Mental Health of Caregivers Working in Nursing Homes during the COVID-19 Pandemic

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Keywords
Caregivers · COVID-19 · Nursing home · Anxiety · Dementia care

Abstract

Introduction: There have been numerous reports of cluster outbreaks of coronavirus disease 2019 (COVID-19) in hospitals and nursing homes. Healthcare workers fighting COVID-19 experience mental health issues. Caregivers in nursing homes experienced increased psychological distress and concern about deterioration of their mental health. We conducted a large-scale web-based survey exploring mental health among caregivers working in nursing homes during the COVID-19 pandemic with the aim of identifying their support needs. Methods: Survey participants were caregivers working at 284 nursing homes in Ibaraki prefecture, Japan. The survey period was from September 2020 to March 2021. Participants responded to a questionnaire covering gender, age, occupation, infections at facilities, infection protection, changes in nursing home users, cooperation with other medical institutions, and prejudice/discrimination. The Hospital Anxiety and Depression Scale (HADS) was used to evaluate participants’ depression and anxiety. Results: In total, 676 participants completed the survey; 350 (52.5%) were with anxiety symptoms and 378 (56.7%) were with depressive symptoms (scores exceeding the HADS cut-off points). The risk for anxiety was associated with being care worker or social worker. The risk of anxiety or depression was high when family caregivers’ mental state changed. Discussion/Conclusion: This study found that caregivers working in nursing homes were exposed to high levels of stress during the COVID-19 pandemic and were at high risk for developing depression and anxiety.
ernment of Japan issued a second state of emergency in Tokyo metropolitan area in conjunction with the Special Measures Law. The number of new infections per day during peak hours exceeded 8,000. Vaccination of healthcare workers started in February 2021 (in Ibaraki, it started in April). In hospitals and nursing homes, the outbreak of clusters was accelerating. Since nursing home users are elderly people including those with dementia, there is a high risk for aggravation due to infection [2, 3]. Facility managers and caregivers experienced physical and mental exhaustion as they were forced to take measures to prevent infection without sufficient preparation. In addition, most people that were frightened by unknown infectious diseases and required to change their lifestyles became irritable in aspects of their daily lives and discriminated against healthcare workers [4, 5].

Previous studies have shown an increase in mental health issues including anxiety, depression, insomnia, and post-traumatic stress disorder symptoms in the general population [6–8]. Moreover, it has been reported that healthcare workers also experienced increased anxiety, depression, and post-traumatic stress disorder during the COVID-19 pandemic, especially those working directly with patients with COVID-19 [9–13]. Among healthcare workers, those who work in places with a higher risk for contracting COVID-19 infection (e.g., hospitals, departments, districts) are considered to be at high risk for developing psychological burden and mental disorders.

In addition, it has also been reported that suicide related to COVID-19 among healthcare workers is a serious problem. Therefore, support for people with burnout and emotional exhaustion fatigue is important [14, 15]. Since people seeking information and news regarding suicidal behaviors are likely to use the Internet, surveys and enlightenment on the web may be useful [16]. Further, specific affective temperaments have been reported to be associated with suicide [17], it seems to be the same under a pandemic [18]. In particular, such individuals need more attention.

There have been reports of increasing psychological burden, anxiety, and depression among caregivers of people with dementia [19–22]. Gallagher and Wetherell [23] reported that caregivers had a higher risk for depressive symptoms compared with non-caregivers, both pre-COVID-19 and during the COVID-19 pandemic.

The above studies show that caregivers are psychologically stressed and worried about the deterioration of mental health. Although White et al. [24] reported that nursing home staff were working under stressful circumstances based on questions using social media, there are no reports of job-specific evaluations for caregivers in nursing homes or objective evaluations using psychological scales.

From the above, the mental health of caregivers under the COVID-19 pandemic is in a critical situation, and this study aimed to evaluate these caregivers’ current situations and clarify the frequency and risk factors of anxiety and depression. Furthermore, we hypothesized that the impact on caregivers’ mental health may differ depending on their occupation and working environment. Therefore, we conducted a large-scale web-based mental health survey among caregivers engaged in nursing homes during the COVID-19 pandemic.

