

Associations Between COVID-19 Anxiety Syndrome and Pandemic Fatigue in a Post-Lockdown Context: The Roles of Community and Personal Resilience

Kexin Wang^{1,2,*}, Yanping Wang^{2,*}, Nan Meng^{2,*}, Yanhua Hao², Ning Ning², Linghan Shan², Yuexia Gao³, Miaomiao Zhao³, Wuxiang Shi⁴, Yinghua Qin⁴, Peng Wang^{1,2}, Yuxuan Wang², Huan Liu², Qunhong Wu²

¹Department of Epidemiology, School of Public Health, Harbin Medical University, Harbin, Heilongjiang, People's Republic of China; ²Department of Social Medicine, School of Health Management, Harbin Medical University, Harbin, Heilongjiang, People's Republic of China; ³Department of Health Management, School of Public Health, Nantong University, Nantong, Jiangsu, People's Republic of China; ⁴Department of Health Economy and Social Security, College of Humanities and Management, Guilin Medical University, Guilin, Guangxi, People's Republic of China

*These authors contributed equally to this work

Correspondence: Qunhong Wu; Huan Liu, School of Health Management, Harbin Medical University, No. 157 Baojian Road, Nangang District, Harbin, Heilongjiang, 150081, People's Republic of China, Email wuqunhong@163.com; liuhuan00813@163.com

Purpose: Pandemic fatigue has become a significant public health challenge during the COVID-19 pandemic, but the mechanism of COVID-19 anxiety syndrome on it and its components remains unclear. It has not yet fully clarified whether and how community resilience and personal resilience can play a key role in the post-lockdown context. This study aims to evaluate the association between COVID-19 anxiety syndrome and pandemic fatigue, and to investigate the underlying effects of community resilience and personal resilience.

Methods: A cross-sectional online survey was conducted with 1209 participants recruited via stratified sampling in Xi'an. They completed demographic characteristics, Pandemic Fatigue Scale, COVID-19 Anxiety Syndrome Scale, Conjoint Community Resiliency Assessment Measurement, and Connor-Davidson Resilience Scale. Descriptive statistics, t-tests, and ANOVA were used to examine demographic differences in pandemic fatigue. Pearson's correlation and stepwise multiple linear regression were employed to analyze the associations among COVID-19 anxiety syndrome, community resilience, personal resilience, and pandemic fatigue.

Results: The mean score of pandemic fatigue was 17.87 (SD = 7.88), with information fatigue (9.51 ± 4.30) higher than behavior fatigue (8.36 ± 4.16). COVID-19 anxiety syndrome was positively associated with pandemic fatigue ($\beta = 0.286, P < 0.001$). The total effects of community resilience and personal resilience accounted for 28.3% and 30.6% in the model of pandemic fatigue and behavior fatigue. Only community resilience significantly explained the association between COVID-19 anxiety syndrome and information fatigue, accounting for 11.87%.

Conclusion: Strategy for enhancing resilience capacity both at the community and individual level should be highlighted to mitigate pandemic fatigue in the context of post-lockdown. Targeted resilience-building interventions should be prioritized for women and middle-aged adults.

Keywords: pandemic fatigue, COVID-19 anxiety syndrome, community resilience, personal resilience

Introduction

China is one of the countries that implemented the strictest and longest-lasting control measures to curb the spread of the COVID-19 pandemic.¹ While these measures are effective in reducing the number of confirmed cases and deaths, they also have lasting and profound impact on people's mental health.^{2,3} Pandemic fatigue is one of the main concerned



psychological problems. World Health Organization (WHO) defined it as distress which can result in demotivation to follow recommended protective behaviors.⁴ It gradually emerges over time and is affected by various emotions, experiences, and perceptions. Notably, pandemic fatigue is a kind of cognitive exhaustion and motivation failure at the psychological and mental level, which needs to be distinguished from physical energy depletion and clinical symptoms. The research by Rudroff and et al delineates the neurophysiological basis of long-COVID fatigue, which includes mechanisms such as neuroinflammation, brain network dysfunction, autonomic dysregulation, and metabolic impairment.⁵ “Pandemic fatigue” in this study describes a phenomenon of psychobehavioral demotivation rather than a clinical fatigue syndrome with biological substrates.

