

Depressive Tendency among Care Workers in Long-Term Care Facilities for Older Adults and the Predictive Effects of the COVID-19 Pandemic in Japan: From the Viewpoint of Workplace Social Capital

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Abstract Objectives: This study aims to clarify the state of depressive tendencies among care workers in long-term care facilities for older adults during the COVID-19 pandemic and examine the effect of workplace social capital. **Methods:** In March 2021, when the second state of emergency was declared in metropolitan areas, we conducted an online survey of care workers in long-term care facilities. Participants included 2,658 qualified care workers who provided care services directly to older adults. **Results:** Hierarchical linear regression analysis showed that the increase in workload and tension at work due to the COVID-19 pandemic had a significant positive effect on depressive tendencies among care workers. It also showed that workplace social capital had a significant negative effect on depressive tendencies. **Conclusion:** The results indicate that increased workload and tension among care workers due to the pandemic are associated with depressive tendencies. These results suggest that workplace social capital plays an important role in reducing depressive tendencies.

Key words: COVID-19, certified care worker, long-term care, facility, depressive tendency, workplace social capital

I. Introduction

COVID-19 has spread worldwide and poses a serious threat to human health. On January 30, 2020, the World Health Organization (WHO) declared that the outbreak constituted a public health emergency of international concern (WHO, 2020a). In Japan, the first state of emergency declaration was issued for seven prefectures on April 7 and was expanded nationwide on April 16. However, despite various measures to prevent the spread of the virus, the second state of emergency declaration was issued for four

prefectures on January 8, 2021, and extended to 11 prefectures thereafter. Furthermore, the emergency period was extended twice, and the second declaration was canceled on March 21.

The crises caused by the pandemic have been revealed slowly, with prolonged recovery. One such crisis is the increasing danger to psychological health (WHO, 2020b). This is a serious problem in Japan. The number of applications for occupational compensation insurance for mental disorders in 2020 was 2,051, accounting for 72.4% of all applications (Ministry of Health, Labour and Welfare, 2021). According to the middle classification by industry, the numbers of worker claims and payment decisions for social insurance, social welfare, and long-term care (LTC) services were 275 and 79, respectively.

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However, there is little evidence to support the mental health of care workers during the pandemic.

According to a survey conducted in 2019, 95.3% of the 5,400 respondents who work in long-term care facility services had concerns, anxieties, or dissatisfaction with their work. Moreover, 79.2% of them had worries, anxieties, or dissatisfaction associated with difficult relationships with colleagues or their supervisors (Care Work Foundation, 2021). Therefore, human relationships in the workplace have become a major issue for Japanese care workers. Differences in values and difficulties in collaborating with colleagues present other significant stressors for care workers (Furukawa, 2015).

Stress responses such as depression are negative emotions caused by stressors. In Kosugi et al.'s (2004) psychological workplace stress model, the quality and quantity of workplace stressors are expressed as a stress response through the reduction effect of coping, including individual resources, such as social support. Matsuda & Tayama (2012) state that negative life events (activating events) are fundamental, and depressive feelings (consequences) are triggered through cognitive processes.

Research on stress among care workers in Japan dates back to the 1980s when many studies were conducted. According to one report, stress is more common in interpersonal support work (Masuda et al., 2003). Studies have shown that care workers experience intense stress (Ogawa & Nagata, 2007; Hayashi et al., 2010). Specifically, care workers in long-term care facilities are more prone to depression than those in other types of care services (Harada & Miyawaki, 2013). A follow-up study in the public sector showed that the onset of depression and recovery is associated with psychosocial factors in the workplace (Tatsuse et al., 2019).

