


Sense of Alienation and Its Associations With Depressive Symptoms and Poor Sleep Quality in Older Adults Who Experienced the Lockdown in Wuhan, China, During the COVID-19 Pandemic

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Abstract

Objective: To examine the epidemiology of sense of alienation (SoA) and its associations with depressive symptoms and poor sleep quality (PSQ) in Chinese older adults who experienced lockdown during the COVID-19 pandemic. **Background:** There is a dearth of data on SoA in older adults during the COVID-19 pandemic. **Methods:** Altogether, 543 community-dwelling older adults (50+ years) were recruited via the three-tier mental health network in Wuhan, China, and completed an online questionnaire in April 2020, the first month after the reopening of Wuhan. SoA, depressive symptoms, and sleep quality were measured by using the General Social Alienation Scale, Depression Anxiety and Stress Scale, and a single standardized question, respectively. **Results:** The prevalence of SoA was 52.3% (95% confidence interval: 48.1–56.5%). Factors associated with higher levels of SoA were religious belief ($\beta = 1.960, P = .024$), monthly family income < 4000 RMB ($\beta = 1.405, P = .022$), unemployment ($\beta = 1.217, P = .039$), fair or poor physical health ($\beta = 2.202, P = .002$), never and sometimes receiving community support ($\beta = 2.297, P < .001$ and $\beta = 3.417, P < .001$), perceiving a low possibility of a cure for COVID-19 ($\beta = 2.379, P < .001$), and affirmative and unsure fear of COVID-19 patients ($\beta = 2.025, P = .007$ and $\beta = 1.101, P = .027$). After adjusting for sociodemographic and pandemic-related variables, a one-SD increment in the SoA score was significantly associated with depressive symptoms (Odd Ratio [OR] = 5.59, $P < .001$) and poor sleep quality (Odd Ratio = 2.00, $P < .001$). **Conclusion:** Over half of the older adults who experienced lockdown felt alienated, and SoA was independently associated with their depressive symptoms and PSQ. Efforts are warranted to address SoA in older adults who experienced lockdown during the pandemic.

Keywords

sense of alienation, depressive symptoms, sleep quality, elderly, COVID-19

Introduction

In social psychology, alienation refers to a sense of self-estrangement, an absence of social support, or meaningful social connectedness.¹ The sense of alienation generally consists of three dimensions: social isolation, powerlessness, and normlessness.² In China, social psychologists have defined it as an alienated relationship with people, society, nature, and oneself or as a relationship of being dominated or controlled, typically exhibited as social isolation, uncontrollability, meaninglessness, feelings of pressure, and a sense of self-estrangement.³ Feelings of alienation are an important indicator of mental well-being and have been associated with depressed mood, anxiety

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symptoms, alcohol use disorders, psychological distress, insomnia, post-traumatic stress disorder, and increased risk of suicide.⁴⁻¹⁰

The ongoing coronavirus disease 2019 (COVID-19) pandemic has caused a worldwide public mental health crisis. In an attempt to curb the spread of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), governments of various countries have imposed regulations such as lockdown restrictions, social distancing, mass quarantine, self-quarantining, and home confinement. These restrictions, while necessary for infection control, reduce social contact among people and cause difficulties in maintaining traditional social connectedness.¹¹ Moreover, the pandemic may also increase suspicion among people because of the invisible transmission of SARS-CoV-2, asymptomatic COVID-19 infections, and fear of being infected, which in turn results in difficulties in developing quality relationships among people. Consequently, people are more likely to feel alienated amid the pandemic. For example, researchers have observed the high prevalence of loneliness, a subjective feeling of social isolation, in Chinese residents affected by the COVID-19 epidemic.¹²

The pandemic has disproportionately affected older adults, including higher case fatality and higher risk for severe complications in elderly patients with COVID-19, and concerns about disruptions in older adults' access to routine healthcare and exacerbated mental health problems.¹³ Accordingly, empirical studies have reported a 32.0–35.8% prevalence of depressive symptoms and a 57.0–64.3% prevalence of poor sleep quality among older adults during the COVID-19 pandemic.¹⁴⁻¹⁶ Commonly reported factors associated with depressive symptoms and poor sleep quality in the elderly population have included female sex, low socioeconomic status, poor physical health, feeling lonely, fear of COVID-19, and history of exposure to SARS-CoV-2.^{14,16-20}

