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A Study of Public Mental Health Status and Group Differences in China in the Post-Epidemic Era

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Abstract: ***Objective**: To assess the multidimensional psychological status of the Chinese public In terms of general health status, perceived stress, social support, and psychological resilience in the post-epidemic era, this project intends to take cognition, social support, and psychological resilience as the core and systematically analyze the health status of different groups of people. This study aimed to systematically analyze the health status of different groups of people and provide a scientific basis for the precise intervention of the health of Chinese residents. **Methods**: Multi-stage convenience sampling was used to collect data through the Questionnaire Star platform combined with offline channels from February to May 2025. Questionnaires were collected from 7997 respondents nationwide using the General Health Questionnaire (GHQ-28), the Perceived Stress Scale (CPSS), the Multidimensional Perceived Social Support Scale (MSPSS), and the Psychological Resilience Scale (CD-RISC-10). Standardized assessment combined with stratified logistic regression was used to explore the influencing factors. **Results**: A total of 52.2% of the population suffered from mental health problems, 4.3% suffered from serious mental health problems, and the demographic differences were significant. Men's mental health, psychological resilience, and social support were better than women's; however, women's perceived stress was higher. The group directly affected by the epidemic had poorer mental health and lower social support, while the mental health of rural residents was better than that of urban residents. The mental health of graduate students was lower than that of undergraduates, and the mental health of junior high school students was the worst of all groups. The mental health of rural residents is better than that of urban residents; the mental health of graduate students is lower than that of undergraduates; the mental health of junior high school students and below is the worst; and the mental health of divorced groups and service and freelance workers is prominent. Demographic differences were significant: men had better mental health (16.11±12.80), psychological resilience (37.32±10.63), and social support (63.85±17.30) than women ($p<0.001$), but women had higher perceived stress (39.05±6.93 $p<0.001$); mental health scores of groups directly affected by the epidemic (19.97±13.93 $p<0.001$); and mental health scores of groups directly affected by the epidemic (19.97±13.63 $p<0.001$). (19.97±13.73) were significantly higher than those of the unaffected group (13.61±11.23, $p<0.001$), and social support was lower (62.09±16.51 vs. 64.85±17.88, $p<0.001$); the mental health of the rural population was better than that of the urban (15.35±12.20; 19.35±13.71, $p<0.001$); the mental health of graduate students was 25.6% lower than that of undergraduates (25.05±12.18; 19.94±13.57, $p<0.001$); the group with junior high school education and below had the worst mental health; and the mental health of divorced people and those in the service industry and freelance professions was prominent. **Conclusion**: This study reveals the complex association between demographic variables and mental health, especially the need to pay attention to the psychological risk of highly educated youth, the reconstruction of social support for graduate students and divorced people, the development of group counseling for stress management for women, the establishment of the "academic-psychological dual tutoring system" for graduate students, the establishment of a community-based emotional support network for divorced people, and the establishment of a community-based emotional support network for urban residents to optimize the accessibility of social resources. The results will provide an important scientific basis for promoting precise and differentiated mental health development in China.*

Keywords: Post epidemic era, Public, Psychology, Difference analysis, Stratified logistic regression.

1. Background

The rapid spread of the new crown epidemic around the world has had a significant impact on public health systems. On January 8 next year, the State promulgated the "Circular on the Issuance of the Overall Plan for the Implementation of Class B B Control of Novel Coronavirus Infections," marking the arrival of the "Post-Epidemic" period. During this period, although people's daily lives and economic activities gradually returned to normal, the impact of the disease still existed, especially on people's physical and mental health, which cannot be ignored.

According to the World Health Organization, there have been 760 million infections and 6.9 million deaths globally between December 2019 and May 2024, and the actual numbers are likely to be higher [1], and even in the post-pandemic period, the health challenges posed by the epidemic remain severe [2]. The international environment in the "Post-Epidemic Era" is complex and volatile, while the domestic economy is still in the recovery phase, and work pressures are high on all fronts. 11.58 million people will graduate from universities in China in 2023, and the surveyed unemployment rate for the youth labor force is still high [3]. These factors may further exacerbate negative public sentiment in the "Post-Epidemic Era". These factors may further exacerbate negative public sentiment in the "post epidemic era".