As a countermeasure, it is important to reduce stressors in the workplace with the support of a supervisor and improve social skills and workers' ability to respond to older adults (Usami et al., 2018). In addition to the stress highlighted in the

past, government support for long-term care providers was less than that for medical institutions during the COVID-19 pandemic (Dominelli et al., 2020). Long-term care facilities for older adults are not only exposed to the threat of infectious diseases but also an increased burden on care workers. Therefore, there is a strong need to understand the mental health situation of care workers and establish more effective measures to relieve depressive tendencies. Considering the issues related to relationships among care workers and the importance of team approaches in long-term care services, we focused on social capital. Social Capital has proven to reduce the risk of depression (Kouvonen et al., 2008; Oksanen et al., 2010) and verified the negative predictive effect on depression among facility care workers.

Social capital (SC) refers to characteristics such as networks, norms, and social trust that promote cooperation for coordination and mutual benefit within a community or group (Putnam, 1995). Several studies have reported an association between social capital and health. Social capital structure is a determinant of population health, and strengthening social capital is an important method for reducing health-related socioeconomic disparities (Wilkinson, 2005). In a cross-sectional study in the United States, compared to states with high social capital, the odds ratio of normal or low self-rated health in states with low social capital was 1.41 (Kawachi, 1999). In a cross-sectional study in Hungary, social capital was significantly associated with mortality due to the lack of societal support among men and the perception of the principles of mutualism among women (Skrabski et al., 2003). A mixed study of caregivers in Peru and Vietnam found that the perception of the concept of community differed greatly depending on cultural and geographical norms (Silva et al., 2006).

The mainstream evaluation of community social capital has been applied to workplaces to determine the reliability and validity of the workplace social capital (WSC) scale, which consists of eight items (Kouvonen et al., 2006). This scale

is widely used in occupational stress research (Oksanen et al., 2013). Kouvonen et al. (2006) considered workplace social capital a multifaceted concept. It includes reciprocity in the workplace, mutual aid, and cooperative interpersonal relationships that transcend differences in position, finding that networks and norms are particularly common components. The definition of workplace social capital in this study complies with that of Kouvonen et al. (2006). In a prospective cohort study of the public sector in Finland, workers with lower social capital were more likely to be diagnosed with depression (Kouvonen et al., 2008). The rate was 20–50% higher than that of workers with higher workplace social capital scores. In a study in Iran, the prevalence of psychological distress was 2.11 times (95%) higher among employees with low individual-level workplace social capital and 2.64 times higher among those with low unit-level workplace social capital (Firouzbakht et al., 2018). Hence, high workplace social capital is associated with a reduced risk of psychological distress. Furthermore, the promotion of workplace social capital is a means of decreasing mental health risks among workers in their workplace. Although a systematic review of the association between social capital and mental health showed that mental health has improved over time, the evidence remains inadequate (Flores et al., 2018). A study in Japan showed that workplace social capital is a protective factor against the risk of deterioration in a major depressive episode (MDE) (Sakuraya et al., 2017).

Previously, no study has focused on the association between depressive tendencies and workplace social capital among care workers in long-term care services for older adults in Japan. Therefore, we investigated depressive tendencies in long-term care workers during the COVID-19 pandemic when some areas were under a second state of emergency. In this study, based on the psychological workplace stress model, we clarified depressive tendency as a stress response and examined the predictive factors among facility care workers. In addition, we tested the effects of

workplace social capital as a coping measure, based on the hypothesis that it has a negative predictive effect on depressive tendencies among long-term care workers, even during the pandemic. These findings should provide evidence for understanding the actual depressive levels of care workers during this historic pandemic and examining measures to reduce them. If high workplace social capital is associated with a reduction in depressive tendency, interventions from a workplace social capital perspective will be an effective measure for health promotion among care workers.

II. Materials and methods

1. Participants

We conducted an online survey from March 10 to 16, 2021, when the second state of emergency was declared in four prefectures. Participants were registered members of an online survey company. A total of 15,938 members were listed as certified care workers with a national qualification (Kaigofukushishi) or as related medical workers living in Japan. The online survey company contacted registrants to complete the survey and ceased recruitment when the total number of participants reached the target number. We screened them using the following criteria.

