



# Gender Effects on Depression, Anxiety, and Stress Regarding the Fear of COVID-19

Ahmet Maslakçı<sup>1</sup> · Lütfi Sürücü<sup>2</sup>

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## Abstract

The fear of the COVID-19 pandemic is associated with negative effects on mental health. The study investigates depression, anxiety, and stress and their relationship to gender among hospitality sector employees in the USA during COVID-19. Fear has been one of the most common psychological responses in the population during the COVID-19 pandemic. The aim of this study is to examine its relationship with depression, anxiety, and stress to combat the fear of COVID-19 between the gender. The study was conducted using an online questionnaire. A sociodemographic data form, the Fear of COVID-19 scale, and the Depression, Anxiety and Stress Scale (DASS-21) were used for data collection. In total, 341 valid questionnaires were analyzed using SPSS version 24. The results showed that the fear of COVID-19 positively and significantly impacted stress (Coeff = .4992, 95% confidence interval (CI): .4409–.5575), anxiety (Coeff = .4825, 95% CI: .4245–.5405), and depression (Coeff = .4601, 95% CI: .3992–.5210), and these effects differed according to gender. The effects of the fear of COVID-19 on stress and anxiety were higher in women compared with men. This cross-sectional study shows that the psychological effects of the fear of COVID-19 are more significant in women than in men. The study makes significant contributions to the literature in terms of showing the gender differences related to COVID-19 within the hospitality sector. Therefore, women should be prioritized in future psychiatric recovery plans.

**Keywords** COVID-19 fear · Hospitality · Gender · Anxiety · Depression · Stress

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✉ Ahmet Maslakçı  
ahmetmaslakci@csu.edu.tr

Lütfi Sürücü  
lutfi.surucu@elu.edu.tr

<sup>1</sup> Faculty of Economics and Administrative Sciences, Bahçeşehir Cyprus University, Mersin, Turkey

<sup>2</sup> Faculty of Economics and Administrative Sciences, European Leadership University, Mersin, Turkey

## Introduction

Coronavirus disease 2019 (COVID-19), which was first detected in Wuhan, China, in December 2019 and subsequently declared a pandemic by the World Health Organisation (WHO), is a public health crisis that has made a worldwide impact. In addition to the economic and social issues caused by COVID-19, it has also seriously affected people's mental health (Huang & Zhao, 2020). Many countries have introduced mandatory lockdowns or social distancing measures to limit the spread of COVID-19. However, while prevention measures can effectively slow disease transmission (Swami et al., 2020), factors related to social distancing and lockdowns, such as changes in daily behavior and functioning, can adversely affect psychological health (Galea et al., 2020). These factors could cause adverse effects on mental health (Özdin & Bayrak Özdin, 2020). Lessons learned from the SARS epidemic in 2003 show that fear, anxiety, and stress in the general population because of infectious diseases can further complicate attempts to prevent viral spread (Zhong et al., 2020). Fear triggered by the sudden and highly contagious COVID-19 pandemic has caused anxiety, depression, and other stress reactions in the general population (Wang et al., 2020). During long-term disasters such as the COVID-19 epidemic, the psychological problems caused by the physical problems caused by the disease on individuals are not noticed and it is especially important to investigate the negative psychosocial effects of pandemics to help immediate and long-term recovery (Mahmud et al., 2022).

Studies show that anxiety and stress levels are higher than pre-epidemic levels (Tull et al., 2020). This unique isolation situation has significant psychological consequences, including depressive symptoms, psychological distress, post-traumatic stress symptoms (PTSS), higher stress and anxiety levels, insomnia and irritability and loneliness (Ausín et al., 2020). Fofana et al. (2020) stated that depression and fear have increased during this period because people cannot cope with the pandemic's emotional effects. In various studies investigating the psychological impact of other epidemics, such as severe acute respiratory syndrome (SARS) and H1N1 influenza, it was observed that more than 40% of those affected by SARS experienced PTSS during the epidemic (Lam et al., 2009; Mak et al., 2010) and they were two to three times more likely to develop a high level of PTSS than those who were not exposed to the epidemic (Wu et al., 2009). Studies have also shown that quarantine practices and exposure to news related to a viral outbreak can increase stress, anxiety, and depression (Hou et al., 2020).

