r = -.12, p < .01$) and university students ($\chi^2(5) = 12.78, p = .025$) also reported higher levels of loneliness, indicating a vulnerability to the effects of quarantine or isolation as it was formerly pointed out (Bu, Steptoe, & Fancourt, 2020; Luchetti et al., 2020). University students have been previously identified as vulnerable to the psychological effects of the COVID-19 outbreak (AlAteeq, Aljhani, & AlEesa, 2020; Husky, Kovess-Masfety, & Swendsen, 2020). Consistently, students perceived higher levels of stress compared to full-time employees or retired people ($\chi^2(5) = 49.26, p < .001$; with a mean rank stress score of 457.18 for students, 369.13 for full-time employees and 242.38 for retired). Thus, it might be concluded that being employed had a protective effect on the current pandemic. Taken together, these findings might be explained by the higher intensity of COVID-related global financial turmoil experienced by specific groups such as university students (Gersons, Smid, Smit, Kazlauskas, & McFarlane, 2020; Student Loan Hero, 2020). Furthermore, the greater number of people isolated together the more perceived stress ($r = .22, p < .01$), loneliness ($r = .09, p < .05$), and reported more compliance ($r = .12, p < .01$). Restrictions about staying home may trigger stress and feelings of isolation (Fuller, Edwards, Vorakitphokatorn, & Sermsri, 1996). On the other hand, living in larger households could facilitate empathy and compassion towards others may lead to being more precautioned (Zickfeld, Schubert, Herting, Grahe, & Faasse, 2020), supporting findings in the current study. Women were more likely than men to comply with the preventive measures, as consistent with previous findings (Brouard, Vasilopoulos, & Becher, 2020; Galasso et al., 2020; Nivette et al., 2021; Solomou & Constantinidou, 2020). Lastly, education level and compliance were positively correlated ($r = .08, p < .05$),

which needs to be further investigated as there are mixed findings in the literature (e.g., Brouard, Vasilopoulos, & Becher, 2020; Nivette et al., 2021).

Moreover, study variables (i.e., extraversion, neuroticism, concerns over coronavirus, stressors and sources of distress, coping/decreasing discomfort, and staying informed) were associated with individuals’ perceived stress, loneliness, and compliance with measures. Specifically, neuroticism ($r = .40, p < .01$), concerns over coronavirus ($r = .15, p < .01$), stressors and sources of distress ($r = .50, p < .01$), staying informed ($r = .10, p < .01$) were positively correlated with perceived stress, while extraversion ($r = -.10, p < .01$), and coping/decreasing discomfort ($r = -.12, p < .01$) had an opposite relationship. Neuroticism ($r = .19, p < .01$) stressors and sources of distress ($r = .36, p < .01$) were also positively correlated with loneliness. As extraversion ($r = .10, p < .01$), concerns over coronavirus ($r = .10, p < .01$), coping/decreasing discomfort ($r = .16, p < .01$), and staying informed ($r = .18, p < .01$) increased, compliance with measures also increased and vice versa. These results underline the significance of these factors in understanding psychological responses during the pandemic together with the existing literature on personality (e.g., Buecker, Maes, Denissen, & Luhmann, 2020; Volk, Brazil, Franklin-Luther, Dane, & Vaillancourt, 2021), coping mechanisms (e.g., Rettie & Daniels, 2020), cognitions (e.g., Taylor, Landry, Paluszek, Rachor, & Asmundson, 2020), and media usage (e.g., Chao, Chen, Liu, Yang, & Hall, 2020) in COVID-19 context.

Akin to growing evidence in the field (e.g., Almutairi, BaniMustafa, Alessa, Almutairi, & Almaleh, 2020; Brück, Ferguson, Justino, & Stojetz, 2020; Rotenberg et al., 2010), trust in people was positively correlated with compliance with preventive measures ($r = .10, p < .01$), and negatively correlated with perceived stress ($r = -.26, p < .01$) and loneliness ($r = -.22, p < .01$). Similar relationships between trust in government/health system and compliance ($r = .15, p < .01$), perceived stress ($r = -.26, p < .01$), and loneliness ($r = -.17, p < .01$) were observed. Social support which has been identified as a protective factor in previous studies (Chen et al., 2021; Nitschke et al., 2021; Ye et al., 2020) was found to be associated with compliance ($r = .29, p < .01$), perceived stress ($r = -.23, p < .01$) and loneliness ($r = -.36, p < .01$).

