

# Worries and concerns about COVID-19 lockdown aggravate stress reactions among pregnant women

Tetsufumi Suda (✉ [t.suda@tachikawa-hosp.gr.jp](mailto:t.suda@tachikawa-hosp.gr.jp))

Department of Neuropsychiatry, KKR Tachikawa Hospital <https://orcid.org/0000-0003-0304-1898>

**Yumiko Miura**

Department of Obstetrics and Gynecology, KKR Tachikawa Hospital

**Motoko Katayama**

Department of Obstetrics and Gynecology, KKR Tachikawa Hospital

**Hiroshi Senba**

Department of Obstetrics and Gynecology, KKR Tachikawa Hospital

**Mioko Takahata**

Department of Obstetrics and Gynecology, KKR Tachikawa Hospital

**Sayumi Nakano**

Department of Obstetrics and Gynecology, KKR Tachikawa Hospital

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## Research Article

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## **Abstract**

Purpose: Since the Coronavirus disease 2019 (COVID-19) pandemic has had a huge impact worldwide, numerous governments have declared lockdowns to prevent further transmission of the virus. However, both the lockdown and the outbreak itself, have influenced pregnant women's daily lives. This study's aim was to assess the extent to which COVID-19 lockdown had psychologically impacted pregnant women and suggest the necessary measures for reassuring them.

Methods: An anonymous questionnaire survey was conducted for collecting socio-demographic and COVID-19 related information. The COVID-19 lockdown-related psychological impact and mental health status were assessed using the Impact of Event Scale-Revised (IES-R) and the short form of Depression Anxiety Stress Scale (DASS-21), respectively. The associations between socio-demographics and COVID-19 related information, and psychometrics were assessed by conducting univariate analyses. Subsequently, multiple regression analyses were conducted to ascertain which variables were significantly associated with scores of IES-R and DASS-21 stress subscales.

Results: Of the 142 participants who completed the questionnaire, 6 were excluded because they were being treated for psychiatric disorders. The presence of depression, anxiety, and stress were identified in 17.7%, 12.5%, and 12.5% of the participants, respectively. While concerns about household finance due to the COVID-19 outbreak independently contributed to the psychological impact; the presence of nasal discharge and concerns about social support were independently associated with perceived stress.

Conclusions: In pandemic situations, concerns about household finances and social support due to lockdown could become targets for interventions among pregnant women.

## **Introduction**

The World Health Organization (WHO) declared on March 11, 2020, that the Coronavirus disease 2019 (COVID-19) outbreak could be characterized as a pandemic. During pandemics, careful and adequate support is necessary for pregnant women, who are considered vulnerable to disasters. Several studies have indicated that infections caused by viruses such as the Influenza A virus subtype H1N1 (A/H1N1) (The ANZIC Influenza Investigators and Australasian Maternity Outcomes Surveillance System 2010); Severe Acute Respiratory Syndrome-Coronavirus (SARS-CoV) (Mullins et al. 2020); and the Middle East Respiratory Syndrome Coronavirus (MERS-CoV) (Alfaraj et al. 2019), posed risks of severe maternal and neonatal morbidities. Moreover, pandemics can induce high levels of maternal psychological stress (Lee et al. 2007), which can be a risk factor for poor pregnancy outcomes (Woods et al. 2010) and child neurodevelopmental disorders (Hantsoo et al. 2019). Moreover, a systematic review substantiated that disasters impact maternal mental health as well as child development (Harville et al. 2010).

Most countries and regions went into lockdowns to prevent the further spread of COVID-19. In Japan, the lockdown started with a nationwide state of emergency being declared by the government on April 7, 2020. Since the Japanese national and local governments cannot legally enforce lockdowns; it was

limited to a “loose lockdown,” wherein people were strongly advised to adopt social isolation and self-restraint, such as refraining from non-urgent outings along with temporary closure of schools, nurseries, and the majority of workplaces. While the lockdown proved to be effective in terms of infection control (Lau et al. 2020); some studies pointed out its negative effects on the economy and mental health (Pellecchia et al. 2015; Brooks et al. 2020).