Some studies have indicated that there are differences between men and women regarding the pandemic's psychological impact and related symptoms of anxiety and depression (González-Sanguino et al., 2020; Özdin & Bayrak Özdin, 2020). González-Sanguino et al. (2020) showed that female gender is a significant predictor of anxiety and PTSS, as the prevalence of anxiety, stress, and depression is generally higher among women (Haro et al., 2006). In the context of the COVID-19 pandemic, there are studies in the literature that show that high levels of stress can be associated with psychological distress, which in turn leads to poor job performance (Meunier et al., 2022). Haro et al. (2006) stated that

women are exposed to more stress, anxiety, and depression than men due to interactions between biological factors, social determinants, gender stereotypes, gender roles, social stigma, inequality, and social autonomy. In support of these findings, research has further shown a strong relationship between female gender and experiences of loneliness during the COVID-19 pandemic (Losada-Baltar et al., 2020).

Furthermore, Pappa et al. (2020) found that anxiety and depressive symptoms have differed by gender and occupation during the COVID-19 pandemic. Liu et al. (2020) emphasized that COVID-19 causes higher stress and anxiety in women, compared with men. Nino et al.'s (2021) study shows that women are generally more likely to have a fear of COVID-19 than men. Studies in Iran, Austria, and India have also found that women and young adults are significantly more concerned about COVID-19 and are subjected to higher levels of pandemic-related stress (Kazmi et al., 2020; Moghanibashi-Mansourieh, 2020; Pieh et al., 2020). In the USA, one of the countries most affected by the COVID-19 outbreak (WHO, 2020), measures against COVID-19 became mandatory on March 16, 2020, when COVID-19 lockdowns began to go into effect (Nhamo et al., 2020). This study investigated the prevalence and predictors of depression, anxiety, and stress in the hospitality sector (Nhamo et al., 2020), which is one of the sectors most affected by the COVID-19 pandemic, in the USA, with a particular focus on investigating the moderating role of gender in the relationships among these factors. This study also seeks to investigate, as a second objective. It aims to contribute to calls to measure the extent of the psychological threats posed by the COVID-19 pandemic to people (Mahmud et al., 2022; Meunier et al., 2022). In doing so, the current study aims to provide hospitality industry managers with insight into concrete actions that can be adopted to reduce the detrimental effects (e.g., psychological distress, poor performance) on employees of high levels of stress caused by the COVID-19 pandemic.

## Methods

### Sampling and Procedure

Research data were obtained in September 2020. According to WHO data dated September 14, 2020, at that time, there were 28,918,900 confirmed cases of COVID-19, including 922,252 deaths (World Health Organization, 2020), with 14,815,178 of these cases in the USA (World Health Organization, 2020). In this context, the present study was conducted using data from the USA. At the time of the study, the adverse effects of the COVID-19 pandemic were continuing worldwide. To protect the health of the participants and researchers, an electronic questionnaire was used instead of the face-to-face method for data collection. Researchers have frequently preferred this method for data collection during the COVID-19 pandemic (Bernardo & Mendoza, 2020; Chen et al., 2020).

Several procedural methods recommended in the literature were used in the present study to minimize common method bias (Podsakoff, 2017). A 33-item questionnaire was prepared for the research. This questionnaire was kept short, with the

aim of preventing cognitive fatigue among participants. Informative notes were provided on the first page of the survey, which included expressions such as, “Participation is optional,” “There are no correct or incorrect answers to the statements in the questionnaire,” and “All information collected during the research will be kept confidential.” Additionally, no personally identifying information was requested from the participants and they were informed that they could withdraw from the study at any stage. Furthermore, the layout of the electronic questionnaire was designed and visualized by professionals employed by the research company.

To obtain participant data, a research company operating in the USA was contacted by the responsible author and an agreement was made to collect data from hotel employees in that country. In the agreement, it was emphasized that the ethical rules would be followed, the data would not be shared with any legal or real person other than the researchers, and permission would be obtained from the managers for the research. Prepared by researchers and visualized by the research company, the electronic questionnaires were sent by e-mail to all employees of the four hotels that were in the research company’s database and previously provided permission to be included in conduct research ( $N=600$ ). The survey data filled in by the participants came to the research company and simultaneously to the researchers’ account. Reminder e-mails were sent by the research company to the hotel employees who did not fill out the questionnaire on the third day of each week and the data collection process was terminated at the end of the third week.

