Special Issue Article

Mental Health Multimorbidity among Caregivers of Older Adults During the COVID-19 Epidemic

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ABSTRACT

Objective: *To investigate mental health status and associated factors among caregivers of older adults during the COVID-19 epidemic in China.* ***Methods:*** *From March 1 to 31, 2020, 916 caregivers of older adults participated in an online cross-sectional survey on the prevalence of anxiety, depression, and sleep problems. The seven-item Generalized Anxiety Disorder Scale (GAD-7) was administered to measure anxiety symptoms, the two-item Patient Health Questionnaire (PHQ-2) was used to assess depressive symptoms, and a self-developed questionnaire was used to assess sleep quality and duration. Six questions about COVID-19-related experiences were used to assess community-level infection contact and the level of exposure to media information. The prevalence rates of anxiety, depression and sleep problems were computed. The Wald χ^2 were applied to compare the differences between subgroups. Multiple logistic regression analyses were performed to investigate factors associated with anxiety, depression, sleep problems, and multimorbidity.* ***Results:*** *The prevalence rates of anxiety, depression, and sleep problems were 46.8%, 29.8%, and 10.8%, respectively. Approximately 263 participants (28.7%) presented with two or more mental health problems. Being female (OR, 2.254; 95% CI, 1.510−3.363), having community-level COVID-19 contact (OR, 1.856; 95% CI, 1.189−2.898), and having a mental disorder (OR, 3.610;*

95% CI, 1.644−7.930) were associated with increased risk of multimorbidity among caregivers. Caregivers who preferred positive information (OR, 0.652; 95% CI, 0.472−0.899) had reduced risk of multimorbidity. **Conclusion:** *Anxiety and depression were common among caregivers of older adults during the COVID-19 epidemic. Being female and having community-level COVID-19 contact were independent risk factors for experiencing multiple mental health problems. Preexisting mental disorders increased the risk of multimorbidity among caregivers, while enhanced access to positive media information decreased the risk of multimorbidity.* (Am J Geriatr Psychiatry 2021; 29:687−697)

Highlights

- **What is the primary question addressed by this study?** Caregivers of older adults were exposed to dual stress during the COVID-19 epidemic. We conducted an online survey to explore the prevalence of the mental health multimorbidity and the potential factors associated with its risk among caregivers of older adults during the unprecedented period.
- **What is the main finding of this study?** In this cross-sectional survey, approximately 28.7% of the caregivers presented with two or more mental health problems. Being female, having community-level COVID-19 contact, and having a mental disorder were associated with an increased risk of multimorbidity. Caregivers who preferred positive information had reduced the risk of multimorbidity.
- **What is the meaning of the finding?** The findings implicate that mental health morbidity is common among caregivers and should be addressed timely by avoiding community-level COVID-19 contact and disseminating positive information in media.

INTRODUCTION

Since the outbreak of COVID-19, older adults who are exposed have been at high risk of infection and death.[1] Caregiver roles can have adverse consequences, causing caregivers to experience higher levels of depression and anxiety and poorer physical health than other populations.[2] During the period of social distancing due to the COVID-19 outbreak, caregivers of older adults were exposed to double stress: fear of infection and concern about the elderly individuals' conditions.[3,4] However, mental health status among caregivers of older adults was not fully attended in January and February 2020.

Of note, the general population has not been spared from the psychological consequences of the COVID-19 outbreak.[5] Caring staff can experience a state of physical and mental stress and feel isolated and helpless in the face of health threats and pressures because of the high-intensity work necessitated by such public health emergencies.[6] Previous studies have shown that caregivers and nurses suffer from loneliness, anxiety, fear, fatigue, sleep disorders, and other mental health problems when in close contact with patients with emerging infectious diseases such as SARS,[7] MERS-CoV infection,[8,9] Ebola,[10] and H1N1 infection.[11] These problems can be related to various factors during such outbreaks, including disruption of the usual routine of life because of isolation,[12] grief and loss.[13] Direct contact with elderly individuals who are strongly suspected of having an infectious disease is also stressful for caregivers. Previous studies have shown that factors associated with stress among caregivers include long work hours, high workloads, a lack of decision-making flexibility at work and a lack of experience with similar situations.[14,15]