The conceptualization of pandemic fatigue condenses the thought of information seeking and behavioral compliance, that is, information fatigue, and behavior fatigue.⁶ Information fatigue refers to feeling exhausted from and demotivated towards keeping oneself informed about the pandemic. Behavior fatigue whereas refers to feeling exhausted from and demotivated towards following recommended COVID-19 protective behaviors, such as physical distancing, hygienic practices, mask wearing.^{7–9} Pandemic fatigue is prevalent in many countries worldwide, with 56.4% in Turkey,¹⁰ and 54.2% in Malaysia.¹¹ Evidence from Hongkong has indicated that the prevalence of pandemic fatigue is 43.7% by using a self-reported single question.¹² A study in mainland China reports pandemic fatigue scores with 15.24 ± 5.26 among 689 individuals from July 2022 to September 2022.¹³ However, the prevalence of pandemic fatigue and its components remains unclear. Pandemic fatigue has many adverse consequences, mostly notably reducing the effectiveness of key public health and social measures.¹⁴ Therefore, understanding the underlying mechanisms of pandemic fatigue is crucial for the development of targeted protective strategies and public health policies in the context of pandemic.

COVID-19 anxiety syndrome, a specific anxiety emerging during the COVID-19 pandemic, manifests as avoidance, checking, excessive worrying, and threat monitoring.¹⁵ Extensive research has linked it with physical fatigue^{16,17} and documented its adverse effects on adherence to health-protective behaviors.^{18,19} While these findings hint at its potential to deplete motivation, its direct link to pandemic fatigue remains less clear. Moreover, the role of resilience in buffering against a range of adverse psychological outcomes is well-documented,^{20–23} but its specific relationship with COVID-19 anxiety syndrome remains unclear.

Psychological resilience refers to an individual’s ability to recover from adversity.²⁴ It mitigates psychological distress and fosters proactive coping with mental issues.^{25,26} Some studies have found that psychological resilience is negatively associated with pandemic fatigue, as more resilient individuals generally show better adaptability during the outbreak.^{27,28} More resilient individuals generally show better adaptability during the outbreak, effectively reducing pandemic fatigue. More research on resilience has focused on the individual and family levels, but the capacity to cope with adversity also operates at a collective scale.^{12,29}

Community resilience means the ability of a community to respond effectively, recover, and maintain its social functioning during a disaster or crisis.^{30,31} Critically, community-level resilience is not independent of individual resilience; rather, it serves as a foundational resource that cultivates personal resilience.^{32,33} Support at the community level can provide individuals with the necessary social support, information transmission and emotional support. Consequently, individuals in high resilient communities are generally better able to access social support that enhances their ability to cope with stress and difficulties. Previous study reflects that community resilience is associated with adherence to lockdown.³⁴ Despite these connections, the role of community resilience in the context of pandemic fatigue is far less clear.

This study, situated in the post-lockdown context, aims to assess pandemic fatigue across its information fatigue and behavior fatigue dimensions. We propose and test a dual-pathway model linking COVID-19 anxiety syndrome to pandemic fatigue, with a specific focus on community resilience and personal resilience. Furthermore, we examine variations in this model across key demographic subgroups to identify vulnerable populations for targeted public health intervention.

Materials and Methods

Participants

This cross-sectional survey was conducted in Xi’an City, Shaanxi Province, China, spanning from January to February 2022. Samples were collected by utilizing a random sampling method stratified by administrative districts.

The validity of each questionnaire was assessed by quality inspectors, considering factors such as completion time and logical consistency in responses. A total of 1209 valid questionnaires were collected, with an effective response rate of 78.7%. Ethical approval for this study was obtained from the ethics review board of Harbin Medical University, and all participants provided informed consent before participating in the survey.