**Materials and Methods**

**Procedure**

Participants in this study were caregivers working at 284 nursing homes, including special nursing homes for older people, long-term care health facilities, pay nursing homes, dementia group homes, multifunctional long-term care in small group homes, home-visit nursing, home-visit rehabilitation, and community-based comprehensive support centers. Participating facilities were linked to 12 hospitals designated as regional dementia disease medical centers in Ibaraki prefecture, Japan. After explaining the purpose and procedures of this research to each facility director and obtaining their consent for participation, study information and an invitation to participate were disseminated in the facilities. Caregivers that were interested in participating could respond to the survey via the web page. The survey period was from September 2020 to March 2021, and responses for 974 caregivers were obtained. Of these, 716 participants who gave informed consent to participate were included. Forty-nine answers were incomplete and excluded. 667 participants (68.5%) were the subject of this study. Data were collected anonymously, and this study was approved by the Medical Ethics Committee of the University of Tsukuba Hospital, Japan (permission No. 1554-1).

**Questionnaire**

Information collected in the questionnaire included gender, age, occupation, the Hospital Anxiety and Depression Scale (HADS), and seven items that covered changes of measures or services in the nursing home as follows.

1. “Did anyone in your workplace suffer or was suspected to suffer from COVID-19?” (Yes, No: Y/N).
2. “Have you implemented sufficient infection protection measures in your workplace?” (Y/N). If “No,” why? (“Insufficient infection protection equipment,” “Insufficient disinfectants,” “Not enough social distancing,” “Not enough ventilation,” “Others”).
3. “Has the frequency of service usage changed?” (“Decreased,” “No change,” “Increased”).
4. “Did the symptoms of people with dementia in your facility worsen?” (Y/N). If “Yes,” how? (“Deterioration of cognitive function,” “Deterioration of behavioral and psychological symptoms of dementia [BPSD],” “Complications,” “Others”).

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DOI: 10.1159/000524953

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5. “Has there been any mental health issues in the family caregivers of people with dementia using your facility”? (Y/N). If “Yes,” what? (“Irritability,” “Depression,” “Anxiety,” “Exhaustion,” “Others”).

6. “Did you get enough cooperation with any other medical institutions”? (Y/N).

7. “Did you suffer any prejudice, discrimination, or slander related to COVID-19”? (Y/N).

Hospital Anxiety and Depression Scale

The HADS is a self-administered rating scale [25] used to screen for anxiety and depression that comprises 14 questions on two subscales: anxiety (seven items) and depression (seven items). Responses are on a 4-point Likert scale (0–3). In this study, these two subscales were defined as HADS-A (anxiety) and HADS-D (depression). We set cut-off points of ≥8 for the HADS-A and ≥8 for the HADS-D; scores below the cut-off points indicated the participant was unlikely to have anxiety/depression [26], and those exceeding the cut-off points were defined as anxiety/depression.

Statistical Analyses

We performed χ² tests to compare categories and logistic regression analyses to examine which variables were related to anxiety or depressive symptoms. Logistic regression analyses were performed with anxiety and depression (exceed HADS score cut-off) as dependent variables, and gender, age, occupation, and answers to the questionnaire items as independent variables. SPSS software version 27 (SPSS Japan, Tokyo) was used for the analyses. p values less than 0.01 were regarded as statistically significant.

Results

In total, there were 974 responses to the questionnaire; 667 (68.5%) caregivers consented to participate in this study. Participants’ demographic and clinical characteristics are shown in Table 1. There were 214 males (32.1%) and 453 females (67.9%). Seventy-eight (11.7%) participants were aged ≤29 years, 163 (24.4%) were aged 30–39 years, 217 (32.5%) were aged 40–49 years, 138 (20.7%) were aged 50–59 years, and 71 (10.6%) were aged over 60 years. The largest occupational group was care workers (certified care workers and home helpers, etc, who directly care for users) (n = 342, 51.3%), followed by social workers (n = 170, 25.5%), and nurses (n = 48, 7.2%). One hundred seven (16.0%) participants listed their occupation as “others.” Others included public health nurses, office workers, dental hygienists, physical therapists and occupational therapists, dietitians, facility managers, welfare equipment consultants, and doctors. All occupations included in “others” were small groups of 5% or less of the total. The median HADS-A score was 8 (range: 0–21, interquartile range: 5–11) and that for the HADS-D was 8 (range: 0–19, interquartile range: 5–11). Overall, 350 (52.5%) participants had a HADS-A score over the cut-off point and 378 (56.7%) had a HADS-D score over the cut-off.

