

# Depressive Symptoms Among Migrant Workers in South Korea Amid COVID-19 Pandemic

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## ABSTRACT

**Background:** The purpose of this study was to investigate the depressive symptoms among migrant workers in South Korea amid the coronavirus disease 2019 pandemic.

**Methods:** This web-based cross-sectional survey involved migrant workers in South Korea to examine their depression levels using the Patient Health Questionnaire-9 scale. Logistic regression was used to find out the factors associated with depression.

**Results:** Migrant workers exhibited mild to severe depressive symptoms (98.4%) of which 41.7% had severe depression (n=161). Migrant workers aged above 25 years were shown to have a significantly higher level of depression (odds ratio=2.13, 95% CI: 1.084-4.193). Male workers (71.1%) had a higher depression level than females (28.9%). Losing a job during the coronavirus disease 2019 pandemic (odds ratio=3.89, 95% CI=1.705-8.906) and not having any social relief support (odds ratio=1.92, 95% CI: 1.109-3.351) were significantly associated with depression.

**Conclusion:** Migrant workers were found to be experiencing a severe level of depression. Mental healthcare should be prioritized and made accessible to vulnerable and risk groups.

## ARTICLE HISTORY

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**KEYWORDS:** COVID-19, depression, mental health, migrant worker

## INTRODUCTION

Coronavirus disease 2019 (COVID-19) pandemic has affected various facets of health severely. The COVID-19 pandemic causes mental drainage as it may add significant strains to the already multifaceted lives of migrants workers.<sup>1,2</sup> The COVID-19 pandemic has the propensity to exacerbate chronic mental disorders, particularly in vulnerable communities.<sup>1,3,4</sup> South Korea confirmed its first case of COVID-19 on January 20, 2020.<sup>5</sup> As of April 29, 2021, 121 351 cases of COVID-19 in South Korea have been confirmed, with 1825 deceased cases.<sup>6</sup> Regardless of whether or not individuals are exposed to the outbreak, the mental effects of pandemics can be intense.<sup>1,5,7,8</sup> While mental health became a major concern during the COVID-19 outbreak, the impact on the migrant workers' mental health has been still neglected.

Migrant workers in Korea are mainly from Asia's neighboring nations (1.27 million, 90%). Aside from Asia, North America has a considerable number of migrant workers (87 000, 6%). Migrants workers from Bangladesh, Uzbekistan, Cambodia, Sri Lanka, Pakistan, and Nepal were systematically recruited by Korean Government on Employment Permit System.<sup>9</sup> These migrants workers typically do manual labor and are more vulnerable to mental health problems

as a result of COVID-19.<sup>10-12</sup> Many published papers have addressed psychological and behavioral approaches to pandemic outbreaks.<sup>1,5,13-23</sup> During the COVID-19 pandemic, the mental disorder was the third most frequent underlying issue of those who died due to COVID-19 in South Korea.<sup>16</sup>

Implementing public health emergency preparedness is critical in cases of public health emergencies. The response of the public during a pandemic provides useful information for communication of health risks and successful changes in public behavior.<sup>1,11,16,24,25</sup> Though social distancing measures have stalled the spread of the disease, the unexpected job losses and increased demand for unemployment benefits have also produced significant psychological disorders.<sup>7,10,13,26-28</sup> The COVID-19 pandemic presents a scenario in which unprecedented numbers of people are at increased risk for mental distress with adverse psychological impacts. The severity of the effect on migrants workers should not be ignored.<sup>1,13,15,16,26</sup>

Despite the successful national mitigation of COVID-19 in Korea, the mental well-being among the population has yet to be thoroughly investigated.<sup>5,16</sup> Several studies can be found on depression, anxiety, and stress assessment in various settings.<sup>1,5,12-20,22-24,29-31</sup> However, there are limited

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studies that examine people's mental suffering during an epidemic or pandemic among migrant workers. Given that there is no quantitative literature solely focusing on the mental health impacts of COVID-19 among migrants workers in South Korea, our findings provide the first systematic investigation among this population on COVID-19 pandemic-related mental health issues. The purpose of this study was to investigate the depressive symptoms due to the COVID-19 pandemic among migrant workers in South Korea. We hypothesized that there will be a significant level of depression among migrant workers as a result of the COVID-19 pandemic. With the implementation of depression measures, we found evidence of severe depressive symptoms among migrant workers.