In addition, the threat of infectious disease can create strong negative feelings including intense fear, and fear-related public ostracism can lead to psychological pain and other negative effects.[6,16] These psychological responses affect the wellbeing of the

individual and community and can persist long after an outbreak subsides.[17]

The psychological experiences of caregivers for patients with COVID-19 can be summarized into several themes. First, as the number of patients has continued to rise and as quarantines have been put into place,[1,18] the workloads of caregivers have increased rapidly from normal levels, and the contact time with elderly individuals has proportionally increased, increasing the likelihood of conflict with the elderly individuals.[4,19] In addition, the caregivers have experienced a strong sense of fear when protective equipment has been in short supply. The failure to meet physical and psychological needs has brought about a sense of helplessness.[20] Most caregivers taking care of older adults in an isolated environment have been concerned mainly about the unknown conditions of severe emergencies and about work-related processes and routines. As with any emerging infectious disease, these concerns need to be addressed while the caregivers are working. Moreover, most caregivers have also been concerned about the impacts of the outbreak on the health of their families, and their families have likewise been worried about them. A previous study has also noted that the traumatic experience of the death of a loved one can cause severe psychological, physical, and behavioral consequences in caregivers.[21] Additionally, previous studies have found that sensationalized media reporting and access to channels disseminating unofficial information about an outbreak frequently leads to general panic that often extends far beyond the geographical location of the actual epidemic.[22−24]

Besides, preexisting mental disorders might have negative impact on the caregivers' mental health status. Disasters disproportionately affect poor and vulnerable populations, and patients with severe mental illness may be among the hardest hit.[25] For example, individuals with severe mental illnesses who are employed may have difficulty taking time off from work and may lack sufficient insurance coverage to cover testing or treatment.[26]

However, it has remained unclear how common mental health problems are among caregivers of older adults and how frequently such caregivers present with more than one mental health problem. Additionally, whether COVID-19-related experiences are associated with the presence of multiple mental health problems has not been fully investigated.

Therefore, we conducted this cross-sectional survey to estimate the prevalence of anxiety, depression, and sleep problems and the coexistence of these three common mental health problems among caregivers of older adults during the COVID-19 epidemic. In addition, our study explored the potential risk factors for these mental health problems with particular emphasis on COVID-19-related experiences.

METHODS

This cross-sectional survey was conducted through the Questionnaire Star online survey platform from March 1 to 31, 2020. The URL link was distributed through the geriatric mental health service network by members of the Chinese Society of Geriatric Psychiatry.

Study Participants

During the survey period, 1,385 participants accessed the screening page of the online questionnaire. As illustrated in Figure 1, 916 participants, including 434 family caregivers and 482 nursing home staff, were eligible for the study. The inclusion criteria for family caregivers included family members or care workers who 1) took care of older adults at home and 2) spent at least 6 hours per week with care recipients. Besides, full-time care workers at nursing home were eligible to attend the survey. All caregivers were required to have basic listening, speaking, reading and writing abilities and to be able to use a smartphone or computer to ensure their completion of the self-reported questionnaire and online surveys.

The ethics committee of Peking University Sixth Hospital approved the study protocol. All subjects provided their consent by answering the screening question "Are you willing to participate in the survey?" The survey was anonymous. No personal information could be identified through the questionnaire.

Instruments for Mental Health Problem Assessment

Seven-item Generalized Anxiety Disorder Scale (GAD-7)

The GAD-7 was designed to identify probable cases of generalized anxiety disorder and to assess
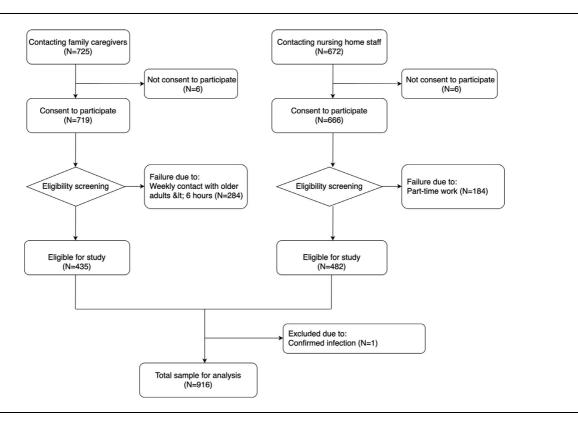
FIGURE 1. Flow chart of subject recruitment and participation in the online survey.

symptom severity. The cutoff score for anxiety was greater than 5.[27]