The COVID-19 lockdown has also influenced pregnant women’s daily lives. Specific examples include hesitation to undergo prenatal examinations, isolation from dependable relatives, cancellations/postponements of maternity classes, and difficulties in obtaining maternal supplies. In fact, such worries and concerns about COVID-19 lockdown have been expressed through the media and clinical practice. Since these influences tend to be more pronounced in pregnant women’s daily lives (Ng et al. 2004), the psychological burden among them is presumed to be greater than that of the general population. However, the COVID-19 lockdown’s psychological effects on pregnant women remain undetermined.

The aim of this study was to assess the extent to which COVID-19 lockdown psychologically impacted pregnant women and to suggest the necessary measures for reassuring them.

## Materials And Methods

An anonymous questionnaire survey was conducted from April 24 to May 22, 2020. The participants comprised Japanese pregnant women over the age of 18, seeking consultation at the Department of Obstetrics and Gynecology, our hospital [name deleted to maintain the integrity of the review process]. The questionnaire had a cover page explaining the study, and its submission was deemed as informed consent. The participants’ anonymity was preserved throughout the study, which was approved by the Ethical Committee of our hospital [name deleted to maintain the integrity of the review process].

The survey collected information on socio-demographic and clinical characteristics such as: age groups, employment status, marital status, family size, living with or without children, gestational week, obstetric complications, physical comorbidities, and psychiatric history. It also investigated information related to COVID-19 like contact history with infected persons, subjective flu-like symptoms during the past week, changes in daily life (isolation from dependable relatives, working environment, financial problems, closure of nurseries, and boredom), worries and concerns about the pandemic, and self-assessment of COVID-19 knowledge. The questionnaires on worries and concerns about COVID-19 were composed of seven closed-ended questions and an open-ended question, and were sorted into three categories: infection, household finances, and social support. Knowledge about COVID-19 was assessed using a 5-point Likert scale (1 – *very insufficient*, 2 – *insufficient*, 3 – *neutral*, 4 – *sufficient*, and 5 – *very sufficient*). The participants undergoing psychiatric treatment prior to the state of emergency were excluded from the study.

We assessed the COVID-19 outbreak’s psychological impact using the Japanese version of the Impact of Event Scale-Revised (IES-R) (Weiss 2004), which had been previously validated (Asukai et al. 2002). The

IES-R is a self-administered questionnaire that measures subjective distress associated with specific stressful life events during the past week, and consists of 22 items classified into three domains: intrusion, avoidance, and hyperarousal. Each item was rated on a 5-point Likert scale ranging from 0 (*not at all*) to 4 (*extremely*). We used the total score to assess the degree of psychological impact.

Mental health status was assessed using the Japanese version of the short form of Depression Anxiety Stress Scale (DASS-21) (Lovibond and Lovibond 1995), which has been previously validated (Mitani et.al. 2015). It is a 21-item self-administered questionnaire designed to measure the general population's level of depression, anxiety, and stress during the past week. Each item was rated on a 4-point Likert scale ranging from 0 (*did not apply to me at all*) to 3 (*applied to me very much or most of the time*). DASS-21 has three subscales: the DASS-21 depression (DASS-D), DASS-21 anxiety (DASS-A), and DASS-21 stress (DASS-S). Each subscale was calculated by summing up the seven corresponding items and multiplied by two. The presence of depression, anxiety, and stress were indicated by DASS-D >9, DASS-A >7, and DASS-S >14 scores, respectively.

### ***Statistical analyses***

Univariate analyses were conducted to assess the associations between socio-demographics and COVID-19 related information and psychometrics, which were tested using the t test and one-way analysis of variance (ANOVA), along with the Tukey-Kramer post-hoc test for categorical variables and Pearson's correlation test for numerical variables.

Subsequently, multiple regression analyses were conducted to ascertain which variables were significantly associated with IES-R scores and the three DASS-21 subscale scores. The categorical variables were converted into binary dummy variables and the variance inflation factor (VIF) was used to check for multicollinearity.

For all statistical tests, the statistical significance level was set at the 5% level ( $p < .05$ ).