## METHODS

### Study Setting and Sample

The quantitative cross-sectional study was conducted among migrant workers in Korea to assess the prevalence of depression levels during the COVID-19 pandemic. Informed consent was also taken from each participant. Ethical approval was taken from IRB of Inje University, South Korea. (2020-CAA-10422). In this study, "Migrant worker is a person from another country who migrated to South Korea for the work purpose." Migrant workers over 18 years old, living in Korea for more than 1 year, and who were able to provide consent were included in the study. The sample size was calculated by using the formula:  $n = Z^2 pq / d^2$ , where  $n$  is the desired sample size for the study,  $Z$  is the standard normal variant that corresponds to 95% CI,  $p$  is the proportion of the estimated population = 50%,  $q = 1 - p = 0.5$ , and  $d = \text{precision} = 0.05$ .

With a proportion ( $p$ ) of 50%, at a CI of 95%, and a 5% margin of error, the sample size for this study was 385. Convenience and snowball sampling methods were used for the sampling purpose. Altogether, 393 migrant workers participated in this study, but only 386 completed the survey. A total of 386 migrant workers from South Korea were included in the final study sample. Two-hundred seventy-four were (71%) male and 112 (29%) were female. Migrant workers over 18 years old, living in South Korea for more than 1 year, and who were able to provide the consent were included in the study. The informed consent was

taken from all participants included in the online survey form. The information regarding the research purpose, and the confidentiality of information was provided to all migrant workers.

### Data Collection and Statistical Analysis

The quantitative data were collected from October 13 to 21, 2020, using an e-questionnaire that consists of informed consent, demographic data, and depression (Patient Health Questionnaire (PHQ)-9) scale. As the South Korean government implemented COVID-19 restrictive control measures, the online anonymous survey questionnaire was designed with a Google survey tool and distributed on various social media platforms (Facebook pages/groups for migrant workers, Kakaotalk, WhatsApp, and Viber). The survey questionnaire was conducted in the English language. The data were analyzed using Statistical Package for the Social Sciences (SPSS) version 23.0 (IBM SPSS Corp.; Armonk, NY, USA). Descriptive statistical analysis was performed for basic information on migrant workers and depression responses. Binary logistic regression was used to find out the determinants of the depressive symptoms among migrant workers based on the PHQ-9 score. For each test, a  $P$  value  $< .05$  was considered statistically significant.

### Variables

**Demographic Variables:** Age of the migrants (18-25, 26-30, and  $>30$ ), gender (male and female) marital status (married and single), education level (primary, high school, and graduate), employment status, income ( $< \$2000$ ,  $\$2000-3000$ ,  $> \$3000$ ), residency (rural and urban), living type (alone and with family), work situation during COVID-19 pandemic (work from home, company, lost a job, and not working), previous health conditions (yes and no), and social relief fund from the South Korean government (yes and no) were assessed as independent variables for the study.

**Depression:** The primary outcome variable was depressive symptoms. Depression was assessed with the use of the PHQ-9. The reliability coefficient, Cronbach's alpha for the PHQ-9 total score was 0.91. The PHQ-9 was found to be a useful tool with a sensitivity of 88% and specificity of 88% for the assessment of major depression among the population.<sup>18,32</sup> The scores in PHQ-9 range from "0 = not at all" to "3 = nearly every day." The levels of depression for the study were categorized as non-minimal = 0-4, mild = 5-9, moderate = 10-14, moderately severe = 15-19, and severe = 20-27.<sup>32,33</sup> Furthermore, for logistic regression analysis purpose, the score was further dichotomized as participants with depression (the PHQ-9 score  $> 10$ ) and normal (the PHQ-9 score  $\leq 10$ ).<sup>18,34</sup>