Comparison of demographic characteristics between those with HADS-A and HADS-D scores over and under the cut-off points are shown in Table 2. There were no significant differences in gender and age. However, significantly more social workers had anxiety symptoms than other occupations, whereas significantly fewer others had anxiety symptoms (p < 0.014, φ = −0.126). Table 3 shows that significantly more participants had anxiety symptoms when the symptoms of people with dementia in their facilities had worsened (question 4: p < 0.001, φ = −0.193), there were mental health issues in family caregivers (question 5: p < 0.001, φ = −0.184), and when they suffered from prejudice, discrimination, or slander (question 7: p = 0.005, φ = −0.108). There were significantly more participants with depressive symptoms when the workplace did not provide sufficient infection protection (question 2: p = 0.008, φ = 0.102), the symptoms of dementia worsened (question 4: p = 0.049, φ = −0.076), there were mental health issues in family caregivers (question 5: p < 0.001, φ = −0.184), there was not enough cooperation with any other medical institutions (question...
Table 2. Relationships between participants’ demographic characteristics and HADS scores

|                      | HADS-A |                      | HADS-D |                      | p value | HADS-A |                      | HADS-D |                      |
|----------------------|--------|----------------------|--------|----------------------|---------|--------|----------------------|--------|----------------------|
|                      | non-anxiety | anxiety (≥8) | p value | non-depression | depression (≥8) | p value | non-anxiety | anxiety (≥8) | p value | non-depression | depression (≥8) | p value |
|                      | N = 317 | N = 350 |         | N = 289 | N = 378 |         | N = 317 | N = 350 |         | N = 289 | N = 378 |         |
| Gender               |         |         |         |         |         |         |         |         |         |         |         |         |
| Male                 | 94   | 43.9   | 120   | 56.1   | 0.201  | 97   | 45.3   | 117   | 54.7   | 0.474  |         |         |
| Female               | 223  | 49.2   | 230   | 50.8   |         | 192  | 42.4   | 261   | 57.6   |         |         |         |
| Age, years           |         |         |         |         |         |         |         |         |         |         |         |         |
| −29                  | 42   | 53.8   | 36    | 46.2   |         | 37   | 47.4   | 41    | 52.6   |         |         |         |
| 30–39                | 67   | 41.1   | 96    | 58.9   | 0.227  | 71   | 43.6   | 92    | 56.4   |         |         | 0.773  |
| 40–49                | 105  | 48.4   | 112   | 51.6   |         | 87   | 40.1   | 130   | 59.9   |         |         |         |
| 50–59                | 64   | 46.4   | 74    | 53.6   |         | 61   | 44.2   | 77    | 55.8   |         |         |         |
| 60–                  | 39   | 54.9   | 32    | 45.1   |         | 33   | 46.5   | 38    | 53.5   |         |         |         |
| Occupation           |         |         |         |         |         |         |         |         |         |         |         |         |
| Care worker          | 161  | 47.1   | 181   | 52.9   |         | 142  | 41.5   | 200   | 58.5   |         |         |         |
| Social worker        | 67   | 39.4   | 103   | 60.6   | 0.014* | 77   | 45.3   | 93    | 54.7   | 0.734  |         |         |
| Nurse                | 28   | 58.3   | 20    | 41.7   |         | 20   | 41.7   | 28    | 58.3   |         |         |         |
| Others               | 61   | 57.0   | 46    | 43.0   |         | 50   | 46.7   | 57    | 53.3   |         |         |         |

HADS, Hospital Anxiety and Depression Scale; HADS-A, HADS-anxiety; HADS-D, HADS-depression.