Measures

Demographic Characteristics

Data on age, sex, marital status, education, employment status, self-reported monthly income, and administrative districts was obtained in the study. Age was divided into four levels, 18–24, 25–29, 30–35 and 36 or above years old. Marital status was categorized as married (including cohabitating) and unmarried (including single, divorced and widowed). Education was classified as Junior college or below, and Bachelor's degree or above. Employment status was categorized as employed, and unemployed, retired or others. Self-reported monthly income (RMB) was divided into four levels, <3000, 3000–4999, 5000–7999, and ≥ 8000 yuan. Administrative districts were categorized Baqiao District, Beilin District, Lianhu District, Weiyang District, Xincheng District, Yanta District, and Chang'an District.

Pandemic Fatigue

Pandemic fatigue was evaluated by the 6-item bi-dimensional Pandemic Fatigue Scale (PFS), which contained both information fatigue and behavior fatigue.⁶ The item was scored on a 7-point Likert scale (from 1 = strongly disagree to 7 = strongly agree) with total scores of 6–42, and higher scores reflecting higher level of fatigue. “I am tired of all the COVID-19 discussions in TV shows, newspapers, radio programs or others.” is an example in information fatigue. “I feel strained from following all of the behavioral regulations and recommendations around COVID-19” is one of items in behavior fatigue. Adaptation of the PFS into Chinese had good internal consistency reliability and good structure validity,³⁵ and the Cronbach's α coefficient of the scale was 0.848 in the present study.

COVID-19 Anxiety Syndrome

The COVID-19 Anxiety Syndrome Scale (C19-ASS) was used to measure the COVID-19 anxiety syndrome. The scale included 9 items and each item was measured on a five-point Likert scale (from 0 = not at all to 4 = nearly every day).¹⁵ Scores ranged from 0 to 36, with higher scores indicating a higher level of COVID-19 anxiety syndrome. The one description of items was that “I have avoided going out to public places (shops, parks) because of the fear of contracting COVID-19”. In this study, the C19-ASS showed good reliability (Cronbach's $\alpha = 0.838$).

Community Resilience

A Chinese version of the 10-item Conjoint Community Resiliency Assessment Measurement (CCRAM-10) was applied to measure community resilience.³⁶ A 5-point Likert scale was adopted from 1 (strongly disagree) to 5 (strongly agree). The range of scores was 10–50, with higher scores signifying higher community resilience. “The local government of my community functions well” was one of the example questions in leadership dimension. “My community is prepared for an emergency situation” was one of example questions in the preparedness dimension. “Residents in my community trust each other” was one of example questions in social trust dimension. In this study, the Cronbach's α of the scale was 0.897 in the current study.

Personal Resilience

Connor-Davidson Resilience Scale-10 item (CD-RISC-10) was applied to measure resilience of adults during the COVID-19.²⁴ Each item was scored on a 5-point Likert scale (0 = never, 1 = rarely, 2 = sometimes, 3 = usually, 4 = always) and the total score ranges between 0 and 40, with lower scores indicating poorer resilience. One example question was that “Coping with stress can strengthen me”. Adaptation of the CD-RISC-10 into Chinese was carried out and had good internal consistency reliability as well as good structure.³⁷ In this study, the Cronbach's α coefficient of the scale was 0.854.

Statistical Analysis

The study employed confirmatory factor analysis (CFA) to evaluate the validity of the variables. Adequate or good fit was indicated by a root mean square error approximation (RMSEA) less than or equal to 0.05, and Goodness-of-Fit Index (GFI), Adjusted Goodness-of-Fit Index (AGFI), Comparative Fit Index (CFI) or Tucker-Lewis Index (TLI) greater than or equal to 0.90.³⁸ To assess the potential impact of common method bias, we adopted the Harman's Single factor and unmeasured latent method construct for testing.^{39,40} In Harman's single factor method, a variance of the first unrotated single factor greater than 40% was considered to have a common method bias. Meanwhile, we introduced a potential common method factor based on the benchmark model, which was set to be unrelated to all theoretical constructs and loaded on all measure terms. The severity of the common method bias was determined by comparing the goodness-of-fit of models. Indicators like χ^2/df , RMR (Root Mean Square Residual), RMSEA, NFI (Normed Fit Index), CFI and TLI were reported.