## RESULTS

Most of the migrant workers were aged 26-30 years (45.1%) and were males (71%). More than half were living alone

### MAIN POINTS

- Migrant workers exhibited mild to severe depressive symptoms with the prevalence of severe depression.
- There is no quantitative literature that exists solely focusing on the mental health impacts of coronavirus disease 2019 (COVID-19) among migrants workers in South Korea.
- Our findings provide the first systematic investigation among this population on COVID-19 pandemic-related mental health issues.

(56.7%), employed (66.8%), and married (63%). Nearly two-quarters of workers were living in the capital area. Migrant workers were found to be diagnosed with a history of chronic disease (10.1%) and psychiatric condition (7.5%). None of the immigrants were found to be infected with COVID-19. Migrant workers were primarily worried about the impact of the COVID-19 pandemic on their social life (72%) and losing their jobs (49.2%) (Table 1). One-hundred sixty-one migrant workers (41.7%) were found to have a severe level of depression followed by moderately severe depression (24.9%) as shown in Figure 1.

Among migrant workers, 380 (98.4%) exhibited depressive symptoms from mild to severe. Female workers (28.9%) had a lower depression level as compared to male workers (71.1%). Migrant workers aged above 25 years (82.1%), married (61.9%), and living alone (55.9%) were more prone to mild to severe depressive disorders. Depressive symptoms were more prevalent among the migrant workers (44.1%) having a monthly income of less than \$2000. Among

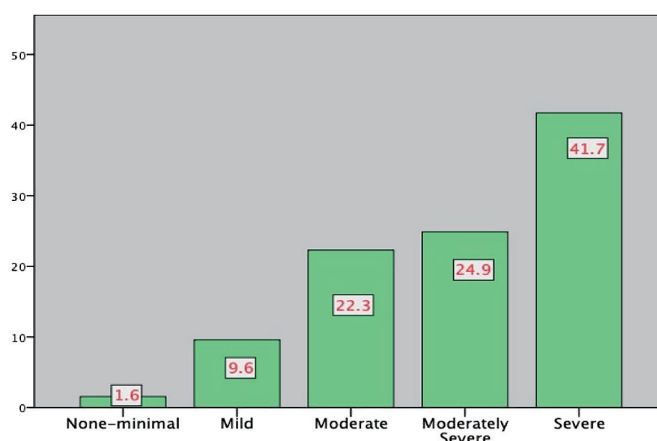


Figure 1. Depression level among migrant workers (%).

the migrant workers who have a history of chronic disease, the severe depression level was found to be 35.9%. The migrants with a history of psychiatric conditions were

Table 1. Information of the Migrant Workers for Various Selected Variables

Variable	Frequency	%
Age		
18-25 years	64	16.6
26-30 years	174	45.1
>30 years	148	38.3
Gender		
Male	274	71.0
Female	112	29.0
Education status		
Primary	51	13.2
High school/college	178	46.1
Bachelor/MS/PhD	157	40.7
Marital status		
Single	143	37.0
Married	243	63.0
Living type		
Alone	219	56.7
With family	167	43.3
Employment		
Yes	258	66.8
No	128	33.2
Monthly income (USD)		
<2000	172	44.6
2000-3000	145	37.6
>3000	69	17.9
Residence		
Seoul	99	25.6
Gyeonggi	90	23.3
Gangwon	71	18.4
Chungcheong	50	13.0