## **Results**

Of the 148 participants subjected to the questionnaire, 142 completed it. Since 6 were excluded because they were under treatment for psychiatric complications; finally the study included 136 participants comprising: 1 (0.7%) teenager, 36 (26.5%) in their twenties, 83 (61.0%) in their thirties, and 16 (11.8%) in their forties. Of the 32 (23.5%) women who reported obstetric complications, 4 (2.9%) had pregnancy-induced hypertension, 16 (11.8%) had gestational diabetes, 6 (4.4%) had multiple pregnancies, 3 (2.2%) had threatened abortion or premature delivery, and 3 (2.2%) had placenta previa. None of the women reported multiple obstetric complications. 18 (13.2%) reported physical comorbidities as follows: 6 (4.4%) had clinical hypothyroidism, 3 (2.2%) had bronchial asthma, 2 (1.5%) had ulcerative colitis, while 1 (0.7%) each, had chronic pancreatitis, type 1 diabetes mellitus, hyperthyroidism, large uterine fibroids, prurigo nodularis, atopic dermatitis, psoriasis, and carpal tunnel syndrome. Additionally, 1 (0.7%) woman had comorbid bronchial asthma with ulcerative colitis. 14 (10.3%) had a history of psychiatric disorders.

The mean of COVID-19 knowledge, IES-R, DASS-D, DASS-A, and DASS-S scores were  $3.0 \pm 1.0$ ,  $13.1 \pm 12.2$ ,  $4.8 \pm 5.5$ ,  $3.0 \pm 4.4$ , and  $6.2 \pm 7.1$ , respectively. The presence of depression was seen in 24 (17.7%) pregnant women, while 17 (12.5%) each, showed the presence of anxiety and stress.

Table 1 shows the associations between socio-demographic characteristics, COVID-19 knowledge, IES-R scores, and DASS-21 subscale scores. No socio-demographic features were associated with COVID-19 knowledge. The participants' age groups were significantly associated with their IES-R scores ( $F(3,132) = 2.91$ ,  $p = .04$ ); with those in their twenties having significantly lower IES-R scores than those in their thirties ( $p = .03$ ). While employment status was significantly associated with the DASS-D scores ( $F(5,130) = 2.58$ ,  $p = .03$ ); group comparisons were not significant in the post-hoc test. Pregnant women with children had significantly lower DASS-D and DASS-A scores ( $t = -2.02$ ,  $p = .05$ ) and ( $t = -2.24$ ,  $p = .03$ ), respectively. No statistical associations were found between obstetric complications and psychometrics. Participants with histories of psychiatric disorders had significantly higher DASS-D and DASS-A scores ( $t = 2.00$ ,  $p = .05$ ) and ( $t = 2.22$ ,  $p = .03$ ), respectively; compared to those without any history of psychiatric disorders. Family size had a significant negative correlation with the DASS-D scores ( $r = -0.17$ ,  $p = .05$ ).

Table 2 shows the univariate analyses of the associations between COVID-19 related information and psychometrics. While flu-like symptoms were infrequent (0% to 8.7%); the presence of multiple symptoms were significantly associated with lower levels of knowledge about COVID-19 along with higher DASS-D, DASS-A, and DASS-S scores. In terms of changes in daily life due to COVID-19, the presence of current financial problems was significantly associated with higher IES-R scores ( $t = 2.00$ ,  $p = .05$ ), and the perception of boredom was significantly associated with higher DASS-D scores ( $t = 2.12$ ,  $p = .04$ ). Although 96.3% of pregnant women were worried about contracting the COVID-19 infection, no statistically significant associations were found between the presence of such worries and psychometrics. However, apprehension about household finances was significantly associated with lower levels of knowledge about COVID-19 ( $t = -3.36$ ,  $p < .01$ ); higher IES-R, DASS-A, and DASS-S scores ( $t = 3.15$ ,  $p < .01$ ), ( $t = 2.12$ ,  $p = .04$ ), and ( $t = 2.20$ ,  $p = .03$ ), respectively. The presence of concerns about insufficient social support due to COVID-19 was significantly associated with higher DASS-S scores ( $t = 2.21$ ,  $p = .03$ ).

As a result of previous univariate analyses, the IES-R scores were statistically associated with age groups, current financial problems, and concerns about household finances. Thus, these three factors were entered as independent variables into the multivariate regression model (Table 3). The age group was converted into binary dummy variables. The model was significant ( $F(5,130) = 3.61$ ; adjusted  $R^2 = .09$ ;  $p = .004$ ). Only concerns about household finances were an independent contributor to IES-R scores after adjusting for all other variables in the model (standardized coefficients = .24;  $t = 2.12$ ;  $p < .01$ ). The VIF values (teenager, 1.16; twenties age range, 2.41; thirties age range, 2.42; current financial problems, 1.39; and household finance, 1.26) indicated an absence of multicollinearity.