Hotels were preferred in the present study because, as Olugbade and Karatepe (2019) stated, hotel employees work under intense stress and their jobs are riskier than those in other sectors during the pandemic.

To increase the response rate, participants were paid a small amount by the research company. Each participant answered a questionnaire electronically after providing informed consent. Participation in the study was entirely voluntary and the participants were informed that they could withdraw from the study at any time. Informed consent was obtained from all individual participants included in the study.

Out of the 600 employees contacted, 421 returned questionnaires, for a response rate of 70%. After examining the returned questionnaires, the researchers identified 19 questionnaires with outliers and 61 in which the participants did not respond to more than 50% of the items. These were excluded from the study, resulting in a total of 341 valid questionnaires.

## Measures

The study was conducted using an online questionnaire. A sociodemographic data form, the Fear of COVID-19 Scale, and the Depression, Anxiety and Stress Scale (DASS-21) were used for data collection. The scales used in the study questionnaire are generally accepted and frequently used in the extant literature. As Likert-type scales are widely used in the literature, they were preferred in the present study.

The Fear of COVID-19 Scale was developed by Ahorsu et al. (2020) and consists of seven items. Items are rated from “strongly disagree (1)” to “strongly agree (5).” Sample items include the following: “It makes me uncomfortable to think about COVID-19,” “I am afraid of losing my life because of COVID-19,” and “I cannot sleep because I am worried about getting COVID-19.”

The DASS-21 developed by Lovibond and Lovibond (1995) was used to assess three negative emotional states (i.e., stress, anxiety, and depression) in participants. The DASS-21 has 7 items per subscale, comprising 21 items in total to determine all three negative emotions. The items are rated from 0 (“never applied to me”) to 3 (“too much applied to me”). Sample items of the scale include “I felt that I was rather touchy,” “I felt that life was meaningless,” and “I felt that I was using a lot of nervous energy.”

## Data Analysis

IBM SPSS software version 24 (IBM Corp., Armonk, NY) was used to test the model proposed in the study and the hypotheses presented by the researchers. First, descriptive and inferential statistics were calculated. The relationships between variables were measured with Pearson correlation coefficients. Finally, the PROCESS macro developed by Hayes (2017) as an add-on to IBM SPSS for Windows, version 24, was used to test the research hypotheses ( $p < 0.05$ ).

## Results

Table 1 presents the participants’ demographic information. Regarding participant gender, 150 (44%) were women and 191 (56%) were men. Participants’ ages ranged from 18 to 67 years ( $M = 33.42$ ,  $SD = 2.11$ ). Many of the participants had an associate degree-level education (41.35%) and work experience in the hospitality industry most frequently ranged between 1 and 5 years (41.06%).

After testing the variables’ validity and reliability in the research model, the mean values, standard deviations, and correlations of the variables were measured (Table 2).

As shown in Table 2, the lowest average was anxiety ( $M = 1.76$ ,  $SD = 0.794$ ) and the highest average was the fear of COVID-19 ( $M = 2.85$ ,  $SD = 1.079$ ). Skewness and kurtosis values were examined to determine the distribution of the data. George (2011) stated that skewness and kurtosis values have a normal distribution when they are between  $-2$  and  $+2$ ; thus, the data had a normal distribution. The correlation analyses showed that the fear of COVID-19 was positively correlated with stress ( $r = 0.676$ ,  $p < 0.01$ ), anxiety ( $r = 0.662$ ,  $p < 0.01$ ), and depression ( $r = 0.662$ ,  $p < 0.01$ ), while gender was negatively correlated with anxiety ( $r = 0.662$ ,  $p < 0.05$ ) and depression ( $r = 0.662$ ,  $p < 0.05$ ).

The PROCESS Macro, version 3.4 (Hayes, 2017), was used to test the research hypotheses. The analysis results with 5000 bootstrap samples and 95% confidence intervals are presented in Tables 3 and 4, respectively.