Variable	Frequency	%
Gyeongsang	52	13.5
Jeolla	24	6.2
Work situation during COVID-19 outbreak		
Work from home	32	8.3
Work in the company	224	58.0
Lost a job due to COVID-19	105	27.2
Not working before & during the COVID-19 outbreak	25	6.5
Diagnosed with any psychiatric condition		
Yes	29	7.5
No	357	92.5
Diagnosed with any chronic medical disease		
Yes	39	10.1
No	347	89.9
Relief fund		
Yes	151	39.1
No	235	60.9
COVID-19 infection		
Yes	0	0
No	386	100
Main worries due to COVID-19 outbreak (multiple responses)		
I may get infected with COVID-19	182	47.2
Family may get infected with COVID-19	155	40.2
Affect on social life	278	72.0
Affect on study	57	14.8
Affect on general health	180	46.6
Lose a job	190	49.2
Not worried	5	1.3

COVID-19, coronavirus disease 2019.

**Table 2.** Depression Level Among Migrant Workers During COVID-19 Pandemic

Variable	Depression Level (PHQ-9 Scale)				
	None-Minimal	Mild	Moderate	Moderately Severe	Severe
<b>Age</b>					
18-25 years	1 (0.3)	11 (2.8)	16 (4.1)	19 (4.9)	17 (4.4)
26-30 years	2 (0.5)	18 (4.7)	39 (10.1)	41 (10.6)	74 (19.2)
>30 years	3 (0.8)	8 (2.1)	31 (8)	36 (9.3)	70 (18.1)
<b>Gender</b>					
Male	4 (1)	26 (6.7)	62 (16.2)	69 (17.9)	113 (29.3)
Female	2 (0.5)	11 (2.8)	24 (6.2)	27 (7)	48 (12.4)
<b>Education status</b>					
Primary	4 (1)	3 (0.8)	14 (3.6)	12 (3.1)	18 (13.2)
High school/college	2 (0.5)	19 (4.9)	40 (10.4)	44 (11.4)	73 (18.9)
Bachelor/MS/PhD	0 (0)	15 (3.9)	32 (8.3)	40 (10.4)	70 (18.1)
<b>Marital status</b>					
Single	2 (0.5)	16 (4.1)	30 (7.8)	38 (9.8)	57 (14.8)
Married	4 (1)	21 (5.4)	56 (14.5)	58 (15)	104 (26.9)
<b>Employment</b>					
Yes	6 (1.6)	30 (7.8)	60 (15.5)	60 (15.5)	102 (26.4)
No	0 (0)	7 (1.8)	26 (6.7)	36 (9.3)	59 (15.3)
<b>Living type</b>					
Alone	3 (0.8)	19 (4.9)	45 (11.7)	57 (14.8)	95 (24.6)
With family	3 (0.8)	18 (4.7)	41 (10.6)	39 (10.1)	66 (17.1)
<b>Monthly income (USD)</b>					
<2000	2 (0.5)	17 (4.4)	37 (9.6)	47 (12.2)	69 (17.9)
2000-3000	3 (0.8)	16 (4.1)	36 (9.3)	32 (8.3)	58 (15)
>3000	1(0.3)	4 (1)	13 (3.4)	17 (4.4)	34 (8.8)
<b>Work situation amid COVID-19 outbreak</b>					
Work from home	0 (0)	5 (1.3)	5 (1.3)	8 (2.1)	14 (3.6)
Work in the company	6(1.6)	23 (6)	55 (14.2)	52 (13.5)	88 (22.8)
Lost a job	0 (0)	5 (1.3)	16 (4.1)	29 (7.5)	55 (14.2)
Not working before & during COVID-19	0 (0)	4 (1)	10 (2.6)	7 (1.8)	4 (1)
<b>Residence</b>					
Capital area	2 (0.5)	19 (4.9)	39 (10.1)	45 (11.7)	84 (21.8)
Non-capital area	4 (1)	18 (4.7)	47 (12.2)	51 (13.2)	77 (19.9)
Diagnosed with chronic medical disease (n=39)	0 (0)	2 (5.1)	10 (25.7)	13 (33.3)	14 (35.9)
Diagnosed with psychiatric condition (n=29)	0 (0)	2 (6.8)	9 (31)	9 (31.1)	9 (31.1)
<b>Relief fund</b>					
Yes	3 (0.8)	18 (4.7)	54 (14)	32 (8.3)	44 (11.4)
No	3 (0.8)	19 (4.9)	32 (8.3)	64 (16.6)	117 (30.3)

COVID-19, coronavirus disease 2019.

found to be suffering from moderately severe to severe depression disorder (62.2%). Those migrants who received the relief funds and support (11.4%) from the Korean government amid the COVID-19 pandemic had a lower severe depression level than migrants who did not receive any relief funds (30.3%) (Table 2).