Statistical data were expressed as mean \pm standard deviation (SD), and categorical variables were expressed as frequencies and percentages. Independent *t*-test and one-way Analysis of Variance (ANOVA) were utilized to examine differences in pandemic fatigue. Pearson's correlation and stepwise multiple liner regression were employed to analyze the associations among key variables. Furthermore, subgroup analyses were conducted by sex and age. Statistical significance was defined as a two-tailed *P* value of < 0.05 . In addition, all models were controlled for covariates (age, sex, marital status, education, employment status, self-reported monthly income, and administrative districts). All statistical analyses were conducted using SPSS 26.0.

Results

Common Method Bias Test

The results of confirmatory factor analysis were demonstrated in [Supplementary File Table S1](#). All fit indices met their respective thresholds for acceptable fit (CFI, TLI, GFI, AGFI > 0.90 ; RMSEA < 0.08). The first common factor accounted for 21.36% of the variation, less than 40%. Furthermore, after introducing the common method factor into the benchmark model (see [Table S2 in Supplementary File](#)), the model fitting index did not show a significant improvement. Therefore, there was no serious common method bias in this study.

Demographic Characteristics and Pandemic Fatigue

The mean score of pandemic fatigue was 17.87 (SD = 7.88), with information fatigue (9.51 ± 4.30) higher than behavior fatigue (8.36 ± 4.16). The demographic characteristics and pandemic fatigue were shown in [Table 1](#). Pandemic fatigue levels were higher among males, aged 25–35, who were married/cohabiting, had a junior college or below, were employed, and had a monthly income above 5,000 yuan, compared to the overall. Also, participants lived in Beilin,

Table 1 Demographic Characteristics and the Distribution of Pandemic Fatigue (N = 1209)

Variables	n (%)	Pandemic Fatigue (M \pm SD)	F/t	P
Sex			2.484	0.013*
Male	551 (45.6)	18.48 \pm 8.17		
Female	658 (54.4)	17.36 \pm 7.59		
Age (M = 32.07, SD = 9.478)			2.923	0.033*
≤ 24	279 (23.1)	17.38 \pm 7.81		
25-29	269 (22.2)	18.06 \pm 7.58		
30-35	312 (25.8)	18.88 \pm 8.33		
≥ 36	349 (28.9)	17.22 \pm 7.67		

(Continued)

Table 1 (Continued).

Variables	n (%)	Pandemic Fatigue (M ± SD)	F/t	P
Marital status			0.523	0.601
Unmarried, divorced, or widowed	481 (39.8)	17.72 ± 7.91		
Married or cohabitating	728 (60.2)	17.97 ± 7.86		
Education			1.343	0.180
Junior college or below	377 (31.2)	18.32 ± 8.46		
Bachelor's degree or above	832 (68.8)	17.66 ± 7.59		
Employment status			0.709	0.479
Unemployed, retired or others	318 (26.3)	17.60 ± 7.74		
Employed	891 (73.7)	17.97 ± 7.93		
Monthly income (RMB, yuan)			1.772	0.151
<3000	303 (25.1)	17.18 ± 7.86		
3000-4999	250 (20.7)	17.50 ± 7.57		
5000-7999	359 (29.7)	18.18 ± 8.16		
≥8000	297 (24.6)	18.51 ± 7.77		
Administrative districts			1.378	0.220
Baqiao District	73 (6.0)	18.10 ± 7.22		
Beilin District	166 (13.7)	19.27 ± 8.46		
Lianhu District	114 (9.4)	18.06 ± 8.13		
Weiyang District	143 (11.8)	18.01 ± 7.97		
Xincheng District	361 (29.9)	17.59 ± 8.29		
Yanta District	218 (18.0)	17.60 ± 7.17		
Chang'an District	134 (11.1)	16.88 ± 6.99		

Note: * $P < 0.05$.