From the perspective of health impact, the public health problem is particularly serious. Several studies on the long-term effects of COVID-19 have shown that Long COVID not only affects physiological risk of disease, which may increase [4], but also involves mental health [5], cognitive functioning [6], social functioning and other aspects of [7], with the proportion of physiological damage to health

being significantly higher than in the pre-epidemic period. Through the survey tracking of healthcare workers, healthcare workers' fatigue, depression and anxiety symptoms continue to increase. After an extensive survey of young people in higher education, in addition to symptoms such as anxiety and depression [8], there are also sleep problems triggered by anxiety [9]. Patients discharged from hospitals with long-term new crowns often present with symptoms such as fatigue, dyspnea, cognitive impairment, and muscle aches and pains [10], which may persist for weeks to months or even longer [11]. Prolonged outbreak environments can have a profound impact on mental health, not only in terms of a generalized increase in anxiety and depression [12], but also in terms of post-traumatic stress disorder mental health issues.

There is a complex shift underway in the kinds of challenges posed by new crown epidemics. From people's greatest fear of acute infectious diseases, they now have concerns about the long-term health effects, psychological and social stress, disruption of the order of life, and economic uncertainty [13]. These symptoms not only affect the individual's daily life, but also burden the family and society. For a period of time, there will be problems globally such as the economic situation remaining severe, employment pressure remaining high, and the after-effects of the new crown persisting for a long period of time [14], and the public's resulting negative emotions such as fear, anxiety, and nervousness, as well as the undesirable perceptions and behaviors triggered by them, are likely to persist. In this context, a comprehensive understanding of the current overall health status of the Chinese public is not only a matter of individual well-being, but also a key foundation for assessing the long-term impact of the epidemic, optimizing the allocation of public health resources, and building a resilient health support system [15].

In order to understand this complex health phenomenon, the underlying psychosocial mechanisms must be studied in depth. Stress perception, as the core psychological process by which individuals assess stressors and threats and mobilize resources to cope with them, has shown new characteristics in the post epidemic era, while the cognitive solidification of negative emotions has weakened the regulatory function of stress perception, making it a key influence on the interaction between the external environment and internal resources. Social support, based on the "social buffer hypothesis", plays an important protective role in stressful situations, reducing the individual's subjective assessment of stressful events by providing emotional comfort and practical help, thus buffering the negative impact of stress on mental health [16,17]. The protective role of psychological resilience as a core ability of individuals to cope with adversity and recover from setbacks is explained in the Quality-Stress Model [18]. High mental resilience is effective in mitigating the negative effects of stressful events and has been shown to be effective in people with high levels of work-related stress.

Although a large number of studies have focused on specific phases of the epidemic or specific health issues, there is still a lack of comprehensive studies integrating multiple dimensions of physical health, mental health, social support, stress perception and psychological resilience to portray China's public health from a holistic perspective, especially in the long term after the major adjustments in epidemic prevention and control policies. In particular, there is a lack of systematic analysis of health disparities among key populations and across populations. The identification of such group differences is a fundamental prerequisite for pinpointing vulnerable populations, optimizing the allocation of public health resources, and building a resilient health support system.

In this study, we integrated physiological, psychological, and social dimensions to assess the health status of the post-epidemic situation based on the interaction model of stress, social support, and psychological resilience. We systematically analyze group differences to provide a target point for "precise intervention". Most of the existing studies focus on the specific stage of the epidemic, but there is a lack of group comparisons of the long-term effects of policy adjustments. Therefore, this project intends to use a large sample of national research data to provide a comprehensive description of the overall mental health status of Chinese residents in the post epidemic era, and to conduct a more comprehensive analysis of the mental health status of different demographic and socio-economic strata of the population, in order to identify key populations with high vulnerability and to provide a scientific basis for our country to cope with the long term challenges of the new coronary pneumonia.

2. Methods

2.1 Subjects

The survey in this study was open to citizens of the national society, and from February to May 2025, the questionnaire was distributed to the nationwide population through the Questionnaire Star platform using convenience sampling. A total of 7,997 valid questionnaires were screened according to the polygraph questions set in the questionnaire, and after a strict quality control process, including the elimination of logical contradictions, regular responses, and data that did not pass the attentional screening, a total of 7,997 valid questionnaires were screened. All participants in this survey participated on the basis of informed consent, and participants who completed the questionnaire were given red packets as a reward.

2.2 Methods

2.2.1 General survey

A basic status questionnaire was used to survey residents' gender, age, education level, marital status, occupation, per capita annual income, place of residence, and occupation.