The migrant workers who lost their job due to the COVID-19 outbreak were 3.9 times (95% CI: 1.705-8.906) more likely to be depressed than migrants who were working during the COVID-19 pandemic. The migrant workers who did not receive any relief funds and support from the Korean government during the COVID-19 pandemic

**Table 3.** Logistic Regression Analysis for Depression Disorders Based on the PHQ-9 Tool

Variables	Depression Status		B	P	OR (95% CI)
	Normal	Depressed			
Age				.028*	2.132 (1.084-4.193)
≤ 25 years <sup>ref</sup>	17 (4.4)	47 (12.2)	1.000		
>25 years	52 (13.5)	270 (69.9)	0.757		
Gender				.286	0.724 (0.399-1.311)
Male <sup>ref</sup>	47 (12.2)	227 (58.8)	1.000		
Female	22 (5.7)	90 (23.3)	-0.324		
Education status				.324	1.316 (0.763-2.269)
College level <sup>ref</sup>	44 (11.4)	185 (47.9)	1.00		
Higher degree level	25 (6.5)	132 (34.2)	0.274		
Marital status					
Single <sup>ref</sup>	28 (7.3)	115 (29.8)	1.000	.238	1.414 (0.795-2.517)
Married	41 (10.6)	202 (52.3)	0.347		
Living type				.056	0.574 (0.325-1.014)
Alone <sup>ref</sup>	34 (8.8)	185 (47.9)	1.000		
With Family	35 (9.1)	132 (34.2)	-0.555		
Employment				.001*	3.629 (1.794-7.314)
Yes <sup>ref</sup>	58 (15)	200 (51.8)	1.000		
No	11 (2.8)	117 (30.3)	1.289		
Monthly income				.210	0.701 (0.402-1.222)
<2000\$ <sup>ref</sup>	28 (7.3)	114 (37.3)	1.000		
>2000\$	41 (10.6)	173 (44.8)	-0.356		
Residency				.560	1.178 (0.679-2.046)
Capital area <sup>ref</sup>	35 (9.1)	154 (39.9)	1.000		
Non-capital area	34 (8.8)	163 (42.2)	0.164		
Work situation during the COVID-19 outbreak				.001*	3.897 (1.705-8.906)
Working <sup>ref</sup>	56 (14.5)	200 (51.8)	1.000		
Lost a job	13 (3.4)	117 (30.3)	1.360		
Diagnosed with any psychiatric condition				.751	0.831 (0.265-2.605)
Yes <sup>ref</sup>	5 (1.3)	24 (6.2)	1.000		
No	64 (16.6)	293 (75.9)	-0.185		
Diagnosed with any chronic medical disease				.395	0.623 (0.209-1.854)
Yes <sup>ref</sup>	5 (1.3)	34 (8.8)	1.000		
No	64 (16.6)	283 (73.3)	-0.473		
Relief fund				.020*	1.928 (1.109-3.351)
Yes <sup>ref</sup>	36 (9.3)	115 (29.8)	1.000		
No	33 (8.5)	202 (52.3)	0.657		

\*Statistically significant at  $P < .05$ .

ref, Reference group; OR, odds ratio.

were 1.9 times (95% CI: 1.109-3.351) more likely to suffer from depression than the migrants who received the relief funds. The migrants who were not employed were found to suffer 3.6 times more from depression (95% CI: 1.794-7.314) compared with the migrant workers who were employed during the COVID-19 pandemic. Migrant workers aged above 25 years tend to have 2.1 times more high

depressive symptoms (95% CI: 1.084-4.193) than migrants aged ≤ 25 years (Table 3).