- (a) working in a long-term care facility for older adults
- (b) handling direct care for older adults

Based on these criteria, the number of valid responses was 2,704. We used data from 2,658 individuals and excluded outliers based on DFBETAs. The average age of the participants was 47.3 years (range: 20–74 years, $SD = 10.0$ years), and 59.9% were women.

2. Measures

2.1. Objective variable

For the objective variable, we used the Toho University Self-Rating Questionnaire for Depression (SRQ-D), whose reliability and validity have been verified by Abe et al. (1972). It was

devised to screen for mild and masked depression. The SRQ-D scale includes 18 items, and no points were added to Questions 2, 4, 6, 8, 10, and 12. The scale was evaluated using a 4-point Likert scale (0 = "No,"... 3 = "Always"). In the analysis, according to the SRQ-Devaluation criteria, 16 points or more out of 36 is rated as 1 "depressive tendency" (844, 31.8%), and less than 16 points are rated as 0 "no depressive tendency." The total scores were used for regression analysis.

2.2. Explanatory variables

The explanatory variables included demographics, education, employment, facility status, and items related to pandemic and workplace social capital. Demographic variables included age, sex, education, marital status, and self-rated health. Education was divided into 1 "more than four-year college" or 0 "less than four-year college." Employment variables included types of employment, presence or absence of job position, number of years worked at their current facility, average working hours per day including overtime, and average number of night shifts per month. Employment types were divided into regular (full-time) and non-regular, including part-time, contract, dispatched, and temporary employees. Leaders, chiefs, section chiefs, and managers were included in descending order. The status of the facility includes the number of staff members, number of residents, and population size of the city, town, or village in which the facility is located. Locations are defined as "large cities," ordinance-designated cities as "small and medium-sized cities" for cities with a population of around 100,000, and "towns and villages" for less than that.

The most important explanatory variables in this study were related to the COVID-19 pandemic and workplace social capital. These include whether the facility is located in the area under the second state of emergency declaration. It also includes how the area relates to the situation of care workers inside and outside the facility. The four prefectures under the declaration during the survey period, Tokyo, Saitama,

Kanagawa, and Chiba, were designated as 1 "emergency state area," and the others were designated as 0 "non-emergency state area." non-emergency state areas. The situation inside and outside care work consisted of three questions: "Has the workload increased consequent to the COVID-19 pandemic?" "Have you been feeling increasingly tense during work due to the COVID-19 pandemic?" and "Have you refrained from going out to prevent COVID-19 infections?" The questions were answered using a five-point Likert scale (0 = "strongly disagree,"... 4 = "strongly agree"). In the analysis, those who answered 4 ("strongly agree") and 3 ("agree a little") were defined as 1, "perceived effect," and the others were rated as 0, "no effect."

Regarding the workplace social capital scale, we used the Japanese version of a scale developed by the Finnish Public Sector Study (FPSS) and validated by Kouvonen et al. (2006) to assess social capital at the individual-level. Table 1 presents the eight items on the scale. Odagiri et al. (2010) verified its reliability and validity in Japan. The workplace social capital scale consists of eight items, and responses are given on a 5-point rating scale (0 = "strongly disagree," ... 4 = "strongly agree"). This scale was designed to measure both the cognitive and structural elements of social capital. In this study, based on the verification results of Kouvonen et al. (2006) and the factor analysis results obtained using the maximum likelihood method with ProMax rotation, the average value of the eight items was calculated without classification by elements or morphological types. To examine the internal consistency of the scale, we calculated Cronbach's α coefficient, which showed a high value of 0.95.