Abbreviations: M, mean; SD, standard deviation.

Baqiao, Lianhu and Weiyang District presented higher pandemic fatigue. Sex and age were significantly associated with pandemic fatigue ($P < 0.05$).

Bivariate Correlations Among the Key Variables

The mean, standard deviation, and Pearson correlation coefficient of the main variables in the study were illustrated in Table 2. COVID-19 anxiety syndrome was positively correlated with information fatigue ($r = 0.170$, $P < 0.001$), behavior fatigue ($r = 0.212$, $P < 0.001$), and pandemic fatigue ($r = 0.206$, $P < 0.001$). COVID-19 anxiety syndrome was significantly correlated with community resilience ($r = 0.230$, $P < 0.001$) and personal resilience ($r = 0.186$, $P < 0.001$). Likewise, community resilience was positively correlated with personal resilience ($r = 0.448$, $P < 0.001$). However, community resilience was negatively correlated with information fatigue ($r = -0.125$, $P < 0.001$), behavior fatigue ($r = -0.207$, $P < 0.001$), and pandemic fatigue ($r = -0.178$,

Table 2 Bivariate Correlations Among COVID-19 Anxiety Syndrome, Community Resilience, Personal Resilience, Information Fatigue, Behavior Fatigue, and Pandemic Fatigue (N = 1209)

	M±SD	1	2	3	4	5
COVID-19 anxiety syndrome	19.60 ± 7.24	NA	NA	NA	NA	NA
Community resilience	37.65 ± 6.98	0.230***	NA	NA	NA	NA
Personal resilience	27.24 ± 6.09	0.186***	0.448***	NA	NA	NA
Information fatigue	9.36 ± 4.46	0.170***	-0.125***	-0.072*	NA	NA
Behavior fatigue	8.50 ± 4.08	0.212***	-0.207***	-0.155***	0.702***	NA
Pandemic fatigue	17.87 ± 7.88	0.206***	-0.178***	-0.121***	0.930***	0.915***

Notes: * $P < 0.05$; *** $P < 0.001$.

Abbreviations: M, mean; SD, standard deviation; NA, not applicable.

$P < 0.001$). Personal resilience was also negatively correlated with information fatigue ($r = -0.072, P < 0.05$), behavior fatigue ($r = -0.155, P < 0.001$), and pandemic fatigue ($r = -0.121, P < 0.001$).

Stepwise Multiple Liner Regression

As shown in Table 3, COVID-19 anxiety syndrome significantly positively predicted community resilience ($\beta = 0.207, P < 0.001$), personal resilience ($\beta = 0.063, P < 0.01$) and pandemic fatigue ($\beta = 0.286, P < 0.001$). Community resilience significantly positively predicted personal resilience ($\beta = 0.376, P < 0.001$) and negatively predicted pandemic fatigue ($\beta = -0.226, P < 0.001$). Personal resilience significantly negatively predicted pandemic fatigue ($\beta = -0.118, P < 0.01$). Moreover, COVID-19 anxiety syndrome significantly positively predicted information fatigue ($\beta = 0.146, P < 0.001$) and behavior fatigue ($\beta = 0.141, P < 0.001$). Community resilience significantly negatively predicted information fatigue ($\beta = -0.123, P < 0.001$) and behavior fatigue ($\beta = -0.103, P < 0.001$). Personal resilience significantly negatively predicted behavior fatigue ($\beta = -0.081, P < 0.001$).