## DISCUSSION

Migrant workers suffered from severe depressive symptoms (41.7%) amid the COVID-19 pandemic, which exceeded the

previously reported depression prevalence rate.<sup>1,14,16,18,24</sup> Our research indicates that migrant workers encounter an unprecedented occurrence of depressive symptoms in this global pandemic situation. There was no significant association between gender and depression,<sup>12,18</sup> but migrant workers above 25 years were more likely to suffer from severe depressive symptoms.<sup>14</sup> Previous findings found that the employment condition, validated by our study, strongly correlated with depression.<sup>27,35</sup> The sudden job loss has placed migrant workers in worse conditions, impacting their mental well-being.<sup>14,27</sup> No statistically significant correlation was observed between other socio-demographic variables, such as income, marital status, education, with depression level. On the contrary, only a few studies have established a substantial correlation with education, income, marital status.<sup>14,25</sup> Our research showed that residency did not affect the level of depression supported by the study carried out in Korea among migrant workers.<sup>12</sup> The living type was associated with depression and people living with the family were more likely to suffer from depressive symptoms than those living alone.<sup>18</sup> There was also no statistical connection in our study supported by other studies<sup>14,16,24</sup>; however, immigrants living alone suffered from moderate to extreme anxiety than living with family.

Workers with a history of chronic disease and psychological illness have not been statistically linked with depression levels found to be identical to prior research outcomes.<sup>12,14,36</sup> Social relief support was found to be associated with the prevalence of depressive symptoms among migrant workers. The study from Korea also showed that social support was associated with depression and stress among migrant workers.<sup>12</sup> The low-income migrant workers were found to be more vulnerable to psychological disorders during the COVID-19 pandemic.<sup>1,7,36</sup> This study also found that migrant workers with low income were suffering from moderate to severe levels of depressive symptoms.

Our results indicate that the COVID-19 pandemic has had a substantial psychological impact on the mental health of migrant workers in South Korea, with elevated rates of depressive symptoms. Consequently, coping strategies are critical for those suffering from mental health issues during pandemics. To minimize the amount of depression triggered by unexpected outbreaks, coping strategies such as cognitive and behavioral treatments are necessary.<sup>23,37</sup> The proper selection and implementation of coping strategies can also aid in the management of depression and the reduction of extreme negative emotions such as suicide.<sup>37</sup> Our findings suggest that, in the context of COVID-19, psychological intervention and coping strategies for depression reduction are urgently required. Migrant workers' mental health has not yet been quantified, so further research is needed on this issue. To mitigate the health inequities and financial burdens during an outbreak, the care of vulnerable populations should be highlighted.

There are some limitations to this study. Since it was a cross-sectional study, the causality cannot be attributed to the findings in the regression models. The study design was convenience sampling due to a lack of resources and strict lockdown measures during the COVID-19 pandemic. As our study was conducted online, the face-to-face survey and focused discussion might have provided an in-depth assessment of depressive symptoms among migrant workers. With limited studies focusing on the mental health of migrant workers, our study emphasizes the significance of mental health resources to adequately access migrant workers during this critical period. Mental healthcare interventions should be made accessible to vulnerable communities.

**Ethics Committee Approval:** Ethics committee approval was received from IRB of Inje University, South Korea (2020-CAA-10422).

**Informed Consent:** Informed consent was obtained from participants who participated in this study.

**Peer-review:** Externally peer-reviewed.

**Author Contributions:** Concept - S.R.A.; Design & Supervision - D.H.M., Y.C.S.; Resource - S.R.A.; Materials - S.R.A., Data Collection and/or Processing - S.R.A.; Analysis and/or Interpretation - S.R.A.; Literature Review - S.R.A.

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