Similarly, the DASS-S scores were statistically associated with four flu-like symptoms (dizziness, headache, nasal discharge, and sore throat) and concerns about social support. These five factors were

entered into the multivariate regression model as independent variables (Table 4). The model was significant ( $F(5,130) = 3.61$ ; adjusted  $R^2 = .09$ ;  $p < .001$ ). The presence of nasal discharge (standardized coefficients = .19;  $t = 2.08$ ;  $p = .04$ ) and concerns about social support (standardized coefficients = .21;  $t = 2.30$ ;  $p = .02$ ) were independent contributors to DASS-S scores, after adjusting for all other variables in the model. The VIF values (dizziness, 1.12; headache, 1.24; nasal discharge, 1.21; sore throat, 1.54; and social support, 1.02) indicated an absence of multicollinearity.

## Discussion

Our results include three primary findings. First, the presence of depression, anxiety, and stress were identified in 17.7%, 12.5%, and 12.5% of pregnant women, respectively. Second, concerns about household finances independently contributed to the psychological impact of the COVID-19 outbreak. Third, the presence of nasal discharge and concerns about social support were significantly associated with perceived stress.

The prevalence of depression was relatively low (17.7%) as compared to the previous studies. even after considering that the DASS-21 was not meant for clinical use, and was not equivalent to other measures. During the COVID-19 outbreak, a study in China found depression in 29.6% pregnant women, and a study in Canada (Lebel et al. 2020) found it in 37.0%. A reason for the difference in prevalence may have been because participants who reported being under treatment for psychiatric disorders were excluded. However, their exclusion was necessary to minimize the influence of pre-existing psychiatric disorders on mental health conditions. Furthermore, Lee et al. (2006) pointed out the possibility that pregnant women who were strongly depressed or anxious might have been hesitant to visit a hospital during the SARS outbreak. Since the present study was conducted at a hospital, such hesitations might have caused a drop in the prevalence of depression as compared to studies carried out in the general population of pregnant women.

It is noteworthy that concerns about household finance independently contributed to psychological impact due to COVID-19 lockdown, whereas current financial problems lost their significance in the multivariable analysis. In other words, solving concerns about household finance could be more useful to buffer the psychological impact due to the COVID-19 lockdown, compared to direct financial support. This finding was understandable considering how critical expenditure for delivering a baby and subsequent nursing would be in the future. Moreover, since insufficient knowledge about COVID-19 was significantly associated with concerns about household finances, providing information on measures taken by the government or infection status could solve such concerns.

Insufficient social support due to the COVID-19 lockdown increased pregnant women's perceived stress. To interpret this finding, cultural backgrounds need to be considered. Since the Japanese family structure is characterized by a growing trend of nuclear families, a lot of housewives, and difficulties in taking paternal leaves, childcares often rely on relatives who live apart and public healthcare providers. Moreover, since it would be unusual to hire babysitters; continuous social isolation could result in

mothers nursing their children single-handedly. In the event of consultation with doctors, such mothers would have to take their babies along with them. We, therefore, suggest providing support that would combine social necessity and prevention of infection. Rasumussen et al. (2008) stated that a possible solution could be providing for the care of pregnant women by assigning for them separate locations and staff from infected patients. Constructing an online support system could also be helpful. Such child raising support could solve concerns to a certain degree, and consequently relieve perceived prenatal stress.

Among flu-like symptoms, nasal discharge strongly contributed to participants' distress. Since some studies reported that during quarantine due to pandemics, any physical symptoms cause excessive fear (Brooks et al. 2020; Rubin et al. 2016), it seems likely that flu-like symptoms could induce anxiety or distress about contracting the infection. However, nasal discharge is considered to be an infrequent and nonspecific symptom in COVID-19 cases. Since more specific symptoms such as cough or sore throat had no significant associations with distress, it was difficult to explain the fear of infection. Therefore, the result could reflect stress due to other clinical conditions that accompany nasal discharge. In fact, hay-fever was prevalent during the investigation period in Japan, and allergic rhinitis has been proven to have a negative impact on patients' psychological well-being (Kremer et al. 2002).