Two-item Patient Health Questionnaire (PHQ-2)

The PHQ-2 included the first two items of the PHQ-9, *i.e.,* "little interest or pleasure in doing things" and "feeling down, depressed, or hopeless", for the previous 2 weeks. The cutoff score for depression was greater than 2.[28,29]

Questions on sleep problems

Two questions were used to screen sleep problems: "How long on average did you sleep per day in the past month?" and "How has your sleep quality changed in the past month?" Sleep problems were defined as follows: 1) a daily average duration of sleep less than 4 hour or more than 8 hour and 2) poorer sleep quality than before.[30]

Assessment of COVID-19-Related Experiences

Community-level infection contact

Two questions were used to examine the degree of community-level infection contact: "Did you have close contact with any individual with confirmed or suspected COVID-19?" and "Was there anyone confirmed or suspected with COVID-19 in your community and neighborhood?". A response of "yes" to either question was considered a positive indication of community-level infection contact.

Exposure to epidemic-related information

Four questions were used to measure the level of exposure to media information, including questions regarding the time spent browsing information per day (<1 hour, 1−3 hour, 3−6 hour, or >6 hour), the preference of the individual for the nature of information (primarily positive, half positive or half negative or primarily negative), the number of channels used

to obtain information (including TV news, the internet, social media platforms such as WeChat and WeBlog, the newspaper, relatives and friends, community workers, or others), and the reliability of the information obtained (information from TV, newspaper, and community workers was classified as highly reliable; information from other channels was classified as potentially reliable).

Medical History Assessment

Two questions were used to identify the medical history of physical and mental conditions: "Have you ever been diagnosed with any of the following physical diseases?" and "Have you ever been diagnosed with any of the following mental disorders?".

Statistical Analysis

Data analysis was performed using SPSS statistical software version 26.0. The significance level was set at $p = 0.05$.

Participants were classified as having any single mental health problem or as having two or more mental health problems, which was considered multimorbidity. The $\chi 2$ was applied to compare the subjects' demographic characteristics (age, sex, education level, marital status, place of residence, and medical history), and degree of community-level infection contact between subgroups with and without anxiety, depression and sleep problems. The Kruskal-Wallis test was applied to compare the time of exposure to epidemic information between subgroups.

The differences among those without mental health problems, those with any single mental health problem, and those having two or more mental health problems were investigated with $\chi 2$. The continuous variables were compared with ANOVA test. Bonferroni correction was used for post-hoc tests.

Multiple logistic regression analysis was performed to examine the potential factors associated with the risks of anxiety, depression, and multimorbidity. As there were no significant differences in any of the studied variables between the subgroups with and without sleep problems, we did not perform multiple logistic regression analysis of factors associated with sleep problems. The odds ratios (ORs) and 95% confidence intervals (CIs) were computed and are presented.

RESULTS

Demographic Characteristics

As presented in Table 1, approximately three-quarters of caregivers were women, and most participants were younger than 60 years old, married and residing in cities. Approximately one-fifth of the caregivers had physical conditions, and approximately 4.6% had mental disorders.

Further analysis showed that gender, marital status, physical conditions, preexisting mental disorders, and time spent browsing information were significantly different between older and younger groups (see Supplemental Table S1).

Prevalence of Anxiety, Depression, and Sleep Problems

Of all study participants, 429 (46.8%) presented with anxiety, 273 (29.8%) had depression, and 99 (10.8%) reported sleep problems.

As shown in Table 1, anxiety was more frequent among women than among men and among caregivers with physical conditions than among those who were healthy. Caregivers with preference for positive information had lower prevalence of anxiety.

Depression was more common among women than among men, among caregivers with mental disorders than among those without and among caregivers with community-level infection contact than among those without. Caregivers who were married and preferred to obtain positive information had a lower prevalence of depression.

Sleep disturbance was more frequent among those with higher educational levels.

Prevalence and Profiles of Mental Health Multimorbidity

Among those reporting mental health problems, 249 (27.2%) presented with a single problem, and 263 (28.7%) had two or more problems.

Among the 263 participants who had two or more mental health problems, 220 (83.6%) had anxiety and depression, 5 (1.9%) had depression and sleep problems, 12 (4.6%) had anxiety and sleep problems, and 26 (9.9%) had all three problems.