In the context of rapid aging and urbanization in recent decades in China, the sense of social alienation had become a major psychosocial problem among Chinese older adults before the pandemic.²¹⁻²⁴ Because older adults are vulnerable to COVID-19, they are more likely to be recommended to stay at home and maintain a social distance from others. Hence, feelings of alienation may have been exacerbated in Chinese older adults, particularly those living in the COVID-19 epicenter. Nevertheless, to our knowledge, few studies have examined the sense of alienation in older adults amid the COVID-19 pandemic, as well as its association with poor mental health.

Compared to the numerous studies on the mental health of a variety of populations during the outbreak stage of COVID-19, fewer studies have focused on the mental health of older adults after the outbreak.^{25,26} However, the

negative mental health impact of the COVID-19 pandemic is likely to be long-lasting and may persist for several years.²⁷ Given the importance of post-pandemic mental health, a municipality-wide psychosocial services program was launched immediately after the easing of the lockdown in Wuhan on 8 April, 2020, the initial COVID-19 epicenter in China, which aimed to provide social work and mental health services to local residents with a particular focus on older adults. To inform the planning and development of appropriate mental health services for older adults, the present study investigated the sense of alienation and its associations with depressive symptoms and poor sleep quality in older adults who experienced the lockdown in Wuhan, China, between 12 and 21 April, 2020. The consideration for focusing on alienation was that since social distancing was still required and public gathering was still prohibited during the early post-outbreak stage, the sense of alienation was still a psychosocial concern for older adults.

Methods

Sampling and Participants

Due to the potential risk of SARS-CoV-2 infection, household-based sampling and face-to-face interviews were not feasible. Instead, an online questionnaire was administered to a convenience sample of community-dwelling older adults living in Wuhan, China. By using the preexisting three-tier mental health network in Wuhan, ten community workers were purposively recruited as the seeds of our sampling. These seeds were required to send the link of our survey questionnaire to at least 50 older adults of the communities in which they were living. Eligible participants were community-dwelling older adults aged 50 years or older living in Wuhan.²⁸ We excluded older adults who had been infected with COVID-19.

The study protocol was approved by the Ethics Committee of Wuhan Mental Health Center. Before completing the online questionnaire, a one-page letter was used to display the content of the survey, declarations on the anonymity and confidentiality principles, and instructions for completing the questionnaires. After that, the respondents were asked to press a “yes” button to indicate their informed consent to participate.

Assessments

Sociodemographic variables in the questionnaire were gender, age, education, marital status, employment status, monthly family income, living arrangement (alone or with others), and religious belief. The presence of religious belief was assessed by asking “Do you have any religious

belief? Respondents who replied “yes” were classified as having religious belief.²⁹

Self-rated physical health was assessed by using a single question: “In general, would you say your overall physical health is good, fair, or poor?”

Pandemic-related factors included COVID-19 infection of family members or relatives, frequency of receiving help from community workers for daily affairs during the lockdown (never, sometimes, often), fear of COVID-19 patients (no, unsure, yes), and perceived possibility of a cure for COVID-19 if a person had COVID-19 (high vs low).

The Jessor and Jessor³⁰ General Social Alienation Scale (GSAS) was used to measure feelings of alienation. The GSAS consists of 15 items with response alternatives of “1=strongly disagree,” “2=disagree,” “3=agree,” and “4=strongly agree”. The possible total scores range from 15 (low alienation) to 60 (high alienation). The Chinese GSAS has been proven to be reliable and valid in Chinese older adults.³¹ Although there is no recommended cutoff score of the GSAS to dichotomize older adults into those with and without clinically significant feelings of alienation, a preliminary study in China suggested 31 and above to indicate the presence of at least some feelings of alienation.³²

Depressive symptoms over the past week were assessed with the depression subscale of the validated Chinese Short Version of Depression Anxiety and Stress Scale (DASS).³³ This subscale has seven items with all items being answered on a four-point Likert scale from “0=did not apply to me at all” to “3=applied to me very much or most of the time”. The possible total scores on the depression subscale of the DASS range from 0 to 21, with 5 and above denoting clinically significant depressive symptoms.