Table 3. Relationships between responses to questionnaire items and HADS scores

|                      | HADS-A |                      | HADS-D |                      | Total N |
|----------------------|--------|----------------------|--------|----------------------|---------|
|                      | non-anxiety | anxiety (≥8) | p value | non-depression | depression (≥8) | p value | non-anxiety | anxiety (≥8) | p value | non-depression | depression (≥8) | p value |
|                      | N = 317 | N = 350 |         | N = 289 | N = 378 |         | N = 317 | N = 350 |         | N = 289 | N = 378 |         |
| 1. “Did anyone in your workplace suffer or was suspected to suffer from COVID-19”? |         |         |         |         |         |         |         |         |         |         |         |         |
| Yes                  | 86    | 45.7   | 102   | 54.3   | 0.564  | 85    | 45.2   | 103   | 54.8   | 0.538  | 188   |        |
| No                   | 231   | 48.2   | 248   | 51.8   |         | 204   | 42.6   | 275   | 57.4   |         | 479   |        |
| 2. “Have you implemented sufficient infection protection measures in your workplace”? |         |         |         |         |         |         |         |         |         |         |         |         |
| Yes                  | 218   | 50.0   | 218   | 50.0   | 0.079  | 205   | 47.0   | 231   | 53.0   | 0.008* | 436   |        |
| No                   | 99    | 42.9   | 132   | 57.1   |         | 84    | 36.4   | 147   | 63.6   |         | 231   |        |
| 3. “Has the frequency of service usage changed”? |         |         |         |         |         |         |         |         |         |         |         |         |
| Decreased            | 111   | 45.9   | 131   | 54.1   | 0.657  | 99    | 40.9   | 143   | 59.1   |         | 242   |        |
| No change            | 195   | 48.9   | 204   | 51.1   |         | 181   | 45.4   | 218   | 54.6   | 0.358  | 399   |        |
| Increased            | 11    | 42.3   | 15    | 57.7   |         | 9     | 34.6   | 17    | 65.4   |         | 26    |        |
| 4. “Did the symptoms of people with dementia in your facility worsen”? |         |         |         |         |         |         |         |         |         |         |         |         |
| Yes                  | 77    | 34.1   | 149   | 65.9   | <0.001* | 86    | 38.1   | 140   | 61.9   | 0.049* | 226   |        |
| No                   | 240   | 54.4   | 201   | 45.6   |         | 203   | 46.0   | 238   | 54.0   |         | 441   |        |
| 5. “Has there been any mental health issues in the family caregivers of people with dementia using your facility”? |         |         |         |         |         |         |         |         |         |         |         |         |
| Yes                  | 93    | 32.7   | 191   | 67.3   | <0.001* | 93    | 32.7   | 191   | 67.3   | <0.001* | 284   |        |
| No                   | 224   | 58.5   | 159   | 41.5   |         | 196   | 51.2   | 187   | 48.8   |         | 383   |        |
| 6. “Did you get enough cooperation with any other medical institutions”? |         |         |         |         |         |         |         |         |         |         |         |         |
| Yes                  | 230   | 48.7   | 242   | 51.3   | 0.333  | 219   | 46.4   | 253   | 53.6   | 0.013* | 472   |        |
| No                   | 87    | 44.6   | 108   | 55.4   |         | 70    | 35.9   | 125   | 64.1   |         | 195   |        |
| 7. “Did you suffer any prejudice, discrimination, or slander related to COVID-19”? |         |         |         |         |         |         |         |         |         |         |         |         |
| Yes                  | 21    | 31.3   | 46    | 68.7   | 0.005* | 21    | 31.3   | 46    | 68.7   | 0.037* | 67    |        |
| No                   | 296   | 49.3   | 304   | 50.7   |         | 268   | 44.7   | 340   | 56.7   |         | 600   |        |