TABLE 1. Demographic Characteristics of All Study Participants and Comparison Between Mental Health Status Subgroups

Variable	All Participants (N=916)	N (%) Anxiety No (N=487)	N (%) Anxiety Yes (N=429)	χ2	p-value	N (%) Depression No (N=643)	N (%) Depression Yes (N=273)	χ2	p-Value	N (%) Sleep Problems No (N=817)	N (%) Sleep Problems Yes (N=99)	χ2	p-Value
Age													
<60 years	812 (88.7%)	434 (53.4%)	378 (46.6%)	0.229	0.632	568 (70.0%)	244 (30.0%)	0.206	0.650	722 (88.9%)	90 (11.1%)	0.565	0.452
≥60 years	104 (11.3%)	53 (51.0%)	51 (49.0%)			75 (72.1%)	29 (27.9%)			95 (91.3%)	9 (8.7%)		
Gender													
Men	227 (24.8%)	149 (65.6%)	78 (34.4%)	18.855	<0.001	176 (77.5%)	51 (22.5%)	7.764	0.005	200 (88.1%)	27 (11.9%)	0.370	0.543
Women	689 (75.2%)	338 (49.1%)	351 (50.9%)			467 (67.8%)	222 (32.2%)			617 (89.6%)	72 (10.4%)		
Schooling educational level													
≤9 years	467 (51.0%)	235 (50.3%)	232 (49.7%)	3.096	0.078	338 (72.4%)	129 (27.6%)	2.165	0.141	428 (91.6%)	39 (8.4%)	5.965	0.015
>9 years	449 (49.0%)	252 (56.1%)	197 (43.9%)			305 (67.9%)	144 (32.1%)			389 (86.6%)	60 (13.4%)		
Marital status													
Married	751 (82.0%)	405 (53.9%)	346 (46.1%)	0.973	0.324	539 (71.8%)	212 (28.2%)	4.940	0.026	670 (89.2%)	81 (10.8%)	0.002	0.963
Single/divorced/ widowed	165 (18.0%)	82 (49.7%)	83 (50.3%)			104 (63.0%)	61 (37.0%)			147 (89.1%)	18 (10.9%)		
Residence													
Urban	722 (78.8%)	373 (51.7%)	349 (48.3%)	3.096	0.078	496 (68.7%)	226 (31.3%)	3.659	0.056	639 (88.5%)	83 (11.5%)	1.674	0.196
Suburban/rural	194 (21.2%)	114 (58.8%)	80 (41.2%)			147 (75.8%)	47 (24.2%)			178 (91.8%)	16 (8.2%)		
Physical Conditions													
Yes	197 (21.5%)	85 (43.1%)	112 (56.9%)	10.117	0.001	130 (66.0%)	67 (34.0%)	2.123	0.145	182 (92.4%)	15 (7.6%)	2.655	0.103
No	719 (78.5%)	402 (55.9%)	317 (44.1%)			513 (71.3%)	206 (28.7%)			635 (88.3%)	84 (11.7%)		
Pre-existing mental disorders													
Yes	42 (4.6%)	17 (40.5%)	25 (59.5%)	2.847	0.092	19 (45.2%)	23 (54.8%)	13.106	<0.001	34 (81.0%)	8 (19.0%)	3.100	0.078
No	874 (95.4%)	470 (53.8%)	404 (46.2%)			624 (71.4%)	250 (28.6%)			783 (89.6%)	91 (10.4%)		
Community-level infection contact													
Yes	127 (13.9%)	58 (45.7%)	69 (54.3%)	3.328	0.068	75 (59.1%)	52 (40.9%)	8.748	0.003	114 (89.8%)	13 (10.2%)	0.050	0.823
No	789 (86.1%)	429 (54.4%)	360 (45.6%)			568 (72.0%)	221 (28.0%)			703 (89.1%)	86 (10.9%)		
Time spent browsing information[a]													
<1 h	243 (26.5%)	139 (57.2%)	104 (42.8%)	2.294	0.514	173 (71.2%)	70 (28.8%)	2.309	0.511	213 (87.7%)	30 (12.3%)	1.714	0.634
1-3 h	512 (55.9%)	265 (51.8%)	247 (48.2%)			359 (70.1%)	153 (29.9%)			458 (89.5%)	54 (10.5%)		
3-6 h	103 (11.3%)	52 (50.5%)	51 (49.5%)			67 (65.0%)	36 (35.0%)			95 (92.2%)	8 (7.8%)		
>6 h	58 (6.3%)	31 (53.4%)	27 (46.6%)			44 (75.9%)	14 (24.1%)			51 (87.9%)	7 (12.1%)		
Preference for the nature of information													
Primarily positive	528 (57.6%)	297 (56.3%)	231 (43.8%)	4.762	0.029	389 (73.7%)	139 (26.3%)	7.206	0.007	479 (90.7%)	49 (9.3%)	3.017	0.082
Half positive/half negative or primarily negative	388 (42.4%)	190 (49.0%)	198 (51.0%)			254 (65.5%)	134 (34.5%)			338 (87.1%)	50 (12.9%)		
Number of channels used to obtain information		3.05±1.477	3.17±1.583	-1.256*	0.209	3.10±1.515	3.12±1.560	-0.132*	0.895	3.08±1.531	3.31±1.496	-1.422*	0.155
Reliability of the information obtained		2.16±1.104	2.24±1.211	-1.014*	0.311	2.21±1.141	2.17±1.189	0.471*	0.638	2.18±1.158	2.34±1.127	-1.265*	0.206