To reduce the response burden, we used the subjective sleep quality question of the validated Chinese Pittsburgh Sleep Quality Index to evaluate the sleep quality: “During the past month, how would you rate your sleep quality overall?”³⁴ The question was answered on a four-point scale: “0=very good,” “1=fairly good,” “2=fairly bad,” and “3=bad”. Respondents who answered “fairly bad” and “bad” were considered to have poor sleep quality.

Statistical Analysis

The mean score (standard deviation [SD]) on the GSAS and prevalence rates of depressive symptoms and poor sleep quality were calculated. One-way ANOVA was used to compare GSAS scores between/across different subgroups based on sociodemographic and pandemic-related characteristics. Multiple linear regression analysis with a backward stepwise entry of all significant variables in one-way ANOVA was used to identify factors associated with feelings of alienation.

The independent association of sense of alienation with depressive symptoms was examined with multiple logistic regression analysis, which included the presence of

depressive symptoms as the outcome variable, alienation as the predictor, and sociodemographic and pandemic-related variables together as covariates. The association between alienation and poor sleep quality was examined in the same manner. To facilitate the explanation of alienation-depression/sleep association, alienation was modeled as a continuous ordinal measure, per one-SD increment in GSAS score, in the logistic regression analyses. Unstandardized coefficients (β s) and odds ratios (ORs) and their 95% confidence intervals (95% CIs) were used to quantify associations between factors and the outcome variables in the linear and logistic regression analyses, respectively. The statistical significance level was set at $P < .05$ (two-sided). SPSS software version 12.0 package (SPSS Inc, Chicago, IL, USA) was used for all analyses.

Results

The final sample of this study was 543 older adults with an average age of 54.4 years (SD: 4.5, range: 50–78) and 30.2% being men. Detailed sociodemographic and pandemic-related characteristics of the sample are displayed in Table 1.

The mean GSAS score was 30.5 (SD: 5.7, range: 15–49). In total, 284 participants (52.3% [95% CI: 48.1–56.5%]) scored 31+. The results of one-way ANOVA showed that the participants who had an educational attainment of senior middle school and below ($P = .006$), had marital status of “others” ($P = .026$), had monthly family income <4000 RMB ($P < .001$), were unemployed ($P = .001$), had religious beliefs ($P = .047$), had poor physical health ($P < .001$), “never” or “sometimes” received community support during the lockdown ($P < .001$), perceived a low possibility of a cure for COVID-19 ($P < .001$), and feared COVID-19 patients ($P < .001$) had significantly higher alienation scores than their counterparts in the same subgroups (Table 1).

In multiple linear regression, 6 factors were significantly associated with feelings of alienation: religious belief (vs no; $\beta = 1.960$, $P = .024$), monthly family income <4000 RMB (vs. > 8000 RMB; $\beta = 1.405$, $P = .022$), unemployment (vs employment; $\beta = 1.217$, $P = .039$), fair or poor physical health (vs good; $\beta = 2.202$, $P = .002$), never and sometimes receiving community support (vs often; $\beta = 2.297$, $P < .001$ and $\beta = 3.417$, $P < .001$), perceiving a low possibility of a cure for COVID-19 (vs high; $\beta = 2.379$, $P < .001$), and affirmative and unsure fear of COVID-19 patients (vs no; $\beta = 2.025$, $P = .007$ and $\beta = 1.101$, $P = .027$) (Table 2).

The prevalence rates of depressive symptoms and poor sleep quality were 21.4 and 23.6%, respectively. GSAS scores were significantly higher in depressed than non-depressed participants (35.6 ± 5.3 vs 29.0 ± 5.0 , $P < .001$) and in participants with poor sleep quality than those

Table 1. Characteristics of the Sample of Older Adults and General Social Alienation Scale Scores According to Sociodemographic and Pandemic-Related Variables.