Table 4 presented the path analysis of COVID-19 anxiety syndrome, community resilience and personal resilience on pandemic fatigue. The total indirect effect was -0.063 (95% CI: $[-0.086, -0.042]$) in the model of pandemic fatigue, accounting for 28.3% of the total effect. Community resilience had an effect of -0.046 , while personal resilience had an effect of -0.008 , with a combined effect of -0.009 . Similarly, the total indirect effect was -0.033 (95% CI: $[-0.045, -0.021]$) in the model of behavior fatigue, accounting for 30.6% of the total effect. The effects of community resilience and personal resilience were -0.021 and -0.005 , respectively, yielding a combined effect of -0.006 . Notably, in the information fatigue

Table 3 Regression Analysis Results of COVID-19 Anxiety Syndrome, Community Resilience and Personal Resilience on Pandemic Fatigue

	Community Resilience			Personal Resilience			Pandemic Fatigue			Information Fatigue			Behavior Fatigue		
	β	SE	t	β	SE	t	β	SE	t	β	SE	t	β	SE	t
COVID-19 anxiety syndrome	0.205	0.027	2.105***	0.063	0.022	2.860**	0.286	0.031	9.282***	0.146	0.017	8.589***	0.141	0.016	8.567***
Community resilience	NA	NA	NA	0.376	0.023	16.519***	-0.226	0.035	-6.430***	-0.123	0.019	-6.365***	-0.103	0.019	-5.505***
Personal resilience	NA	NA	NA	NA	NA	NA	-0.118	0.040	-2.948**	-0.037	0.022	-1.689	-0.081	0.021	-3.794***
R-square	0.066			0.238			0.117			0.102			0.106		
F	10.593***			41.485***			15.940***			13.651***			14.188***		

Notes: ** $P < 0.01$; *** $P < 0.001$; Adjusted for age, sex, marital status, education, employment status, self-reported monthly income, and administrative districts.
Abbreviations: NA, Not Applicable; SE, Standard Error.

Table 4 Path Analysis of COVID-19 Anxiety Syndrome, Community Resilience and Personal Resilience on Pandemic Fatigue

Outcome	COVID-19 Anxiety Syndrome								
	Pandemic Fatigue			Information Fatigue			Behavior Fatigue		
	Effect (BootSE)	LLCI	ULCI	Effect (BootSE)	LLCI	ULCI	Effect (BootSE)	LLCI	ULCI
Total effect	0.223 (0.031)	0.163	0.284	0.115 (0.017)	0.082	0.149	0.108 (0.017)	0.076	0.140
Direct effect	0.286 (0.031)	0.226	0.347	0.146 (0.017)	0.112	0.179	0.141 (0.016)	0.108	0.173
Indirect effects									
Total	-0.063 (0.011)	-0.086	-0.042	-0.031 (0.006)	-0.042	-0.020	-0.033 (0.006)	-0.045	-0.021
Ind 1	-0.046 (0.010)	-0.068	-0.027	-0.025 (0.006)	-0.037	-0.015	-0.021 (0.005)	-0.032	-0.012
Ind 2	-0.008 (0.004)	-0.167	-0.001	-0.002 (0.002)	-0.007	0.001	-0.005 (0.002)	-0.011	-0.001
Ind 3	-0.009 (0.004)	-0.017	-0.003	-0.003 (0.002)	-0.007	0.001	-0.006 (0.002)	-0.011	-0.003
Total indirect effect/Total effect	28.3%			21.7%			30.6%		

Abbreviations: BootSE, Bootstrapped Standard Errors; LLCI, Lower Level Confidence Interval; ULCI, Upper Level Confidence Interval; Ind 1, Path from COVID-19 anxiety syndrome to pandemic fatigue/information fatigue/behavior fatigue through community resilience; Ind 2, Path from COVID-19 anxiety syndrome to pandemic fatigue/information fatigue/behavior fatigue through personal resilience; Ind 3, Path from COVID-19 anxiety syndrome to pandemic fatigue/information fatigue/behavior fatigue through community resilience and personal resilience.

model, only community resilience demonstrated a significant effect ($\beta = -0.025$, 95% CI: $[-0.037, -0.015]$), accounting for 21.7% of the total effect.

Subgroup Analyses

The results of subgroup analyses by sex and age group were presented in [Figure S1](#) and [S2](#) in the Supplementary File. Among females, both community and personal resilience significantly predicted pandemic fatigue (including information and behavior fatigue; $P < 0.05$). In contrast, among males, only community resilience was significant. Across all age groups, community resilience was the sole significant predictor of information fatigue ($P < 0.05$). However, age differences emerged in pandemic fatigue and behavior fatigue. While both community and personal resilience were significant predictors among participants aged 36 or above ($P < 0.05$), only community resilience was significant among those aged 35 or below.