3. Statistical analysis

A chi-square test and *t*-test were performed to examine the relationship between the explanatory variables and depressive tendencies. To verify the factors related to depressive tendency and calculate the effect size (β) of different models, a hierarchical linear regression analysis was con-

Table 1 Workplace Social Capital Item

| | Items |
|---------|--------------------------------------------------------------------------------------------------------|
| Item 1. | Our supervisor treats us with kindness and consideration. |
| Item 2. | Our supervisor shows concern for our rights as an employee. |
| Item 3. | We have a 'we are together' attitude. |
| Item 4. | People keep each other informed about work-related issues in the work unit. |
| Item 5. | People feel understood and accepted by each other. |
| Item 6. | Do members of the work unit build on each other's ideas in order to achieve the best possible outcome? |
| Item 7. | People in the work unit cooperate in order to help develop and apply new ideas. |
| Item 8. | We can trust our supervisor. |

1 = fully disagree; indicative of low social capital; 5 = fully agree; indicative of high social capital; except item 7, where 1 = very little, 5 = very much.

From Kouvonen A, Kivimäki M, Vahtera J, et al. (2006). Psychometric evaluation of a short measure of social capital at work. *BMC Public Health* 6: 251.

ducted with the SRQ-D score as the objective variable. In Model 1, the demographic variables were input as covariates. In Model 2, the variables related to employment status were input. In Model 3, the variables related to the facilities where care workers were engaged were input. In Model 4, variables related to COVID-19 were used as inputs. Lastly, in Model 5, we inputted workplace social capital and verified its explanatory effect.

This correlation was confirmed to exclude the effect of the variance inflation factor (VIF). The intraclass correlation coefficient (ICC) of the depressive tendency score was 0.1 or less within prefectures. The significance level was 0.05 (both sides), and IBM SPSS Statistics for Windows version 27.0 (IBM Japan, Tokyo) was used for this analysis.

III. Ethical approval

This study was approved by the Ethics Review Committee of the Human Sciences Research Center of Waseda University (approval number: 2020-374). The online survey was conducted after clearly stating that cooperation in this survey was voluntary and that the data were limited to research using anonymously processed information on the first screen. The questionnaire provided consent to participate in the survey.

IV. Results

1. Depressive tendency and explanatory variables

The mean SRQ-D score was 13.1 ($SD = 7.0$). According to a survey by Matsuda & Tayama (2012) using the same scale, the mean score was 12.3, and vocational school students in Japan were 10.98 ($SD = 6.15$). According to the survey results of Kimura et al. (2016), the score of 168 Japanese working adults was 9.2 ($SD = 4.3$). The depression score among care workers in the COVID-19 group exceeded these scores by two or more points. The mean workplace social capital score in this survey was 2.16 ($SD = 0.94$). According to a survey by Iida et al. (2020), using the same scale, the mean score among 317 Japanese healthcare workers was 3.72 ($SD = 0.7$). According to research by Oksanen et al. (2011), the score among 28,043 public-sector employees in Finland was 3.59 ($SD = 0.65$). The workplace social capital score among care workers in the COVID-19 group was below this score by one or more points.

Table 2 presents the distribution and results of the relationship between depressive tendencies and each explanatory variable in care workers. Regarding the demographic variables, younger people were significantly more likely to be depressed. Those who had no spouse or answered that their health status was poor and