Variable		Number of Participants (Percentage Among the Total Sample)	General Social Alienation Scale Score	F	P
Sex	Male	164 (30.2%)	30.9±5.6	1.479	.225
	Female	379 (69.8%)	30.3±5.8		
Age (years)	50–59	494 (91.0%)	30.4±5.8	1.188	.276
	60+	49 (9.0%)	31.3±5.4		
Education	Senior middle school and below	137 (25.2%)	31.6±5.5	7.468	.006
	College and above	406 (74.8%)	30.1±5.8		
Marital status	Married	479 (88.2%)	30.3±5.8	4.984	.026
	Others ^a	64 (11.8%)	32.0±5.3		
Monthly family income	<4000 RMB	108 (19.9%)	32.0±6.0	8.108	<.001
	4000–8000 RMB	271 (49.9%)	30.6±5.4		
	>8000 RMB	164 (30.2%)	29.2±5.9		
Employment status	Employed	425 (78.3%)	30.0±5.8	10.768	.001
	Unemployed	118 (21.7%)	32.0±5.2		
Living alone	No	506 (93.2%)	30.4±5.6	2.135	.145
	Yes	37 (6.8%)	31.8±7.0		
Religious belief	No	501 (92.3%)	30.3±5.8	3.961	.047
	Yes	42 (7.7%)	32.1±5.1		
Self-rated physical health	Good	348 (64.1%)	30.0±5.8	7.944	<.001
	Fair	169 (31.1%)	31.4±5.6		
	Poor	26 (4.8%)	33.4±4.8		
Family members or relatives diagnosed with COVID-19 ^b	No	523 (96.3%)	30.4±5.7	1.709	.192
	Yes	20 (3.7%)	32.1±6.4		
Receiving community support during the lockdown	Never	91 (16.8%)	31.0±5.1	11.162	<.001
	Sometimes	288 (53.0%)	31.3±5.4		
	Often	164 (30.2%)	28.7±6.3		
Possibility of a cure for COVID- 19 ^b	High	501 (92.3%)	30.1±5.6	18.65	<.001
	Low	42 (7.7%)	34.1±6.0		
Fear of patients with COVID- 19 ^b	No	127 (23.4%)	28.6±6.4	10.067	<.001
	Unsure	89 (16.4%)	30.4±5.4		
	Yes	327 (60.2%)	31.2±5.4		
Depressive symptoms	No	427 (78.6%)	29.0±5.0	152.822	<.001
	Yes	116 (21.4%)	35.6±5.3		
Poor sleep quality	No	415 (76.4%)	29.6±5.3	44.33	<.001
	Yes	128 (23.6%)	33.3±6.2		

^aOthers included never-married, divorced, separated, and widowed.

^bCOVID-19: corona virus disease 2019.

without poor sleep quality (33.3 ± 6.2 vs 29.6 ± 5.3 , $P < .001$) (Table 1). After adjusting for sociodemographic and pandemic-related variables, feelings of alienation (a one-SD increment in GSAS score) were still significantly associated with depressive symptoms (OR [95% CI]: 5.59 [3.76, 8.29], $P < .001$) and poor sleep quality (OR [95% CI]: 2.00 [1.54, 2.60], $P < .001$) (Table 3).

Discussion

To the best of our knowledge, this is the first study investigating the sense of alienation in an older adult population

amid the COVID-19 pandemic. In addition, the significant associations of feelings of alienation with depressive symptoms and poor sleep quality were also replicated in older adults who experienced the lockdown.

The main finding of this study is the mean GSAS score of 30.5 and 52.3% prevalence of at least some feelings of alienation in the elderly population living in the COVID-19 epicenter after the reopening of Wuhan. In 2014, Gu and colleagues²² reported a mean GSAS score of 31.0 in a representative sample of 733 Chinese older adults aged 60 years and over. Compared to this mean level of sense of alienation during the pre-pandemic period, our study found

Table 2. Results of Multiple Linear Regression on Factors Associated With Feelings of Alienation in Chinese Older Adults.