HADS, Hospital Anxiety and Depression Scale; HADS-A, HADS-anxiety; HADS-D, HADS-depression. * p < 0.05.
6: \( p = 0.013, \varphi = 0.096 \), and when caregivers suffered from prejudice, discrimination, or slander (question 7: \( p = 0.037, \varphi = -0.081 \)). Analysis of questions with multiple answers showed the most common reason for insufficient infection protection (question 2) was “Not enough social distancing” (\( n = 196, 84.8\% \)), followed by “Insufficient infection protection equipment” (\( n = 114, 49.4\% \)), “Not enough ventilation” (\( n = 64, 27.7\% \)), and “Insufficient disinfectant” (\( n = 41, 17.7\% \)). The most common reason for dementia worsening was “Deterioration of cognitive function” (\( n = 201, 88.9\% \)), followed by “Deterioration of BPSD” (\( n = 85, 37.6\% \)) and “Complications” (\( n = 33, 14.6\% \)). The reasons for changes in family caregivers were “Anxiety” (\( n = 212, 74.6\% \)), “Exhaustion” (\( n = 129, 45.4\% \)), “Irritability” (\( n = 117, 41.2\% \)), and “Depression” (\( n = 39, 13.7\% \)).

Logistic regression analyses were performed to examine the factors affecting HADS scores (Table 4). The risk factors identified by multivariable logistic regression analysis are shown in Table 4.

### Table 4. Risk factors identified by multivariable logistic regression analysis

| Variable | HADS-A (anxiety) | HADS-D (depression) |
|----------|------------------|---------------------|
|          | OR    | 95% CI | p value | OR    | 95% CI | p value |
| Gender   |       |        |         |       |        |         |
| Male     | 1 [Ref.] |        |        | 1 [Ref.] |        |        |
| Female   | 0.97  | 0.68   | 1.39   | 0.858 | 1.21  | 0.85   | 1.73   | 0.288 |
| Age, years |       |        |         |       |        |         |
| ≥29      | 1 [Ref.] |        |        | 1 [Ref.] |        |        |
| 30–39    | 1.50  | 0.84   | 2.67   | 0.168 | 1.01  | 0.57   | 1.78   | 0.979 |
| 40–49    | 1.04  | 0.59   | 1.81   | 0.168 | 1.16  | 0.67   | 2.00   | 0.601 |
| 50–59    | 1.25  | 0.69   | 2.28   | 0.458 | 1.03  | 0.57   | 1.86   | 0.914 |
| ≥60      | 0.97  | 0.49   | 1.92   | 0.920 | 0.99  | 0.50   | 1.94   | 0.970 |
| Occupation |       |        |         |       |        |         |
| Care worker | 1.65 | 1.03   | 2.67   | 0.039* | 1.02  | 0.62   | 1.90   | 0.927 |
| Social worker | 2.01 | 1.20   | 3.39   | 0.009* | 1.43  | 0.90   | 2.29   | 0.133 |
| Nurse    | 1.04  | 0.50   | 2.16   | 0.923 | 1.40  | 0.68   | 2.89   | 0.360 |
| Others   | 1 [Ref.] |        |        | 1 [Ref.] |        |        |

**Questionnaire**

1. “Did anyone in your workplace suffer or was suspected to suffer from COVID-19?”
   - Yes: 1.11 | 0.77 | 1.60 | 0.585
   - No: 1 [Ref.]

2. “Have you implemented sufficient infection protection measures in your workplace?”
   - Yes: 1 [Ref.]
   - No: 1.14 | 0.78 | 1.66 | 0.508

3. “Has the frequency of service usage changed?”
   - Decreased: 0.67 | 0.28 | 1.60 | 0.368
   - No change: 0.69 | 0.30 | 1.61 | 0.396
   - Increased: 1 [Ref.]

4. “Did the symptoms of people with dementia in your facility worsen?”
   - Yes: 1.46 | 0.98 | 2.17 | 0.061
   - No: 1 [Ref.]

5. “Has there been any mental health issues in the family caregivers of people with dementia using your facility?”
   - Yes: 2.36 | 1.62 | 3.44 | <0.001*
   - No: 1 [Ref.]

6. “Did you get enough cooperation with any other medical institutions?”
   - Yes: 1 [Ref.]
   - No: 0.90 | 0.61 | 1.33 | 0.599

7. “Did you suffer any prejudice, discrimination, or slander related to COVID-19?”
   - Yes: 1.60 | 0.89 | 2.87 | 0.114
   - No: 1 [Ref.]