**Table 1** Participants' demographic characteristics

Items	Types	All ( <i>N</i> =341)		Female ( <i>n</i> =150)		Male ( <i>n</i> =191)	
		Frequency	(%)	Frequency	(%)	Frequency	(%)
Marital status	Single	188	55.13	83	55.33	105	54.97
	Married	153	44.87	67	44.67	86	45.03
Age (years)	18–29	103	30.21	48	32.0	55	28.8
	30–44	92	26.98	48	32.0	44	23.0
	45–60	96	28.15	32	21.33	64	33.5
	>60	50	14.66	22	14.67	28	14.7
Education	Vocational Training	88	25.81	49	32.67	39	20.42
	Associate Degree	141	41.35	55	36.67	86	45.03
	Bachelor's Degree	91	26.69	38	25.33	67	27.75
	Graduate Degree	21	6.16	8	5.33	13	6.81
Work experience (hospitality industry)	<1 year	110	32.26	56	37.33	54	28.27
	1–5 years	140	41.06	52	34.67	88	46.07
	6–10 years	66	19.35	32	21.33	34	17.80
	>10 years	25	7.33	10	6.67	15	7.85

**Table 2** Descriptive statistics correlations

Variables	Mean	Standard deviation	1	2	3	4	5
Fear of COVID-19	2.85	1.079	.801 <sup>a</sup>				
Stress	2.02	.801	.676**	.800 <sup>a</sup>			
Anxiety	1.76	.794	.662**	.781**	.804 <sup>a</sup>		
Depression	1.97	.799	.628**	.791**	.780**	.806 <sup>a</sup>	
Gender	-	-	.016	-.089	-.127*	-.111*	
Skewness	-	-	.066	.649	.990	.888	-.243
Kurtosis	-	-	-.767	.263	.263	.263	-1.952

\*\* $p < 0.01$ , \* $p < 0.05$ . <sup>a</sup>The square root of the average variance extracted

As shown in Table 3, the fear of COVID-19 significantly impacted stress ( $\beta = 0.4992$ , 95% CI = [0.4409, 0.5575],  $t = 16.8482$ ,  $p < 0.05$ ), anxiety ( $\beta = 0.4825$ , 95% CI = [0.4245, 0.5405],  $t = 16.3598$ ,  $p < 0.05$ ), and depression ( $\beta = 0.4601$ , 95% CI = [0.3992, 0.5210],  $t = 14.8560$ ,  $p < 0.05$ ).

While the moderating effect of gender on stress was not significant ( $\beta = -0.0750$ , 95% CI = [-0.1911, 0.0410],  $t = -1.2723$ ,  $p > 0.05$ ), its moderating effects on anxiety ( $\beta = -0.1263$ , 95% CI = [-0.2418, -0.0108],  $t = -2.1505$ ,  $p < 0.05$ ) and depression ( $\beta = -0.1281$ , 95% CI = [-0.2494, -0.0069],  $t = -2.0785$ ,  $p < 0.05$ ) were significant. As the lower level of confidence interval (LLCI) and upper level of confidence interval (ULCI) values did not contain

**Table 3** Direct effects

Predictors	Dependent variables	Coeff	SE	<i>t</i>	<i>p</i>	LLCI	ULCI
Constant	Stress	2.0187	.0318	63.5446	.000	1.9862	2.0812
Fear of COVID-19 (TFC)		.4992	.0296	16.8482	.000	.4409	.5575
Gender		-.1609	.0640	-2.5143	.012	-.2868	-.0350
TFC X Gender	Anxiety	-.0750	.0590	-1.2723	.204	-.1911	.0410
Constant		1.7652	.0316	55.8234	.000	1.7030	1.8274
TFC		.4825	.0296	16.3598	.000	.4245	.5405
Gender	Depression	-.2210	.0637	-3.4694	.000	-.3463	-.0957
TFC X Gender		-.1263	.0587	-2.1505	.032	-.2418	-.0108
Constant		1.8876	.0332	56.8513	.000	1.8223	1.9529
TFC	Depression	.4601	.0310	14.8560	.000	.3992	.5210
Gender		-.1957	.0669	-2.9253	.003	-.3272	-.0641
TFC X Gender		-.1281	.0616	-2.0785	.038	-.2494	-.0069

*TFC*, the fear of COVID-19; *SEM*, standard error of mean; *t*, *t*-values; *p*, probability values; *LLCI*, lower level of confidence interval; *ULCI*, upper level of confidence interval