2.2.2 Survey instruments

The Multidimensional Perceived Social Support Scale (MSPSS) assessed the subjects' understanding of social support. The questionnaire includes three dimensions, family support, friend support, and other people's support. This study was scored on a scale of 1-7, with total scores ranging from 12-84, and those with higher total scores received higher levels of social support [19,20]. In this study, Cronbach's alpha coefficient reached 0.985.

The Perceived Stress Scale (CPSS) evaluates the level of stress perceived by the subjects. The self-rating scale consists of 14 items and includes two constructs, tension and loss of control. In this study, on a scale of 1 to 5, using 5 levels, the sense of loss of control was inversely scored with a total score between 0-56, with higher total scores indicating a higher level of perceived stress in the individual [21]. Cronbach's alpha coefficient in this study was 0.933.

Psychological resilience scale was evaluated. The scale consists of 10 items [22]. People with higher total score have higher psychological resilience. In this study, the Cronbach's alpha coefficient was 0.976.

General Health Questionnaire GHQ-28 (GHQ) assessed the mental health level of the subjects. The scale consists of 28 items and contains four dimensions: somatic symptoms, anxiety/insomnia, social dysfunction, and severe depression, with 7 questions for each dimension. A 4-point scale from 1 to 4 is used, with higher scores representing lower levels of mental health [23]. The Cronbach's alpha coefficient of the scale was 0.871.

3. Statistical Analysis

Data processing was performed using SPSS27.0 software as a tool to express data that conformed to normal distribution using x± s. Independent samples t-tests and one-way ANOVA were used to make comparisons between groups. Pearson's correlation analysis was used to explore general health, stress perception, social support, mental toughness and the correlations between them. Multiple logistic regression analysis was used for the analysis of factors influencing general health level. The test level was α=0.05.

4. Results

4.1 Basic Information

The sample consisted of 7997 students, including 6768 male students (84.6 %) and 1229 female students (15.4 %). In total, 67 people were under 18 years old, 6166 were 18-25 years old, 801 were 26-30 years old, 553 were 31-40 years old, 211 were 41-50 years old, 178 were 51-60 years old, and 21 were over 60 years old. 4.2 Common methodological biases

4.2 Statistical Analysis

In order to control the possible common method bias of the questionnaire data, this study used Harman one-way test for diagnosis. The results of principal component analysis showed that there were 8 factors with eigenvalues greater than 1 extracted when not rotated, and the first factor explained 36.73% of the variance, and the cumulative total explained variance was 75.36%. The first factor explained rate did not exceed the critical value of 40%, and there was no single factor dominance (maximum variance explained rate <40%), indicating that the data did not have serious common method bias problems.

4.3 Overall Mental Health Level

Based on the standardized delineation scores of the General Health Questionnaire (see Table 1), the results of the participants' scores were categorized into four health status levels. The results showed that 47.8% of the participants were in the lowest level of health distress, suggesting relatively good overall health. However, 52.2% of the participants reported symptoms of varying degrees of health distress. Of these, 4.3% of participants scored in the highest distress level (Level 4), suggesting that they are currently facing significant health distress and that these individuals may need to be prioritized for further mental health assessment or support.

Table 1: General Mental Health Questionnaire Overall Mental Health Levels

Overall Health Level	Frequency	Percentage
Normal (0-14 points)	3824	47.8%
Mild psychological distress (15-28 points)	2979	37.2%
Moderate psychological distress (29-42 points)	851	10.6%
Severe psychological distress (≥43 points)	343	4.3%

4.4 Analysis of Variance

According to the analysis of variance (Table 2), except for marital status, which showed no significant difference in psychological resilience scores between groups, the rest of the demographic variables, including gender, experience of the impact of the epidemic, place of residence, age, education, occupation, and marital status, showed significant between-group differences in general health level, that is, GHQ scores, perceived stress, psychological resilience, and social support ($p<0.05$).

Regarding gender, males had significantly better general health (GHQ: 16.11 ± 12.80) than females (25.20 ± 12.62; t = -20.11, p < 0.001), and males had significantly higher levels of psychological resilience (37.32 ± 10.63 vs. 34.36 ± 8.93) and social support (63.85 ± 17.30 vs. 59.34 ± 15.44) were significantly higher (both p < 0 .001), while perceived stress was significantly higher in women (39.05 ± 6.93) than in men (34.24 ± 8.36; t = -19.02, p<0.001).