Unexpectedly, participants in their twenties had low IES-R scores. Moreover, their scores on the three DASS-21 subscales were relatively low, although the differences were not statistically significant. These results are inconsistent with those of previous studies. A population-based study in Ireland showed that younger age was a risk factor associated with screening positive for COVID-19 related post-traumatic stress disorder (Hyland et al. 2020). Wu et al. (2020) found that age under 35 was a risk factor for depression among pregnant women during the COVID-19 outbreak in China. The perceived threat to COVID-19 infection could be a reasonable explanation for this difference. The WHO reported that young healthy individuals have a low risk of infection and mortality due to COVID-19 (World Health Organization, 2020). The report has been widely covered by media and is well-known in Japan. Furthermore, a previous study in China was conducted before the WHO report. Thus, the possibilities in the present study for women in their twenties to feel less threatened by the COVID-19 infection.

The present study had some limitations. First, since it used an anonymous self-administered questionnaire, if the participants were unaware of complications, they could have been missed out medical information. Conversely, using an anonymous questionnaire had advantages in this study. A study showed that anonymity increased accuracy in evaluating sensitive topics such as mental health or infection by excluding the effect of stigma (Ong and Weiss 2000). As this study's primary purpose was to examine the psychological impact, its results were considered to have been slightly influenced by missed out information. Second, it was conducted in a single institution of a particular region—Tokyo, Japan. Although a lockdown was declared, the prevalence and mortality rates remained relatively low compared to those of other countries during the COVID-19 outbreak. In fact, no participants reported close contact with COVID-19 patients. Consequently, it is conceivable that contact history or fear of infection may dominantly influence mental health in areas where COVID-19 is more prevalent. Nevertheless, at a certain

time in pandemic phases, it should become more focused on worries and concerns about daily lives than on fears of infection; thus the present study's findings could be applied to such situations. To confirm and generalize the findings, further studies carried out in different backgrounds such as other regions or different levels of epidemic status are warranted.

## Conclusion

Our study showed that concerns about household finance and social support related to lockdown influenced psychological impact and perceived stress due to COVID-19 outbreak in pregnant women. Our hypothesis is that presenting measures and information to solve these concerns will relieve distress and contribute to the maintenance of pregnant women's mental health in pandemic situations.

## Declarations

### *Funding*

Not applicable

### *Conflicts of interest*

The authors declare that they have no conflicts of interest.

### *Ethics approval*

Approval was obtained from the ethics committee of our hospital [name deleted to maintain the integrity of the review process]. The procedures used in this study adhered to the tenets of the Declaration of Helsinki.

### *Consent to participate*

We used an anonymous questionnaire with a cover page explaining the study, and the submission of the questionnaire was considered as informed consent. The participants' anonymity was maintained throughout the study.

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## Tables

Table 1. COVID-19 knowledge and psychometrics according to socio-demographic variables