Factor		β	Standard Error	t	P
Monthly family income	<4000 RMB vs > 8000 RMB	1.405	.609	2.305	.022
Religious belief	Yes vs no	1.960	.865	2.267	.024
Employment status	Unemployed vs employed	1.217	.588	2.071	.039
Self-rated physical health	Fair or poor vs good	2.202	.705	3.125	.002
Receiving community support during the lockdown	Never vs often	2.297	.531	4.327	<.001
	Sometimes vs often	3.417	.874	3.911	<.001
Possibility of a cure for COVID-19 ^a	Low vs high	2.379	.563	4.225	<.001
Fear of patients with COVID-19 ^a	Yes vs no	2.025	.75	2.701	.007
	Unsure vs no	1.101	.496	2.221	.027

^aCOVID-19: corona virus disease 2019.

Table 3. Results of Multiple Logistic Regression Analyses on Associations Between Sense of Alienation and Depressive Symptoms and Poor Sleep Quality in Chinese Older Adults, Controlling for Sociodemographic and Pandemic-Related Factors.

Variable	Depressive Symptoms	P	Poor Sleep Quality	P
Alienation score: Per standard deviation increment	5.59 (3.76, 8.29)	<.001	2.00 (1.54, 2.60)	<.001
Gender: Female vs male	.74 (.42, 1.30)	.293	1.42 (.84, 2.39)	.190
Age (years): 60+ vs 50–59	.97 (.38, 2.48)	.952	.46 (.17, 1.23)	.124
Education: College and above vs senior middle school and below	1.10 (.57, 2.12)	.780	1.46 (.79, 2.70)	.228
Marital status: Others ^a vs married	1.06 (.49, 2.28)	.883	1.32 (.69, 2.54)	.401
Monthly family income: < 4000 RMB vs >8000 RMB	.73 (.32, 1.64)	.442	1.34 (.64, 2.77)	.437
Monthly family income: 4000–8000 RMB vs >8000 RMB	.91 (.49, 1.69)	.764	1.51 (.88, 2.58)	.134
Employed: No vs yes	1.65 (.81, 3.37)	.169	1.21 (.64, 2.30)	.562
Living alone: Yes vs no	1.43 (.52, 3.95)	.492	1.12 (.46, 2.74)	.799
Religious belief: Yes vs no	1.10 (.47, 2.60)	.830	.61 (.26, 1.42)	.253
Self-rated physical health: Poor or fair vs good	1.57 (.93, 2.64)	.093	2.00 (1.27, 3.14)	.003
Family members or relatives diagnosed with COVID-19 ^b : yes vs no	2.15 (.62, 7.41)	.226	2.94 (1.04, 8.36)	.043
Receiving community support during the lockdown: Never vs often	.80 (.40, 1.61)	.530	1.00 (.53, 1.88)	.999
Receiving community support during the lockdown: Sometimes vs often	1.08 (.49, 2.35)	.856	1.44 (.72, 2.85)	.301
Possibility of a cure for COVID-19 ^b : Low vs high	2.00 (.86, 4.62)	.107	2.24 (1.09, 4.60)	.029
Fear of patients with COVID-19 ^b : Unsure vs no	1.50 (.75, 2.99)	.253	1.05 (.60, 1.84)	.860
Fear of patients with COVID-19 ^b : Yes vs no	1.15 (.48, 2.79)	.751	.77 (.36, 1.65)	.502

^aOthers included never-married, divorced, separated, and widowed.

^bCOVID-19: corona virus disease 2019.

a similar level of sense of alienation in Chinese older adults amid the pandemic. However, because the average age of our sample was much lower than that of the above study (54.4 vs 70.4 years) and because levels of sense of alienation were shown to be higher in the oldest old and old-old adults than young-old adults,³⁵ our study would likely have a higher level and prevalence of sense of alienation if we had recruited a sample of similar age.