**Table 4** Moderating effects of gender

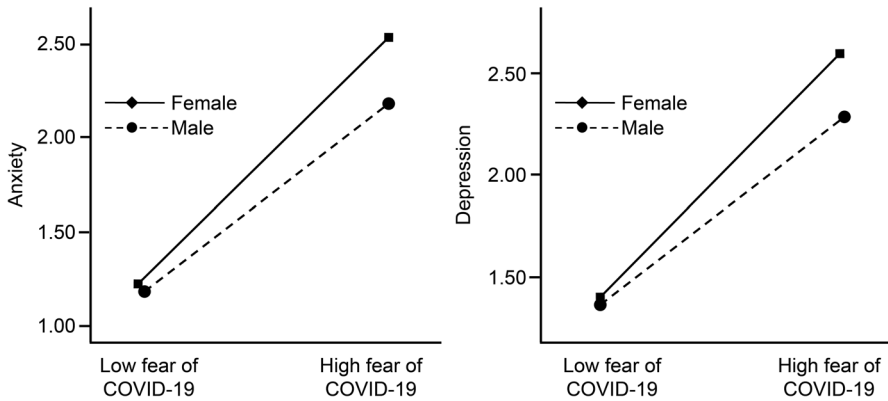
Gender		Coeff	SE	<i>t</i>	<i>p</i>	LLCI	ULCI
TFC X Gender	Anxiety						
Female (0)	-.5601	.5532	.0419	13.1884	.000	.4707	.6358
Male (1)	.4399	.4270	.0411	10.3941	.000	.5078	.5078
TFC X Gender	Depression						
Female (0)	-.5601	.5318	.0440	12.0746	.000	.4452	.6185
Male (1)	.4399	.4037	.0431	9.3598	.000	.3189	.4885

*TFC*, the fear of COVID-19; *SEM*, standard error of mean; *t*, *t*-values; *p*, probability value; *LLCI*, lower level of confidence interval; *ULCI*, upper level of confidence interval

zero (0) in any case (Hayes, 2017), these results show that gender has a moderating role in the impact the fear of COVID-19 on anxiety and depression.

The results of the analysis to determine the effects of the fear of COVID-19 on anxiety and depression by gender are presented in Table 4.

While the effect of the fear of COVID-19 on anxiety was  $\beta = 0.4270$ ,  $p = 0.000$  for men, it was measured as  $\beta = 0.5532$ ,  $p = 0.000$  for women. Parallel with these results, the effect of the fear of COVID-19 on depression was measured as  $\beta = 0.4037$  and  $\beta = 0.5318$  for men and women, respectively. Thus, the analysis showed that the fear of COVID-19 had a greater impact on anxiety and depression in women than in men. A simple slope regression graph as suggested by Aiken et al. (1991) was drawn to extend the analysis and visually show the moderating effects of gender in the present study (Fig. 1).



**Fig. 1** Interaction of gender and the fear of COVID-19 on anxiety and depression

## Discussion

The aim of this study was to understand the effects of COVID-19 fear on different psychological outcomes and to control the role of gender in these effects. For this purpose, the study investigates the effects of fear of COVID-19 on depression, anxiety, and stress in hotel workers in the USA and whether these effects differ by gender. The hypothesis of the study was tested in the USA (World Health Organization, 2020), the country with the highest number of cases. The results of the study show that fear of COVID-19 has a greater impact on depression, anxiety, and stress in women than in men. The effects of the fear of COVID-19 on anxiety and depression found in the current study are consistent with the results of other studies (Ausín et al., 2020; Fofana et al., 2020; Özdin & Bayrak, 2020; Satici et al., 2020). This study also indicated that gender differences may be associated with pandemic-related fear, anxiety, and depression by showing that, in the current sample, women had higher levels of anxiety than did men. Abuhammad et al. (2022), in their study in Jordan, showed that women's DASS scores are higher than men during COVID-19. These findings are consistent with extant literature (Bobevski et al., 2016; Özdin & Bayrak Özdin, 2020; Lathabhavan, 2021).

Epidemiological studies have consistently reported gender differences in mental health (Matud et al., 2020). In general, women show higher prevalence rates of anxiety and stress disorders than men. Depressive and anxiety symptoms are the most common indicators of psychological distress (Matud et al., 2020). Anxiety disorder has been reported to occur three times more frequently in women than men during the COVID-19 pandemic (Wang et al., 2020). Moreover, gender is shown to be the strongest predictor of PTSS during an epidemic (Liu et al., 2020). Thus, the higher levels of anxiety and depression and the fear of COVID-19 in women in this study were in line with previous studies showing that psychiatric effects during the pandemic have a greater impact on women (Özdin and Bayrak Özdin, 2020).