This study also examined the mediating roles of social support, trust in people, and trust in government. Firstly, all three variables significantly mediated the relationship between study variables and perceived stress, $R^2 = .42, F(11, 762) = 49.89, MSE = .283, p < .001$. Secondly, trust in people and social support mediated the relationship between study variables and loneliness, $R^2 = .26, F(11, 762) = 24.47, MSE = .66, p < .001$. Lastly, it

was found that only social support significantly mediated the relationship between study variables and compliance with the measures, $R^2 = .13, F(11, 762) = 10.46, MSE = .39, p < .001$. These findings further support the idea that psychological consequences of pandemics are multifaceted (Taylor et al., 2020) and imply that enhancing social welfare, including individuals’ close relationships, trust to others, and social institutions, is essential in overcoming COVID-related burdens (e.g., Banerjee, 2020; Bargain & Aminjonov, 2020; Dünya Sağlık Örgütü Avrupa Bölge Ofisi, 2020; Pantell, 2020; van Rooij et al., 2020).

Limitations and suggestions for future research

Data from the COVIDiSTRESS Global Study, including data for the current study, were collected immediately after the COVID-19 outbreak. Therefore, this study was cross-sectional by nature. Taylor and colleagues (2020) highlight the dynamic nature of epidemics and pandemics and find it important to understand dynamics during the pandemic both within the same society and different societies. Therefore, conducting longitudinal studies in the future would be critical to capture changes in time. Moreover, data was collected online, and consequently, the sample mainly consists of individuals who are educated and have internet access. Future studies may include participants from different socioeconomic backgrounds to be able to increase generalizability.

Another limitation of the current study is related to the instruments used. In the literature, the relationship between neuroticism, extraversion, and conscientiousness seems strongly associated with perceived stress (Ebstrup, Eplov, Pisinger, & Jørgensen, 2011; Liu, Lithopoulos, Zhang, Garcia-Barrera, & Rhodes, 2021). Therefore, in this study, only neuroticism and extraversion were included. However, future studies would also examine other personality traits such as sensation seeking and reward dependence. Besides, the instruments assessing loneliness and compliance with preventive measures had relatively low internal consistency levels. It is important to consider this while interpreting the findings of these variables. In addition, variables examined within the scope of this study were assessed based on self-report. This issue brings the possibility of biases related to social desirability or memory, especially in compliance with preventive measures.

Finally, some findings regarding concerns over the pandemic and extraversion are inconsistent with the literature and may be related to study characteristics. Nevertheless, relatively weak relationships in mediation analyses should be interpreted carefully, and future research should focus on examining those relationships in more detail.

Conclusion

The COVID-19 pandemic continues to threaten lives around the world. The pandemic can be associated with various adverse psychological outcomes. The current study aimed to examine the relationship stress, loneliness, and compliance with preventive measures have with the sociodemographic factors, neuroticism and extraversion, concerns over the pandemic, stressors and sources of stress, and coping resources. In addition, the mediating roles of trust and social support in these relationships were also examined. This study was conducted as part of the COVIDiSTRESS Global Survey and is the first in Turkey to focus on stress, loneliness, and compliance behaviors simultaneously.

The study's findings provide information on a broad range of variables related to emotional, cognitive, and behavioral processes, including stress, loneliness, and compliance with measures, and highlights that those processes can also be multidimensional. Utilizing the study's findings in the development of prevention and intervention programs during and after the pandemic would help identify potential risk factors for and protective factors against the pandemic's negative psychological impact. Moreover, the results showing that trust and social support mediated the relationships between study variables and stress, loneliness, and compliance with preventive measures imply that those factors might be protective against the pandemic's negative impact. Initiatives to foster trust and mutual support in the community would be necessary to reduce stress and loneliness and/or increase compliance with preventive measures.