The mental health score of the group directly affected by the pandemic (19.97 ± 13.73) was significantly higher than that of the unaffected group (13.61 ± 11.23, t = 21.60, p < 0.001), indicating that the level of mental health of the group directly affected by the pandemic was poorer than the New Year's Day health of the mentally healthy population unaffected by the pandemic. Their psychological resilience (36.32 ± 9.92) and social support levels (62.09±16.51), on the other hand, were significantly lower than those of the unaffected group (all p<0.001).

Rural residents had significantly better mental health status than urban residents (score: 15.35±12.20 vs. 19.35±13.71, t=13.67, p<0.001). Although perceived stress was higher in the urban group (35.73±8.12 vs. 34.10±8.50), the rural group had greater psychological resilience (37.49±10.81 vs. 36.32±10.08) and social support (64.04±17.53 vs. 62.40±16.70) (all p<0.001).

The 26-30 years group had the best mental health status (lowest score: 15.70±11.82) and highest psychological resilience (38.02±11.15) and social support (65.71±17.54) (F=15.60, p<0.001). In contrast, the >60 years group had the worst mental health status (highest score: 34.58±15.76) and the lowest level of social support in the entire sample

(47.19±19.73). The adolescents (<18 years) group also showed a high mental health risk (21.09±16.88).

The university specialist group had the best mental health status (lowest score: 13.88±11.92) and the highest social support (65.02±18.05) among the three groups. The junior high school and below group had the worst mental health status (highest score: 34.47±18.17) and highest stress perception (40.89±5.36). Notably, the graduate group had significantly worse mental health status than the undergraduate group (25.05±12.18 vs. 19.94±13.57, F=130.49, p<0.001).

The divorced group had the worst mental health status (highest score: 27.21±12.19) and peak stress perception (41.78±5.47, F=65.98, p<0.001). Service workers, workers, and traders had the highest mental health scores, indicating lower mental health levels, with freelancers having the highest level of stress perception in the entire sample.

Table 2: Analysis of variance of research variables and demographic variables

	N	Overall mental health	Perceived stress	Psychological resilience	Perceived social support
Gender					
Male	6768	16.11±12.80	34.24±8.36	37.32±10.63	63.85±17.30
Female	1229	25.20±12.62	39.05±6.93	34.36±8.93	59.34±15.44
t-value		-20.11	-19.02	9.18	8.54
P-value		0.000	0.000	0.000	0.000
Affected by epidemic					
Yes	4898	19.97±13.73	36.17±7.96	36.32±9.92	62.09±16.51
No	3099	13.61±11.23	33.09±8.57	37.72±11.17	64.85±17.88
t-value		21.60	16.37	-5.87	-7.06
P-value		0.000	0.000	0.000	0.000
Place of residence					
City	4302	19.35±13.71	35.73±8.12	36.32±10.08	62.40±16.70
Countryside	3695	15.35±12.20	34.10±8.50	37.49±10.81	64.04±17.53
F value		13.67	8.79	-5.02	-4.28
P-value		0.000	0.000	0.000	0.000
Age					
<18	67	21.09±16.88	38.07±6.59	32.42±11.10	56.01±17.99
18-25	6166	16.19±12.32	34.70±8.30	36.94±10.47	63.40±17.23
26-30	801	15.70±11.82	33.51±8.82	38.02±11.15	65.71±17.54
31-40	553	26.13±15.50	38.17±7.73	36.72±9.24	61.77±14.53
41-50	211	27.77±14.83	36.88±7.55	35.14±8.68	60.03±14.44
51-60	178	28.92±13.77	37.43±7.48	34.28±9.47	55.82±16.17
>60	21	34.38±15.76	39.90±4.86	28.29±12.65	47.19±19.73
F value		110.69	26.45	8.92	15.60
P-value		0.000	0.000	0.000	0.000
Educational attainment					
Junior high school and below	70	34.47±18.17	40.89±5.36	30.49±9.65	52.04±17.94
High school/secondary school	2576	16.19±12.36	34.65±8.11	37.46±10.21	63.91±16.40
University college	2026	13.88±11.92	33.43±8.76	37.47±11.63	65.02±18.05
Undergraduate	3044	19.94±13.57	35.87±8.10	36.25±9.87	61.66±16.97
Graduate students and above	281	25.05±12.18	38.01±7.61	35.27±8.47	61.85±15.16
F value		130.49	46.39	14.70	21.17
P-value		0.000	0.000	0.000	0.000
Marital status					
Unmarried	6788	16.27±12.42	34.65±8.33	36.98±10.52	63.45±17.29
Married	1060	24.03±15.44	36.13±8.23	36.29±9.95	62.00±15.92
Divorced	149	27.21±12.19	41.78±5.47	35.89±10.20	58.05±15.57
F value		210.35	65.98	2.65	10.08
P-value		0.000	0.000	0.071	0.000
Occupation type					
Professional	415	26.50±16.27	37.49±7.06	35.96±9.84	61.16±16.34
Service workers	41	28.83±16.22	39.76±7.73	30.22±12.31	49.29±18.91
Freelancers	139	23.86±9.67	40.99±5.21	37.97±7.89	61.32±12.05
Workers	48	30.04±19.66	40.10±6.15	33.02±11.31	54.92±19.02
Employees	154	28.68±15.07	39.35±6.98	33.41±9.62	57.56±15.97
Institutions, etc.	3212	14.97±11.87	33.36±8.54	38.14±10.48	65.42±16.83
Students	2770	18.47±12.25	35.92±7.90	36.12±9.69	61.97±16.65
Merchants	39	29.54±16.22	39.26±5.45	31.64±8.37	51.08±15.48
Other	1179	15.44±13.73	34.50±8.59	36.34±11.95	62.66±18.60
F value		81.59	46.33	15.12	19.30
P-value		0.000	0.000	0.000	0.000
Annual per capita household income					
10,000 and below	1673	17.14±13.63	35.54±9.17	35.63±11.22	61.12±18.65
10-50 thousand (including 50 thousand)	3214	16.62±12.26	34.79±8.40	37.12±10.29	63.42±16.77
50,000-100,000 (including 100,000)	1844	17.41±13.03	34.63±8.38	37.22±10.09	64.12±16.48
More than 100,000	1266	20.36±14.64	35.22±8.30	37.37±10.13	63.79±16.50
F value		25.26	4.55	10.13	10.73
P-value		0.000	0.003	0.000	0.000