Notes: χ^2, $df=1$
[a] $df=3$, * independent samples t test, t-value, $df=914$

TABLE 2. Comparisons of Demographic Characteristics and COVID-19-related Experiences Among Normal Comparison, Those With Single Morbidity and Those With Mental Health Multimorbidity

Variable	Normal Comparison (N=404)	Single Morbidity (N=249)	Multimorbidity# (N=263)	χ2	p-Value	NC vs SM	NC vs MM	SM vs MM
Age				0.447	0.800			
<60 years	359 (44.2%)	218 (26.9%)	235 (28.9%)					
≥60 years	45 (43.3%)	31 (29.8%)	28 (26.9%)					
Gender				15.594	<0.001	0.649	<0.001	0.002
Women	287 (41.7%)	181 (26.3%)	221 (32.1%)					
Men	117 (51.5%)	68 (30.0%)	42 (18.5%)					
Schooling educational level				5.250	0.072			
≤9 years	200 (42.8%)	142 (30.4%)	125 (26.8%)					
>9 years	204 (45.4%)	107 (23.8%)	138 (30.8%)					
Marital status				3.348	0.188			
Married	337 (44.9%)	208 (27.7%)	206(27.4%)					
Single/divorced/widowed	67 (40.6%)	41 (24.9%)	57 (34.5%)					
Residence				5.413	0.067			
Urban	308 (42.7%)	194 (26.9%)	220 (30.5%)					
Suburban/rural	96 (49.5%)	55 (28.3%)	43 (22.2%)					
Physical conditions				5.431	0.066			
Yes	74 (37.6%)	55 (27.9%)	68 (34.5%)					
No	330 (45.9%)	194 (27.0%)	195 (27.1%)					
Pre-existing mental disorders				11.075	0.004	0.172	0.001	0.096
Yes	10 (23.8%)	11 (26.2%)	21 (50.0%)					
No	394 (45.1%)	238 (27.2%)	242 (27.7%)					
Community-level infection contact				8.329	0.016	0.682	0.006	0.042
Yes	46 (36.2%)	31 (24.4%)	50 (39.4%)					
No	358 (45.4%)	218 (27.6%)	213 (27.0%)					
Time spent browsing information[a]				0.606	0.895			
<1 h	110 (45.3%)	67 (27.6%)	66 (27.2%)					
1-3 h	224 (43.8%)	139 (27.1%)	149 (29.1%)					
3-6 h	45 (43.7%)	24 (23.3%)	34 (33.0%)					
>6 h	25 (43.1%)	19 (32.8%)	14 (24.1%)					
Preference for the nature of information				8.602	0.014	0.105	0.004	0.267
Primarily positive	253 (47.9%)	140 (26.5%)	135 (25.6%)					
Half positive/half negative or primarily negative	151 (38.9%)	109 (28.1%)	128 (33.0%)					
Number of channels used to obtain information[b]	3.01±1.51	3.24±1.48	3.13±1.60	1.905	0.149			
Reliability of the information obtained[b]	2.14±1.12	2.31±1.13	2.19±1.23	1.742	0.176			

Notes: NC: normal comparison; SM: single morbidity; MM: multimorbidity. Most group comparisons (exceptions indicated otherwise) were conducted with $χ^2$, $df=2$
[a] Kruskal-Wallis test, $df=3$
[b] ANOVA analysis, df (between groups) =2, df (within groups) = 913.