Variables	N (%)	COVID-19 knowledge		IES-R scores		DASS-D scores		DASS-A scores		DASS-S scores		
		Mean ± SD	p	Mean ± SD	p	Mean ± SD	p	Mean ± SD	p	Mean ± SD	p	
<b>Age group (year)</b>												
18~19	1 (0.7)	3	.75	23	.04*	10	.29	8	.32	8	.16	
20~29	36 (26.5)	3.1 ± 0.9		8.3 ± 8.7		3.6 ± 5.4		2.1 ± 2.7		4.1 ± 5.5		
30~39	83 (61.0)	2.9 ± 1.1		15.0 ± 12.8		5.4 ± 5.6		3.2 ± 4.9		7.2 ± 7.8		
40~49	16 (11.8)	2.9 ± 0.9		13.6 ± 13.2		4.3 ± 4.7		3.6 ± 4.6		5.8 ± 6.0		
<b>Marital status</b>												
Married	128 (94.1)	2.9 ± 0.9	.43	13.5 ± 12.3		4.8 ± 5.2	.20	3.0 ± 4.4	.63	6.3 ± 7.1	.29	
Engaged	5 (3.7)	2.8 ± 1.6		7.8 ± 8.6		7.2 ± 11.7		3.6 ± 5.4		7.6 ± 8.3		
Single	3 (2.2)	3.7 ± 1.5		4.7 ± 8.1		0		0.7 ± 1.2		0		
<b>Employment status</b>												
Self-employed	4 (2.9)	3.5 ± 1.9	.58	20.8 ± 29.8		6.5 ± 9.4	.03*	7.5 ± 11.4	.27	9.5 ± 15.1	.42	
Employed	34 (25.0)	3.0 ± 0.9		15.2 ± 11.3		6.4 ± 4.6		2.6 ± 3.7		7.8 ± 7.2		
Employed on maternal leave	37 (27.2)	3.0 ± 1.2		13.8 ± 15.1		3.2 ± 4.1		2.3 ± 4.4		5.2 ± 7.2		
Part-timer	11 (8.1)	3.3 ± 0.5		13.7 ± 10.8		4.7 ± 5.6		3.1 ± 4.0		7.1 ± 7.2		
Housewife	48 (35.3)	2.8 ± 0.9		10.8 ± 7.7		4.4 ± 5.4		3.3 ± 3.9		5.3 ± 5.8		
Unemployed	2 (1.5)	2.5 ± 2.1		0		14.0 ± 19.7		6.0 ± 8.5		10.0 ± 14.1		
Living with children	60 (44.1)	3.0 ± 1.0	.91	11.6 ± 10.9		3.8 ± 4.6	.05*	2.1 ± 3.0	.03*	6.0 ± 6.8	.79	
Obstetric complications	32 (23.5)	3.1 ± 1.0	.49	11.1 ± 10.2		3.8 ± 4.4	.23	2.3 ± 3.4	.27	5.6 ± 6.4	.59	
Physical comorbidities	18 (13.2)	2.8 ± 1.2	.41	14.2 ± 9.4	.69	7.7 ± 7.6	.02*	4.0 ± 3.6	.30	8.0 ± 7.6	.26	
History of psychiatric disorders	14 (10.3)	2.9 ± 0.9	.69	14.4 ± 9.9	.68	7.6 ± 7.4	.05*	5.4 ± 4.3	.03*	9.1 ± 6.4	.10	
<b>Variables</b>												
		Mean ± SD	COVID-19 knowledge		IES-R scores		DASS-D scores		DASS-A scores		DASS-S scores	
			r	p	r	p	r	p	r	p	r	p
Gestational week	27.6 ± 8.5		.12	.17	.10	.27	-.09	.32	.12	.16	.02	.79
Family size (n)	2.6 ± 1.1		-.04	.67	-.11	.21	-.17	.05*	-.11	.19	-.05	.54

Abbreviations: IES-R, the Impact of Event Scale-Revised; DASS-D, the depression domain of the short form of Depression Anxiety Stress Scale;

DASS-A, the anxiety domain of the short form of Depression Anxiety Stress Scale; DASS-S, the stress domain of the short form of Depression Anxiety Stress Scale

\* Statistically significant difference ( $p < .05$ )

Table 2. COVID-19 knowledge and psychometrics according to COVID-19 related information