Note: *p<0.05 **p<0.01 ***p<0.001.

4.5 Correlation Analysis

According to the analysis of variance (Table 3), The GHQ score was significantly positively correlated with perceived stress, significantly negatively correlated with psychological resilience, and significantly negatively correlated with the total score of comprehension social support. The family support dimension was negatively correlated with the GHQ, and perceived stress was not only highly correlated with the GHQ, but also strongly negatively correlated with psychological resilience. Perceived stress was also significantly negatively correlated with the total social support score. Psychological resilience was highly positively correlated with the total social support score.

Table 3: Correlation analysis of research variables

	General mental health	nervousness	loss of control	consciousness stresses	psychosocial resilient	sb. else be in favor of	(one's) family be in favor of	friends be in favor of	Appreciating social support
General mental health	-								
nervousness	0.50**	-							
loss of control	0.18**	-0.20**	-						
perceptual stress	0.51**	0.53**	0.53**	-					
psychological resilience	-0.30**	-0.02*	-0.02*	-0.65**	-				
Support from others	-0.30**	-0.06**	-0.06**	-0.51**	0.70**	-			
Family support	-0.33**	-0.10**	-0.54**	-0.54**	0.70**	0.92**	-		
Friends Support	-0.32**	-0.10**	-0.54**	-0.54**	0.68**	0.93**	0.92**	-	
Appreciating social support	-0.33**	-0.09**	-0.56**	-0.54**	0.71**	0.98**	0.97**	0.98**	-

Note: *p<0.05 **p<0.01 ***p<0.001

4.6 Multiple Linear Regression Analysis

According to the analysis of variance (Table 4) Perceived stress, psychological resilience and perceived social support all predicted overall mental health and were all included in the regression equation, with perceived stress having the greatest effect on overall mental health (β=0.52), psychological resilience the next highest (β=0.15), and perceived social support the smallest (β=-0.15), which allows for the establishment of a regression equation, Y=0.52 X1+0.15 X2-0.15 X(3)-11.01.