Table 2 Differences in Depressive Tendency and Each Explanatory Variable

| | | depressive tendency | | | | Chi-square or | | df |
|------------------------------------------|------------------------------|---------------------|-------------|-------------|-------|---------------|------|-----|
| | | % | (n) | % | (n) | t value | | |
| demographic | age | mean ± SD | 45.3 ± 9.2 | 48.2 ± 10.2 | 1808 | 7.47 | 1808 | *** |
| | sex | women | 58.3 (492) | 60.6 (1100) | 1 | 1.32 | 1 | |
| | | men | 41.7 (352) | 39.4 (714) | | | | |
| | education | above university | 20.7 (175) | 22.4 (406) | 1 | 0.91 | 1 | |
| | | under university | 79.3 (669) | 77.6 (1408) | | | | |
| | marital state | with spouse | 43.0 (363) | 52.7 (956) | 1 | 21.64 | 1 | *** |
| | | without spouse | 57.0 (481) | 43.0 (858) | | | | |
| | self-rated health | good | 12.7 (107) | 29.1 (527) | 2 | 317.6 | 2 | *** |
| | | normal | 49.1 (414) | 60.8 (1103) | | | | |
| | | poor | 38.3 (323) | 10.1 (184) | | | | |
| employment | employment type | full-time | 77.5 (654) | 69.5 (1260) | 1 | 18.42 | 1 | *** |
| | | part-time | 22.5 (190) | 30.5 (554) | | | | |
| | middle manager or supervisor | yes | 27.0 (228) | 23.9 (433) | 1 | 3.05 | 1 | |
| | | no | 73.0 (616) | 76.1 (1381) | | | | |
| years of working at current place | mean ± SD | 6.0 ± 3.5 | 6.2 ± 3.4 | | 1.25 | 1606 | * | |
| working hours for day shift | mean ± SD | 7.8 ± 2.2 | 7.5 ± 2.2 | | -3.33 | 2656 | † | |
| number of night shifts per month | mean ± SD | 3.8 ± 3.3 | 3.5 ± 3.4 | | -1.86 | 1702 | † | |
| facility status | population | large city | 21.6 (182) | 26.5 (480) | 2 | 10.26 | 2 | ** |
| | | small/medium city | 62.6 (528) | 60.9 (1105) | | | | |
| | | village/ town | 15.9 (134) | 12.6 (229) | | | | |
| | number of staff | mean ± SD | 59.2 ± 31.6 | 55.9 ± 32.1 | | -2.47 | 2656 | * |
| number of residents | mean ± SD | 57.4 ± 32.3 | 56.9 ± 32.4 | | -0.38 | 2656 | † | |
| related factors of the COVID-19 pandemic | emergency state area | yes | 23.8 (201) | 26.2 (476) | 1 | 1.79 | 1 | |
| | | no | 76.2 (643) | 73.8 (1338) | | | | |
| | increase in work load | yes | 63.0 (532) | 37.0 (988) | 1 | 17.27 | 1 | *** |
| | | no | 37.0 (312) | 63.0 (826) | | | | |
| increase in tension during work | yes | 69.7 (588) | 60.7 (1101) | 1 | 20.02 | 1 | *** | |
| | no | 30.3 (256) | 39.3 (713) | | | | | |
| self-restraint in going out | yes | 78.6 (663) | 78.7 (1428) | 1 | 0.01 | 1 | | |
| | no | 21.4 (181) | 21.3 (386) | | | | | |
| workplace social capital | mean ± SD | 1.9 ± 1.0 | 2.3 ± 0.9 | 1461 | 9.49 | 1461 | *** | |

(n = 2,658)

1) χ^2 test (both sides), †: t-test

2) *: $p < .05$, **: $p < .01$, ***: $p < .001$

were more likely to be depressed. Regular employees or those who had worked for fewer years at their current facility were significantly more likely to have depressive tendencies. Additionally, those who worked more night shifts per month showed a significant tendency toward depression. When the population in the facility location was small, there was a tendency toward depression among the care workers. Regarding pandemic-related factors, those who reported an increase in workload and tension tended to be significantly depressed. The group with a low depressive tendency had significantly higher social capital scores than the other groups.

2. Factors related to depressive tendency

To examine the effects of the factors related to depressive tendency, we performed a hierarchical linear regression analysis with the depressive score as the objective variable. Table 3 presents the results of the analysis. As a result of inputting demographic, employment, facility status, and variables related to COVID-19 in order from Models 1 to 4, the F values showed a downward trend. However, the value increased in the final model (Model 5) with workplace social capital as an input. In Model 5, the explanatory variables that were positively associated with depressive tendency included poor self-rated health, increased tension during work, number of facility staff, middle managers or supervisors, increased workload, and location in towns and villages, in descending order of effect size. The variables that were negatively related were age, good self-rated health, workplace social capital, marital status, and years of employment at the current facility.