During the COVID-19 pandemic, women have appeared to have more knowledge about the disease than men and are generally more likely to follow



health-related guidelines, such as wearing masks and avoiding public spaces (Zhong et al., 2020). The tendency of women to perceive the COVID-19 outbreak as a severe health risk and accept and comply with restrictive measures (Galasso et al., 2020) is considered to increase their stress, anxiety, and depression related to the pandemic. Matud et al. (2015) stated that spending more time on housework and childcare, particularly during the shutdowns associated with the pandemic, have also increased depression, anxiety, and stress among women. It is considered that the fear of losing their jobs working in the hospitality sector, which is one of the sectors most affected by COVID-19, and increased burdens at home may increase the psychological pressure women experience. In the hospitality sector, fear of COVID-19 increases uncertainty about employment and negatively affects the psychological health of employees who feel threatened by their jobs (Ruiz-Palomino et al., 2022), and female employees experience more stress and anxiety than male employees (Rahimi et al., 2022). The findings of the study support the idea that fear of COVID-19 in the hospitality sector affects the anxiety and stress of female employees more (Rahimi et al., 2022). The findings are consistent with the fact that the hospitality sector is related to the fact that most of the workforce is made up of women who are low-skilled, daily, and seasonal (Maslakçı et al., 2022), and that these women are among the first to lose their jobs, mostly due to their non-contract work (Rahimi et al., 2022).

### **Limitations and Future Studies**

This study has some limitations. The most important limitation is that it was a cross-sectional study; therefore, the identified effects are not causal. Second, due to global lockdowns, researchers could not go into the field to collect data. Instead, they used electronic tools to easily collect data via sampling. Although the lockdown situation in the USA affected people from all walks of life, this study was limited to hotel employees, who have been more strongly affected by the pandemic than many other groups. Thus, it is not possible to generalize across the whole population and other sectors. Third, the cross-sectional nature of the study prevents us from concluding that there is any cause-and-effect relationship. The study shows that the fear of COVID-19 affects the anxiety and stress of female employees in the hospitality sector more. In this context, it is not possible to verify the direction of the relationship between perceived stress, psychological distress, anxiety, and work. In future longitudinal studies, it will be important to examine these two-way relationships using a cross-delayed analysis, as outlined in Meunier et al. (2022), which will analyze a two-way relationship between psychological health and performance (Leclerc et al., 2014). Last, this study focused on depression, anxiety, and stress experienced during the COVID-19 pandemic, as moderated by gender. Further research should also consider factors such as irritability, confusion, anger, and frustration related to COVID-19 anxiety according to gender.

## Conclusion

This study contributes significantly to the existing literature on depression, anxiety, and stress. First, the study responds to calls to explore the possibilities of new avenues of research in the COVID-19 fear literature (Ahorsu et al., 2020; Lathabavan, 2021). Second, the study reconsiders the concept of stress during the pandemic and contributes to the literature in explaining the role of gender in mental health issues caused by the pandemic. In addition, this study is the first study to investigate the relationship between COVID-19 fear, depression, anxiety, stress, and gender in the hospitality sector. The results suggest many avenues for future research and applications. Therefore, women can be attributed to more psychological support measures, especially during periods of pandemic. The findings of the study suggest that health-related and psychological support interventions will be more effective if they target specific demographic groups during the pandemic. It is considered that psychological support programs specifically designed for women during the COVID-19 pandemic will provide positive improvements in terms of their stress and anxiety. However, more research is needed to identify the specific behaviors that should be adopted by managers to achieve these conclusions.

**Author Contribution** A.M. and L.S. conceived of the presented idea. A.M. developed the theory and performed the computations. A.M. and L.S. verified the analytical methods. L.S. encouraged A.M. to investigate (a specific aspect) and supervised the findings of this work. All authors discussed the results and contributed to the final manuscript.

**Data Availability** The manuscript has no associated data or data will not be deposited.

## Declarations

**Ethics Approval** This research was approved by the Research Ethics Committee of European Leadership University (Approval Number: ALU-ETK-2021–05).

**Consent to Participate** Informed consent was obtained from all individual participants included in the study.

**Conflict of Interest** The authors declare no competing interests.

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