TABLE 3. Multiple Logistic Regression Analyses of Factors Associated With Mental Health Multimorbidity

Variable	Wald $\chi 2$	*p*-Value	OR (95%CI)
Comparison with normal comparison			
Gender, women	15.821	<0.001	2.254 (1.510-3.363)
Pre-existing mental disorders	10.225	0.001	3.610 (1.644-7.930)
Community-level COVID-19 contact	7.400	0.007	1.856 (1.189-2.898)
Preference for positive information	6.795	0.009	0.652 (0.472-0.899)
Comparison with single morbidity			
Gender, women	10.337	0.001	2.042 (1.321-3.155)
Community-level COVID-19 contact	4.490	0.034	1.705 (1.041-2.792)

Notes: Multiple logistic regression analysis, df=1.

As shown in Table 2, multimorbidity was more prevalent among women than among men, among those with community-level COVID-19 contact than among those without, and among those with preexisting mental disorders than among those without. It was less common among individuals who preferred to read positive messages than among those who did not.

Factors Associated With Anxiety, Depression and Sleep Problems

Multiple logistic regression analyses showed that female sex (OR=2.068, 95% CI=1.508−2.838) and physical conditions (OR=1.727, 95% CI=1.249−2.388) were associated with increased risk of anxiety. Preference for positive information was associated with lower risk of anxiety (OR=0.747, 95% CI=0.572−0.977). Female sex (OR=1.732, 95% CI=1.212−2.477), community-level COVID-19 contact (OR=1.770, 95% CI=1.192−2.630), and preexisting mental disorders (OR=3.156, 95% CI=1.665−5.981) were associated with increased risk of depression. Being married (OR=0.680, 95% CI=0.473−0.978) and preferring to positive messages (OR=0.714, 95% CI=0.533−0.956) may have reduced the risk of depression. A higher educational level was associated with increased risk of sleep problems (OR=1.693, 95% CI=1.106−2.591) (see Supplemental Table S2).

Factors Associated With Multimorbidity of Mental Health Problems

As summarized in Table 3, in comparison with the normal comparison, women (OR=2.254, 95% CI=1.510

−3.363), individuals with community-level COVID-19 contact (OR=1.856, 95% CI=1.189−2.898), and individuals with preexisting mental disorders (OR=3.610, 95% CI=1.644−7.930) exhibited increased risk of multimorbidity. A preference for positive information was associated with lower risk of multimorbidity (OR=0.652, 95% CI=0.472−0.899). Women (OR=2.042, 95% CI=1.321−3.155) and individuals with community-level COVID-19 contact (OR=1.705, 95% CI=1.041−2.792) were at elevated risk of developing more than one mental health problem.

DISCUSSION

To our knowledge, this is the first study to investigate mental health problems among caregivers of older adults during the COVID-19 epidemic. Mental health problems, especially anxiety and depression, were common among all study participants. The study also found that being female, having community-level COVID-19 contact and having preexisting mental disorders increased the risk of depression. In particular, being female and having community-level COVID-19 contact were independent risk factors for experiencing multiple mental health problems. Compared with normal comparison, caregivers with preexisting mental disorders exhibited increased risk of multimorbidity, while those who obtained access to more positive media information exhibited decreased risk of multimorbidity.

In this study, caregivers were not free from the psychological consequences of the outbreak, as the results revealed a high prevalence of mental health symptoms during the COVID-19 epidemic. Almost half of the participants presented anxiety symptoms, and one-third of them experienced depressive symptoms. Similarly, the anxiety levels of caregivers were found to be significantly higher than those of the general community during the SARS outbreak in Cheng et al.'s study.[31] The prevalence rate of anxiety and depression was higher than those reported in general populations[5,32] and similar to that among healthcare workers exposed to COVID-19.[33] It highlights that the mental health needs of elder caregivers should be addressed timely.