V. Discussion

In this study, we conducted an online survey to analyze depressive tendencies among care workers in long-term care facilities for older adults during the COVID-19 pandemic. The results showed that depressive tendencies were low when self-rated health was good. Suzuki (2006)

showed that many psychological factors are involved in subjective symptoms that are closely related to depressive tendencies. Matsubara & Inoue (2019) analyzed 339 Japanese junior high school teachers and found a significant relationship between mental health and all social capital, including bonding, bridging, and linking. In this regard, it has been highlighted that when care workers encounter psychological stress, they cannot always control their emotions through self-care. However, those around them notice signs of stress and can support the self-care process (Sasaki & Kitamura, 2017).

Regarding employment, a significant positive association between job position (middle manager or supervisor) and depressive tendencies was identified. This result is consistent with the findings of Harada & Miyawaki (2013). However, no significant association with full-time job status was found despite a previous study reporting that full-time employees were more stressed than part-time employees (Fukunaga, 2000). Full-time employment is represented by longer working hours, leading part-time workers, and having more responsibility for the quality of caregiving for older adults. However, the results showed that job positions were related to increased depressive tendencies. Workers in this position are considered more likely to be depressed because of their direct responsibility to implement new protection procedures against COVID-19 to save the lives of older adults and workers. In addition, there may be many opportunities to perform non-standard tasks, which may manifest as excessive burdens under these circumstances (Ogawa & Nagata, 2007).

In terms of facility status, depressive tendencies tended to increase in facilities with more staff. Additionally, working in facilities in towns and villages was positively related to depressive tendencies. In areas with small populations, health-related resources and long-term care services are limited. Furthermore, it is often the case that the necessary services cannot be completed or provided within the area. Therefore, they may experience problems different from

Table 3 Associated Factors of Depressive Tendency

| | Model 1 β | Model 2 β | Model 3 β | Model 4 β | Model 5 β |
|---------------------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| demographic | | | | | |
| Age | -0.186 *** | -0.179 *** | -0.177 *** | -0.177 *** | -0.177 *** |
| sex (female = 1) | -0.009 | 0.003 | 0.001 | -0.004 | -0.005 |
| Education (above uni = 1) | 0.006 | 0.007 | 0.011 | 0.008 | 0.006 |
| marital state (with spouse = 1) | -0.065 *** | -0.063 *** | -0.067 *** | -0.066 *** | -0.066 *** |
| self-rated health (good = 1) | -0.173 *** | -0.175 *** | -0.175 *** | -0.177 *** | -0.159 *** |
| self-rated health (poor = 1) | 0.333 *** | 0.332 *** | 0.330 *** | 0.322 *** | 0.292 *** |
| employment | | | | | |
| employment type (full-time = 1) | | 0.005 | -0.005 | -0.005 | -0.012 |
| middle manager or supervisor (yes = 1) | | 0.048 * | 0.052 ** | 0.049 ** | 0.063 *** |
| years of working at current place | | -0.028 | -0.038 * | -0.050 ** | -0.046 * |
| average working hours for day shift per day | | 0.029 | 0.032 | 0.031 | 0.031 |
| average number of night shifts per month | | 0.008 | 0.014 | 0.018 | 0.015 |
| facility status | | | | | |
| population (large city = 1) | | | -0.018 | -0.021 | -0.020 |
| population (village/town = 1) | | | 0.033 | 0.037 * | 0.037 * |
| number of staff | | | 0.069 ** | 0.069 ** | 0.066 ** |
| number of residents | | | -0.028 | -0.030 | -0.031 |
| related factors of the pandemic of COVID-19 | | | | | |
| emergency state area (yes = 1) | | | | -0.007 | -0.010 |
| increase in work load (yes = 1) | | | | 0.045 * | 0.049 * |
| increase in tension during work (yes = 1) | | | | 0.092 *** | 0.101 *** |
| self-restraint in going out (yes = 1) | | | | -0.026 | -0.010 |
| workplace social capital | | | | | -0.142 *** |
| F value | 120.91 *** | 67.25 *** | 50.59 *** | 42.64 *** | 44.55 *** |
| R ² | .215 | .218 | .223 | .235 | .253 |
| adjusted R ² | .213 | .215 | .219 | .229 | .247 |