Table 4: Multiple linear regression analysis of the study variables

Independent variable (X)	Dependent variable (Y)	B	β	t	p
Perceived stress X1	Overall mental health	0.83	0.52	41.11	0.000***
Psychological resilience X2	Overall mental health	0.18	0.15	9.55	0.000***
Appreciation of social support X3	Overall mental health	-0.11	-0.15	-10.52	0.000***

Note: *p<0.05 **p<0.01 ***p<0.001

4.7 Multifactorial analysis of general mental health level

Table 5: Assignment of independent variables

Dependent Variable	Description
Gender: 0=male, 1=female	0=Male, 1=Female
Place of residence	0=rural, 1=urban
Marriage	0=Married, 1=Single (including unmarried and divorced)
Annual per capita household income	0=High income (more than 10,000 yuan), 1=Low income (less than 10,000 yuan)
Educational attainment	0=high educational attainment (college college, undergraduate, graduate and above, 1=low educational attainment (below middle school; below high school)

Gender, place of residence, annual per capita household income, education, marriage, perceived stress, psychological resilience and comprehension of social support as independent variables, general mental health as dependent variables (Table 5), in which demographic independent variables were included in the first level, and other research variables were included in the second level for stratified logistic regression analysis, the results showed that the predictive accuracy of the model was 73%, as shown in Table 6. The results of logistic regression analysis showed that males were more dominant than females. The mental health risk factor for rural residents was higher than that for urban residents, up to 41%. "Perceived stress" showed the strongest predictive ability, and married marital status had a significant protective effect, as did social support.

Table 6: Stratified logistic regression analysis of factors influencing general mental health

Variable	β-value	SE	Wald value	P-value	OR value (95% CI)
Sex (reference group: male)	0.94	0.08	130.75	0.000	2.57 (2.18~3.00)
Female					
Place of residence (reference group: rural)	0.34	0.05	40.58	0.000	1.41 (1.27~1.56)
Urban					
Per capita income (reference group: high income)	-0.04	0.07	0.42	0.516	0.96 (0.85~1.09)
Low income					
Educational attainment (reference group: higher education)	0.03	0.06	0.26	0.608	1.03 (0.92~1.15)
Low education					
Marriage (reference group: married)	-0.59	0.08	49.75	0.000	0.56 (0.47~0.66)
Single					
Perceived stress	0.14	0.01	859.09	0.000	1.15 (1.14 to 1.16)
Psychological elasticity	0.03	0.00	66.21	0.000	1.03 (1.02 to 1.04)
Comprehending social support	-0.02	0.00	75.90	0.000	0.98 (0.98 to 0.99)

Note: *p<0.05 **p<0.01 ***p<0.001

5. Discussion

5.1 Differences in Group Mental Health

Based on a nationwide large-sample survey, this study conducted a comprehensive research on the multidimensional health problems of China's public health in the "post-epidemic period". The results of the study show that more than half of the respondents reported some degree of illness distress, which is a common risk factor that cannot be ignored. Of these, 4.3% were severely anxious, suggesting

greater health problems and an urgent need for attention and intervention by specialized mental health agencies. This generalized challenge has important echoes in the global research on the physical and psychological effects of Long COVID. The present study analyzes this issue and finds that mental health risks are significantly higher among those who are positively affected by the epidemic, demonstrating that emergencies themselves are an important source of stress and reflecting the higher health costs that special populations continue to bear after policy adjustments.

It has been shown that there are significant gender differences in depressive symptoms [24], and this finding is supported by the data findings. The overall health level of this survey showed that girls were less healthy than boys, which is consistent with the findings of the pre-Huang Yue epidemic [25]. It was found in this survey that girls have lower systematic in understanding social support. This seeming contradiction is also consistent with long term research findings [26]. Mental illness, especially depression, is common among Chinese women. Data from the Chinese Mental Health Census show that women make up a higher proportion of the depressed population than men, and their lifetime incidence of depression is also much higher than the incidence of depression in men. This phenomenon may be closely related to the division of social roles, where women have long been responsible for the main domestic work and unpaid care labor such as child care in the family [27]. Excessive participation in domestic work and childcare can have an impact on women's status in the workplace. In order to achieve a balance between career and family, women prefer to work informally, which affects women's job opportunities, thus reducing their pay or satisfaction with their pay and income, which negatively affects women's mental health [28].