**OR, odds ratio; CI, confidence interval; HADS, Hospital Anxiety and Depression Scale; HADS-A, HADS-anxiety; HADS-D, HADS-depression.**

* \( p < 0.05 \)
of anxiety was associated with specific occupation groups: care worker (odds ratio [OR] = 1.65, 95% confidence interval [CI]: 2.67, \( p = 0.039 \)) and social worker (OR = 2.01, 95% CI: 1.20–3.39, \( p = 0.009 \)). There was also a high risk of anxiety (question 5: OR = 2.36, 95% CI: 1.62–3.44, \( p < 0.001 \)) and depression (question 5: OR = 2.22, 95% CI: 1.52–3.25, \( p < 0.001 \)) when there were mental health issues in family caregivers.

**Discussion/Conclusion**

The most relevant finding in this study is that the risk for anxiety and depression in caregivers working in nursing homes is associated with occupation and mental health issues in family caregivers. To date, there have been several reports of the mental health of family caregivers during the COVID-19 pandemic [19, 20, 22, 23], but, to our knowledge, no studies have extensively surveyed caregivers in nursing homes.

The frequencies of anxiety and depression in caregivers in nursing homes in this study were similar to those reported among healthcare workers [9–11]. The increased risk for anxiety among caregivers and social workers found in this study may be attributable to longer contact with users among these groups compared with other occupations. But then it was unclear why physical therapists and occupational therapists had less risk for anxiety.

Comparing the categories of questionnaire items, \( \chi^2 \) tests showed a significantly higher rate of depression when infection protection and cooperation with other medical institutions were insufficient. Moreover, there was a significantly higher rate of anxiety when dementia symptoms worsened or the participant had experienced COVID-19-related prejudice, discrimination, or slander. However, the logistic regression analyses did not show a significant difference. There was a significantly higher rate of anxiety and depression when family caregivers of people with dementia had mental health issues. It has been reported that COVID-19 causes deterioration of cognitive function and behavioral disorders in patients with dementia [27, 28]. In addition, patients with dementia showed worsened neuropsychiatric symptoms [29] and increased depressive symptoms [30, 31] because of social isolation. These reports suggested that the deterioration of cognitive function and neuropsychiatric symptoms in patients with dementia are influenced by restricted outings, restricted visits, and interruption of cognitive rehabilitation to prevent the spread of COVID-19. It has been reported that depressive symptoms were more common among dementia caregivers than other caregivers [32]. Furthermore, worsening of dementia symptoms, especially BPSD, has a profound physical and psychological impact and increases depressive and anxiety symptoms among both formal and informal caregivers [33–35]. In this study, worsening of dementia symptoms was commonly reported (by 32.1% of participants) along with deterioration of cognitive function (89.1%) and deterioration of BPSD (38.3%). Mental health issues in family caregivers were reported by 40.8% of participants. These results suggest that worsening of symptoms in people with dementia placed a burden on caregivers during the COVID-19 pandemic.

It has also been reported that conflict with family members increases burnout among caregivers in nursing homes [36, 37]. As institutional caregivers act as a bridge between the patient and the family in nursing homes, especially during the COVID-19 pandemic, changes in family caregivers’ mental status (e.g., anxiety and irritability) as shown in this study may increase the burden on these caregivers as they must respond to family caregivers’ complaints and care for them.

There was no significant increase in anxiety and depressive symptoms when participants experienced COVID-19-related prejudice, discrimination, or slander. However, during the COVID-19 pandemic, xenophobia and racial discrimination due to prejudice were problems encountered all over the world [38, 39], including in Japan. Discrimination and stigma against healthcare workers because of the high risks for clustering and infection were serious issues [4, 5]. The government, local governments, academic societies, and the Japan Federation of Bar Associations have all issued antidiscrimination statements. Discrimination has been associated with greater psychological impact of the COVID-19 pandemic and higher levels of stress, anxiety, and depression [40]. Stigmatization of healthcare workers was a particular issue during the pandemic and was a major source of stress [41]. Responses to the questionnaire in this study indicated that prejudice, discrimination, and slander were encountered both inside and outside the workplace. For example, “I was rumored at work and in the community,” “Children were refused to go to school (or kindergarten),” “I was slandered at home-visit care destination and couldn’t get inside,” and “My family told me to quit my job.”