Discussion

In this study, COVID-19 anxiety syndrome shows significant positive associations with pandemic fatigue, information fatigue, and behavior fatigue. Community resilience is linked to personal resilience, with both forming a network of psychosocial resources related to pandemic fatigue in the pathway analyses. Notably, multiple levels of resilience differ across pandemic fatigue dimensions. Only community resilience is linked to information fatigue, whereas both community and personal resilience are associated with behavior fatigue. Subgroup analyses indicate that the protective association of community resilience is widespread across different sex and age groups. The association with personal resilience, however, is conditional and only significant among women and participants aged 36 or above. These findings provide insights into the complex relationships between multi-level psychosocial resources and pandemic fatigue and suggest that supportive strategies should consider both group differences and the specificity of pandemic fatigue dimensions.

The level of pandemic fatigue reported in this study is within a reasonable range and falls between the values reported in two previous studies conducted in mainland China.^{13,41} This may indicate that pandemic fatigue is not static but fluctuates over time, potentially influenced by evolving epidemic conditions, the stringency of intervention measures, and the perceived severity of the outbreak itself. Information fatigue is higher than behavior fatigue, which aligns with findings from other studies.^{42,43} Previous studies report that people use different social media platforms to get COVID-19 related information, and over 90% participants received COVID-19 information every hour and day.^{44,45} Such frequent and sustained exposure may therefore explain, at least in part, the elevated information fatigue observed.⁴⁶

The level of COVID-19 anxiety syndrome observed in this study is moderate, a finding consistent with previous research.⁴⁷ It is closely associated with pandemic fatigue through multiple psychosocial pathways. On the one hand, inadequate risk perception, encompassing a low estimated likelihood of infection, downplayed the severity of the disease, and a diminished sense of threat, fundamentally undermines the motivation for protective behaviors.^{7,8,48} On the other hand, at different stages of the epidemic's development, various rumors and false information spread widely under the promotion of self-media,^{49,50} while continuous exposure to homogeneous risk information may contribute to emotional exhaustion.^{51,52} Being in such an information environment for a long time, individuals may fall into a contradiction between cognition and emotion. While risk awareness is enhanced, it also intensifies the internal conflict between "should do" (cognitive-driven protection) and "unwilling to do" (emotion-driven avoidance).^{53,54} In summary, demotivation to follow recommended protective behaviors may be compromised both by insufficient risk perception that fails to initiate action and by an over-saturation of risk information that leads to disengagement.

Significant positive correlation between resilience and COVID-19 anxiety syndrome has been observed in this study. This result is beyond our expectations because many studies found the negative associations between resilience and negative events.^{55,56} This study was conducted in a specific context during the post-lockdown period. In this context, COVID-19 anxiety syndrome may have initiated an adaptive motivation pathway. Anxiety, as a risk warning signal, prompts individuals and communities to actively seek information, establish mutual assistance networks, and enhance coping skills and other adaptive behaviors, which are manifested in the short term as an increase in resilience scale scores. This phenomenon of "stress-driven resilience mobilization" reflects a stressful state where psychological

resources are activated in the early stage of a crisis, rather than stable psychological traits. However, this short-term resilience boost driven by anxiety may mask the potential risk of psychological exhaustion. According to the adaptive load theory and the stress system theory, when threats persist and transform into chronic stress, if the initially mobilized psychological resources are not fully restored and replenished, the originally adaptive alertness and response state may gradually evolve into system overload, ultimately leading to cognitive fatigue, emotional exhaustion and behavioral alienation.^{57,58} This process has been confirmed in research related to “pandemic fatigue”, and its core feature is precisely the decline in motivation and engagement under long-term stress.⁵⁹ Therefore, the currently observed positive correlation may only represent the early mobilization stage of the stress response. If the state of anxiety persists for a long time, the relationship between the two may shift from positive to negative as the duration of stress exposure increases, presenting a dynamic transformation from resource mobilization to resource depletion. Future research needs to conduct longitudinal tracking to further examine whether the impact of anxiety on resilience shows nonlinear and time-varying characteristics at different stages of the epidemic’s development, with particular attention to the critical point and protective factors from short-term adaptive mobilization to long-term psychological exhaustion.