(n = 2,658)

1) β : Standard partial regression coefficient. R²: Coefficient of determination

2) *: $p < .05$, **: $p < .01$, ***: $p < .001$

those of large cities, affecting their depressive tendencies.

Regarding the COVID-19 pandemic variables, the main subject of this study, the tendency toward depression increased with an increase in workload or feeling tense. Koura (2003) stated that the stressor most frequently experienced by care workers is the quantitative workload. However, there were no significant differences in the areas subject to the second state of emergency and refraining from going out. It is possible that work hours are long and free time outside of work is limited. Model 4 shows that when controlling for other variables, care workers with increased workload had a higher depressive tendency than those without. Additionally, the depressive tendency of care workers with increased tension at work was higher than those without increased tension. This shows that the increased workload and tension caused by the pandemic increases the depressive tendency of care workers. However, the institution being in the declaration area or whether individual activities are restricted after work does not affect care workers' depressive tendency. In addition, Model 5 with workplace social capital as the input, appeared to be more effective than the previous model based on the F value. The negative predictive effect of workplace social capital on depressive tendencies during COVID-19 has been clarified. In this regard, Kouvonen et al. (2006) considered that workplace social capital relies heavily on informal and routine face-to-face interactions with supervisors, colleagues, and subordinates, highlighting its importance. As shown in this study, it is thought that factors that comprise workplace social capital, such as the supervisor's response, strengthening the sense of collaboration and information sharing in the workplace, and respecting and helping each other, lead to a reduction in depressive tendency.

Conversely, when cooperating in providing long-term care at a facility, it is essential to communicate with colleagues. However, when a supervisor's understanding of the field is insufficient, it leads to stress among care workers

(Ogawa & Nagata, 2007). To reduce such stress, opportunities for supervisors to listen to the concerns of their subordinates have been proposed (Hotta, 2009). Similarly, as shown in this study, those who had a job with care responsibility during the pandemic tended to be depressed. Furthermore, there was assumed to be a limit to consideration for subordinates and the exercise of leadership. Therefore, it is important for people around supervisors, including subordinates, to understand and support people in such a position. During the COVID-19 pandemic, a methodology for constructing and strengthening linking social capital, reflecting cooperative interpersonal relationships that transcend differences in positions, is urgently needed.

VI. Conclusion

In this study, we conducted an online survey of certified care workers in long-term care facilities. The results suggest that the depressive tendency of care work was significantly associated with increased workload and work tension during the COVID-19 pandemic. Additionally, it established that workplace social capital reduced depressive tendency among care workers even during the pandemic.

Limitations

In this study, we used an online survey. Presenting the advantages and disadvantages of online surveys, Wright (2005) argued that many online services offer access to specialized or hard-to-reach populations based on self-reported data. However, there is no guarantee that participants provide accurate demographic or characteristic information. To avoid this problem, we chose Intage Research, a company that regularly administers the participants' email lists. However, the subjects were limited to end-users using PCs or smartphones, who were relatively literate and had access to information technology. Self-selection bias is another limitation of online surveys (Thompson et al., 2003).

This is a meaningful survey from the perspec-

tive of the protection of residents and care workers in facilities for older adults; however, it does not include those with moderate or severe depressive tendencies. Thus, it is likely that the survey did not include those who need to be investigated and supported. The possibility of confounding bias and unobserved variables cannot be ruled out. In addition, because the analysis results are based on a cross-sectional survey, building a causal model through a longitudinal survey is required in future research.

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