Nevertheless, it is expected to find that as high as 52.3% of the Wuhan older adults had a sense of alienation during the first month after the reopening. Older adults have reduced social connections with others due to their low socioeconomic status,

physical illnesses, disability, and frailty, and limited access to technology aids.^{36,37} The mass quarantine in Wuhan worsened this situation, because Chinese older adults were not able to maintain social connectedness in a face-to-face manner, which they have been shown to prefer.¹¹ Furthermore, it is not easy for this population to re-establish connections with others after the easing of mass quarantine because of the restrictions caused by social distancing. The high prevalence of a sense of alienation in our study suggests that feelings of alienation in older adults may not be a transient phenomenon during the outbreak; rather, it could persist for a long time after the successful containment of the COVID-19 outbreak.

In the literature, male sex, older age, marital status of never-married, indicators of low socioeconomic status such as low monthly income and unemployment, living alone, and poor physical health have been significant factors associated with the sense of alienation in the elderly population.^{22,24,38} Correlates of a sense of alienation identified in our study were consistent with some, not all, previous studies. The association of alienation with religious belief was unexpected, because it is generally believed that religious belief and attendance can promote social connectedness.³⁹ We speculate that this may be explained by the suspension of religious activities during the COVID-19 pandemic, which disrupted social connections among those with religious beliefs and makes them feel alienated. The finding of a higher sense of alienation in older adults who never and sometimes received community support than those who often received support was interesting and suggested the importance of support from community workers for maintaining the psychosocial well-being of older adults during the pandemic. For example, during the lockdown days in Wuhan, community workers and volunteers played a critical role in meeting older adults' needs for daily necessities, care, and social interactions because most of them either lacked access to social technologies or had limited skills to use social media.¹¹

The significant associations of perceiving a low possibility of a cure for COVID-19 and fear of COVID-19 patients with a sense of alienation suggested that older adults' knowledge and attitudes toward COVID-19 may have influenced the risk of feeling alienated. The excessive fear of COVID-19 infection may have limited older adults' willingness to go out and interact with others and participate in community activities, increasing the risk of feelings of alienation.

The 21.4% prevalence of depressive symptoms and 23.6% prevalence of poor sleep quality demonstrated in this study were lower than those of the aforementioned studies,¹⁴⁻¹⁶ which may be attributed to the time point of our mental health assessment, which was during the post-outbreak period, not the outbreak period itself. However, the finding that over one-fifth of the Wuhan older adults suffered from depressive symptoms and poor sleep quality after the reopening of Wuhan still suggests that reducing and preventing mental health problems should still be a focus of the psychosocial services for older adults who experienced the outbreak and mass quarantine. The elevated risk of depressive symptoms and poor sleep quality in alienated older adults was consistent with earlier studies.^{10,22} There might be direct and indirect pathways to explain the alienation-depression/sleep relationship; for example, people may feel depressed and experience insomnia due to lack of meaningful social connectedness, and the risk of depression and poor sleep quality may be heightened in stressed older adults who lack of social support.

The current study has some limitations. First, the sample of older adults was relatively young and recruited by convenience sampling, so the sample representativeness was limited. We

must be cautious when generalizing the findings. Second, sense of alienation is a culturally specific subjective feeling, so qualitative data from Wuhan older adults who experienced the mass quarantine would provide more insights to understand their feelings of alienation. Due to our limited research budget, we did not perform in-depth interviews with them. Third, older adults' attitudes toward psychosocial services are also important for planning the services, but we did not collect data on these variables in the questionnaire. Finally, since this was a cross-sectional study, the causality between identified factors and sense of alienation needs to be further examined in longitudinal studies.

In conclusion, over half of the older adults who experienced the lockdown in the COVID-19 epicenter had feelings of alienation after the outbreak, and the sense of alienation was independently associated with their high risk of depressive symptoms and poor sleep quality. Addressing the sense of alienation should be considered a focus of the post-outbreak psychosocial and mental health services for older adults, which may be beneficial for reducing depressive symptoms and improving their sleep quality. Efforts to prevent or reduce feelings of alienation in older adults may be more useful if targeted at those with a low socioeconomic status, poor physical health, and excessive fear of COVID-19. In addition, providing community support to those in need is promising for relieving the feelings of alienation.

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