Variables	N (%)	COVID-19 knowledge		IES-R scores		DASS-D scores		DASS-A scores		DASS-S scores	
		Mean ± SD	p	Mean ± SD	p	Mean ± SD	p	Mean ± SD	p	Mean ± SD	p
Any flu-like symptoms	29 (21.3)	2.9 ± 1.0	.88	14.9 ± 11.2	.37	8.2 ± 7.0	< .01*	5.2 ± 5.1	< .01*	10.1 ± 7.9	< .01*
fever (>37.5°C)	0 (0)										
chill	1 (0.7)	1	.05	0	.28	28	<.01*	12	.04*	20	.05
headache	10 (7.4)	2.3 ± 1.2	.03*	14.7 ± 10.6	.67	8.2 ± 8.4	.04*	3.6 ± 3.9	.66	8.6 ± 7.8	.27
muscleache	0 (0)										
cough	7 (5.2)	3.3 ± 0.5	.37	10.1 ± 7.8	.51	7.7 ± 4.7	.15	4.3 ± 5.1	.43	10.3 ± 6.7	.12
dyspnea	0 (0)										
dizziness	5 (3.7)	3.0 ± 1.2	.92	12.2 ± 13.9	.87	10.8 ± 11.1	.01*	6.4 ± 6.2	.08	12.4 ± 8.3	.05*
nasal discharge	11 (8.1)	2.7 ± 1.1	.43	17.4 ± 14.3	.23	11.3 ± 9.0	< .01*	7.3 ± 5.7	< .01*	12.5 ± 10.2	< .01*
sore throat	2 (1.5)	1	< .01*	17.0 ± 24.0	.65	22.0 ± 8.5	< .01*	8.0 ± 5.7	.11	22.0 ± 2.8	< .01*
Contact history with infected persons	3 (2.2)	3.7 ± 0.6	.21	9.0 ± 13.9	.56	6.0 ± 5.3	.71	6.0 ± 7.2	.23	8.0 ± 7.2	.66
<b>Changes in daily life</b>											
isolation from dependable relatives	51 (37.5)	3.0 ± 1.1	.56	12.8 ± 11.8	.83	5.6 ± 6.0	.22	3.6 ± 5.3	.18	6.9 ± 7.4	.39
working environment	39 (28.7)	3.0 ± 0.8	.89	15.4 ± 14.7	.16	6.3 ± 5.5	.05	3.5 ± 5.2	.41	7.4 ± 7.7	.23
current financial problems	10 (7.4)	2.4 ± 1.0	.06	20.4 ± 13.3	.05*	6.2 ± 4.9	.41	5.2 ± 4.7	.10	10.0 ± 8.9	.08
closure of nurseries	27 (19.9)	2.8 ± 1.0	.41	13.3 ± 12.6	.91	4.7 ± 4.7	.93	1.8 ± 2.8	.11	8.2 ± 7.3	.10
boredom	52 (38.2)	3.0 ± 1.1	.68	14.6 ± 13.4	.27	6.1 ± 6.1	.04*	3.7 ± 5.3	.15	7.3 ± 8.3	.15
<b>Worries and concerns</b>											
infection	131 (96.3)	2.9 ± 1.0	.05	13.4 ± 12.3	.12	4.9 ± 5.5	.32	3.1 ± 4.4	.12	6.4 ± 7.1	.18
household finances	31 (22.8)	2.5 ± 1.1	< .01*	19.0 ± 14.1	< .01*	5.7 ± 5.2	.33	4.5 ± 6.0	.04*	8.6 ± 8.5	.03*
social support	75 (55.2)	2.9 ± 1.1	.42	14.9 ± 13.3	.05	5.3 ± 5.2	.23	3.5 ± 4.9	.13	7.4 ± 7.5	.03*
Variables		Mean ± SD		IES-R scores		DASS-D scores		DASS-A scores		DASS-S scores	
COVID-19 knowledge		3.0 ± 1.0		-.17		-.11		-.04		-.06	
				.05		.20		.64		.52	

Abbreviations: IES-R, the Impact of Event Scale-Revised; DASS-D, the depression domain of the short form of Depression Anxiety Stress Scale;

DASS-A, the anxiety domain of the short form of Depression Anxiety Stress Scale; DASS-S, the stress domain of the short form of Depression Anxiety Stress Scale

\* Statistically significant difference ( $p < .05$ )

Table 3. Multiple regression analysis about IES-R scores

Variables	unstandardized coefficients (95%CI)	standardized coefficients	t value	p value
Age group				
18~19	3.03 (-21.88 – 27.93)		.02	.44
20~29	-5.31 (-12.25 – 1.63)		-.19	-1.24
30~39	1.03 (-5.27 – 7.32)		.04	0.39
Current financial problems	0.80 (-8.11 – 9.70)		.02	0.18
Concerns about household finances	6.97 (1.69 – 12.25)		.24	2.12
				.01*

Notes: multiple regression model:  $F = 3.61$ ,  $df = 5,130$ , adjusted  $R^2 = 0.09$ ,  $p = .004$

Abbreviations: IES-R, the Impact of Event Scale-Revised

\* Statistically significant difference ( $p < .05$ )

Table 4 Multiple regression analysis about DASS-S scores

Variables	unstandardized coefficients (95%CI)	standardized coefficients	t value	p value
Flu-like symptoms				
dizziness	4.02 (-2.42 - 10.47)	.14	1.23	.22
headache	-2.45 (-7.49 - 2.59)	-.4	-0.96	.34
nasal discharge	4.76 (0.23 - 9.29)	.19	2.08	.04*
sore throat	11.49 (-0.16 - 23.13)	.17	1.95	.05
Concerns about social support	2.68 (0.37 - 4.99)	.21	2.30	.02*

Notes: multiple regression model:  $F = 4.49$ , df = 6,129, adjusted  $R^2 = 0.13$ ,  $p < .001$

Abbreviations: DASS-S, the stress domain of the short form of Depression Anxiety Stress Scale

\* Statistically significant difference ( $p < .05$ )