Previous studies have shown that caregivers who are female and who have chronic illnesses prior to an outbreak are more likely to experience anxiety.[34−36]

Moreover, caregivers who are female and who have preexisting mental health problems have been found to exhibit significant rates of depression, while being married has been found to be protective against depression. Our study had similar observations. In addition, education level was found to be inversely associated with caregivers' sleep problems in the current study. These findings are similar to previous reports.[35] Despite the possible differences related to culture, the results indicate that higher education levels may facilitate timely acquisition of COVID-19-related information, which might increase fear if the nature of information was not well discerned and the information was misinterpreted.[37]

Furthermore, we found that having community-level COVID-19 contact was an independent risk factor for experiencing multiple mental health problems. A study on the Ebola virus has noted that direct contact with highly infectious patients is associated with stress.[16] Previous studies have also shown that close contact with patients with emerging infectious diseases such as SARS causes individuals to suffer from loneliness, anxiety, fear, sleep disorders, and other mental health problems.[38]

Caregivers who had preexisting mental health problems in this study had a high propensity to develop multimorbidity, especially comorbidity of anxiety and depression. Disasters disproportionately affect caregivers, especially those with severe mental illness.[26,39,40] Such mental health problems may not only lead to job dissatisfaction and possibly impair work performance but also aggravate burnout, which have likely been prominent problems during the outbreak of COVID-19. Other research also found that mental problems were part of the long-term burdens on caregivers.[41] These findings highlight the need to maintain the continuity of mental health services, especially for those with preexisting mental illnesses who may be affected by the COVID-19 pandemic.

A flood of evolving information, as well as potentially damaging misinformation, has accompanied the coronavirus pandemic.[42] Interestingly, our study revealed that access to more positive media information decreased the risk of multimorbidity. The media play a key role in disseminating information about epidemics, including information about the spread, characteristics, transmission, and human impacts of diseases.[43] Previous studies found that the more frequently people paid attention to the epidemic information of COVID-19 outbreak, the more negative the information they received, and the more anxious they would be.[44] Another survey noted that useful and supportive information was associated with less panic from epidemic diseases and increased confidence to fight against the disease.[45] Consistent with these previous studies, our study might imply the potential buffering effect of preference for positive information.

LIMITATIONS

This study has several limitations. First, this cross-sectional survey was conducted through the Questionnaire Star online survey platform, and the URL link was distributed through the geriatric mental health service network by members of the Chinese Society of Geriatric Psychiatry. All response participants were willing to actively engage in the discussion on psychology-related topics related to the effects of COVID-19. Response bias may exist if the nonrespondents lacked external support resources or avoided the topic of mental health. Second, our study implied that the age differences of demographic characteristics and COVID-19 related experiences might buffer the stressful response and the effect of COVID-19 on mental health status. However, the uneven distribution of age in this study sample did not allow further statistical analysis. Therefore, further exploration on the age-related mental health status among caregivers was warranted. Third, Type I error rate may have arisen due to the multiple group comparisons of the participants' demographic characteristics, and the degree of community-level infection contact. Last, our study was conducted during the period in which the strictest epidemic prevention and control management measures were implemented, so there were no responses from Hubei Province. More than 400 mental health workers were sent to Hubei Province to provide psychological rescue. The local residents might have received timely psychological support to some extent. Also, the local residents may be primarily concerned about their physical health after the epidemic; mental health problems may not be the priority. In the future, it may be worthwhile to conduct in-depth studies to explore the trajectory of mental health status.

CONCLUSION

In this survey of caregivers of older adults during the COVID-19 epidemic, caregivers responding to the spread of COVID-19 reported high rates of mental health problems. Being female and having community-level COVID-19 contact were independent risk factors for experiencing multiple mental health problems. Compared with normal comparison, caregivers with preexisting mental disorders exhibited increased risk of multimorbidity, while those who accessed more positive media information exhibited decreased risk of multimorbidity. We suggest taking preventive and early intervention measures to support caregivers during the postepidemic era.

DECLARATIONS

Ethics Approval and Consent to Participate

The study was approved by the research ethics committee of Peking University Institute of Mental Health (Sixth hospital), and all participants provided informed consent through online survey system.

Consent for Publication

Not applicable.

Availability of Data and Material

The dataset generated and analyzed during the current study are not publicly available because we are preparing an additional manuscript. However, they are available upon the reasonable request to the corresponding author.

SUPPLEMENTARY MATERIALS

Supplementary material associated with this article can be found, in the online version, at https://doi.org/10.1016/j.jagp.2021.01.006.

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