Under the specific circumstances of the COVID-19 lockdown, community resilience, as a collective, structural and contextual resource, has become a fundamental psychosocial defense line to alleviate the pandemic fatigue. Xi’an underwent a 31-day closed quarantine that began on December 23, 2020 and ended on January 22, 2022. The behaviors of residents were strictly controlled, and each family can assign one family member every two days to go out to buy daily necessities during the period. Communities as the main living environment for participants during COVID-19 lockdown, build a structural support foundation for residents by providing necessary material resources, such as food, medical supplies, and establishing shared management norms and operation guarantee mechanisms.^{30,60} Moreover, mutual assistance among neighbors within a community strengthens collective identity and activates a series of social and psychological processes, such as shared willingness and capacity to jointly address common challenges, thereby exerting a more profound and sustained influence during COVID-19 lockdown period.^{34,61,62} Community resilience provides individuals with sustained external buffers, whereas personal resilience relies more on internal, variable psychological traits. Although community resilience has a universal protective effect in long-term public health crises, personal resilience is also more prominent in subgroups with heavier social and emotional burdens or greater responsibility pressures at different life stages (women and middle-aged people).³² Therefore, when formulating intervention policies, universal community capacity building is the foundation. It is necessary to design and implement additional supportive programs to enhance personal resilience for these key populations. Priority should be given to targeted mental health services, family support policies, and flexible work arrangements.

Limitation

First, the cross-sectional design adopted in this study essentially cannot determine the temporal relationship among the variables. It neither captures the longitudinal impact of community resilience on individual resilience nor clarifies the temporal correlations among these variables. Therefore, it is difficult to draw causal inferences. Second, the research was conducted during the post-lockdown specific window period. Capturing the immediate psychological state during post-lockdown recovery allows key insights, yet it also means the observed variables may predominantly reflect short-term stress-induced fluctuations. Therefore, the conclusions drawn are period-specific and should not be unverified and deduced to normal or other types of crisis situations. In the future, repeated research can be conducted on the same community at multiple time points, including normal operation, crisis response, and long-term recovery periods. Third, the assessment of community resilience did not account for the classification of community attributes. Although this study conducted a univariate analysis of community resilience under different administrative divisions, no statistically significant differences were found. Future research should integrate attribute classification and spatial analysis to gain a more systematic and profound understanding of the formation mechanism and differentiated characteristics of community resilience, thereby providing more targeted support for the establishment of community resilience in long-term public health crises.

Conclusion

In the post-lockdown context, a dual-focus strategy that enhances resilience at both the community and individual levels must be prioritized. Communities resilience, a critical and effective protective resource with universal applicability, should strengthen structured support systems to provide a stable buffer against prolonged psychological problems. Simultaneously, individualized psychological and social interventions should give priority to vulnerable subgroups.

Data Sharing Statement

The raw data supporting the conclusions of this study will be available from the corresponding author Huan Liu.

Ethics Approval

The studies involving human participants were reviewed and approved by the Ethics Review Board of Harbin Medical University (HMUIRB20200003). The participants provided their written informed consent online.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

Funding

This study was funded by the International (Regional) Cooperative Project of National Nature Science Foundation of China (approval number 72361137562), the Youth Project of National Natural Science Foundation of China (approval number 72304079), the Innovative Science Research Fund of Harbin Medical University (approval number 2022-KYYWF-0261) and the Graduate Science Research and Innovation Project of Harbin Medical University (approval number YJSCX2023-25HYD).

Disclosure

The authors report no conflicts of interest in this work.

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