However, questions 1 and 2 were not associated with anxiety or depressive symptoms. This is probably because
about 70% of the respondents answered that they had sufficient cooperation with medical institutions, meaning the backup system at the nursing homes was relatively well established.

The most common reason for not being able to implement sufficient infection control measures (question 2) was “Not enough social distancing” (85.2%). Many participants commented that “Patients have poor understanding of infection prevention, they cannot wear masks or keep social distance.” It has been reported that patients with moderate to severe dementia were found to have a low COVID-19 recognition rate and did not understand why they had to wear facemasks [42]. As various problems such as this are unique to patients with dementia, it is necessary to consider these factors and devise strategies to prevent infection.

Our study had some limitations. First, participants are not random and web-based survey. Caregivers who are more interested in mental health may have participated in this study. Second, we could not evaluate data by type of facility because there were disparities in numbers among facility types. The effect on the mental health of caregivers working in nursing homes may change based on differences between inpatient and outpatient care, the severity of patients with dementia, and the period of nursing home use. It is necessary that these factors are analyzed and evaluated in further studies. A similar limitation applies to the type of occupation; it is necessary to evaluate groups separately according to the content of the work they mainly engaged in. Finally, this study is a cross-sectional study and may change depending on the pandemic situation at the time and required follow-up. We would like to consider this factor in a further investigation along with observing the trend of the spread of infection.

In conclusion, our survey found that caregivers in nursing homes were exposed to intense stress during the COVID-19 pandemic and were at high risk for developing depression and anxiety. In particular, attention should be paid to caregivers’ mental health if there is worsening of symptoms in people with dementia they care for or mental changes in supporting family. For example, the facility manager, occupational physician, or colleague may be able to see if the caregiver is suffering from anxiety or depressive symptoms and be given rest and medical care as needed. This is also considered to be important not only in nursing homes but also in home care. The results of this questionnaire can be returned to caregivers and their managers to alert high-risk individuals and provide insight into the required support. As the COVID-19 pandemic continues and expands, it is important to continue to support the mental health of caregivers in nursing homes.

Acknowledgment

We thank Audrey Holmes, MA, from Edanz (https://jp.edanz.com/ac) for editing a draft of the manuscript.

Statement of Ethics

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008. Written informed consent from all participants in this study was obtained for participation. Data were collected anonymously, and this study was approved by the Medical Ethics Committee of the University of Tsukuba Hospital, Japan (permission No. 1554-1).

Conflict of Interest Statement

The authors declare no conflicts of interest associated with this article.

Funding Sources

This research received no specific grant from any funding agency, commercial, or not-for-profit sectors.

Author Contributions

Takumi Takahashi, Saori Ekoyama, Hirokazu Tachikawa, and Tetsuaki Arai designed this study. Takumi Takahashi, Saori Ekoyama, Hirokazu Tachikawa, Haruhiko Midorikawa, Yuki Shiratori, Miho Ota, Sho Takahashi, and Tetsuaki Arai acquired the data. Takumi Takahashi analyzed and drafted the article. Hirokazu Tachikawa and Tetsuaki Arai revised the article. Takumi Takahashi, Saori Ekoyama, Hirokazu Tachikawa, Haruhiko Midorikawa, Yuki Shiratori, Miho Ota, Sho Takahashi, and Tetsuaki Arai contributed to and have approved the final manuscript.

Data Availability Statement

The data that support the findings of this study are not publicly available due to their containing information that could compromise the privacy of research participants but are available from the corresponding author (Hirokazu Tachikawa) upon reasonable request.
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Additional references are listed, covering various aspects of mental health and COVID-19 effects, including studies on mental health outcomes, symptoms among health workers, and behavioral and psychological symptoms in caregivers.

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