In terms of literacy level, there is a significant difference in the level of mental health among different groups of people. Professional students in higher education showed the best mental status, but the mental health status of graduate students was significantly lower than that of undergraduate students. There are significant differences in the mental health status of college students with different educational levels. General undergraduate college students had higher mental health, but master's degree students had higher mental health. This phenomenon has also been verified worldwide [29], study students suffer from depression or anxiety disorders, the incidence of which is several times times higher than that of normal people, which is due to high academic pressure, economic instability, and uncertainty about the future. During crises such as COVID-19, studies have confirmed that undergraduate students show superior stress resistance due to systematic courses and a strong peer support network [30]; while master's degree students have been in a chronic psychological state due to the long term commitment to high-risk scientific research, the pressure to publish their thesis and the lack of systematic support [29,31]. The structural problems of our current education system are mainly manifested in the insufficient mental health services for graduate students and the financial difficulties caused by insufficient funding. Targeted psychological interventions, subsidies to ensure the basic livelihood of college students, and relief channels to eliminate stigma should be pursued. For a long time, there is a lack of systematic cultivation of psychological resilience for college students in postgraduate education. It is mainly reflected in the lack of cultivation of psychosocial abilities such as emotion management and stress regulation in the curriculum system. The assessment system pays too much attention to academic performance and too little to mental health, and the responsibility for psychological support of instructors and counselors is unclear [32]. This structural deficiency makes postgraduates lack a set of effective psychological buffer and social support system when they face the double pressure of academic and career. For this reason, there is an urgent need to reform the higher education system to provide students with a more complete and supportive educational environment in the pursuit of academic achievement, in order to solve the mental health problems that arise with the increase in academic qualifications.

From an occupational perspective, the mental health problems faced by occupational groups such as service sector and industrial workers are more serious. The unevenness of economic recovery in the post epidemic period, the replacement of automation technology and the expansion of the "casual labor economy" have accentuated the problems of unstable employment, unstable income and loss of benefits in such industries. Studies have shown that chronic financial strain and job insecurity are long-term sources of mental stress and cause long-term damage to mental health, characterized by high inputs and low returns, high work intensity, low autonomy, and low social acceptance [33]. Studies have shown that the combined effects of night work and high-intensity work stress significantly increase an individual's mental health risks and further exacerbate mental depletion through disruption of the individual's physiological rhythm and deprivation of work autonomy. In contrast, agency workers can effectively avoid occupational risks and maintain good mental health due to their institutional security, job autonomy, and resource availability [34].

5.2 Health Impact Mechanisms and the Role of Psychological Resilience and Social Support

The present study verified the central role of stress perception, social support, and psychological resilience in connecting external stressors to final health outcomes. Stress perception was shown to be a key influence on health risk transmission, with strong feelings of loss of control and tension significantly amplifying the negative impact of external stressors on mental health. Social support plays a buffering role in coping with stress, and strong family and friend support can effectively reduce the occurrence of stressful events and alleviate their mental trauma, in line with the theoretical predictions of the social buffering hypothesis. Psychological resilience, on the other hand, is an inherent resource within the individual with a protective regulatory function, which can better cope with the same stress and reduce mental suffering, and is the fundamental reason for revealing differences in individual mental health. In the postepidemic period, the interaction of the various psychological and social mechanisms described above has shaped the health trajectories of various populations.

5.3 Methods and Countermeasures

In the postepidemic period, Chinese populations have experienced markedly different levels of mental health, and the underlying mechanisms of this change are multidimensional, including social, economic, occupational, and gender. On the basis of existing research, it is necessary to construct a systematic intervention system with multiple levels and perspectives. It is necessary to focus on key high-risk groups and carry out targeted interventions. For high-stress occupational groups, it is necessary to strengthen the protection of labor rights, develop an occupational mental health monitoring system, implement mandatory stress management services in high-risk jobs, and explore a new social insurance system. On this basis, countermeasures are proposed to promote the reform of the university education system, improve the duties of examination psychological counseling and increase the investment of counseling resources. Mental health screening among grassroots medical personnel and employers.

A sound social support network should be established, family mental health education should be carried out, psychological counseling rooms and mutual aid groups should be set up in the community, peer support mechanisms on campuses should be strengthened, and help for enterprise workers should be enhanced. It is important to focus on improving the mental resilience of the population, to nurture resilience throughout all aspects of education, to conduct widespread mental health literacy, to develop online psychological self-help tools, and to provide targeted interventions for high-risk groups. On this basis, China's mental health service system should be further improved, core indicators should be introduced in public health, the capacity of grassroots mental health services should be enhanced, a corresponding hierarchical intervention network should be constructed, and standardized tools should be used to evaluate policy implementation.

6. Research Limitations and Future Directions

This study also has some limitations. Although this project was conducted on a nationwide scale, the age composition, with a large proportion of young people, provides a possibility for this project. This project is mainly a cross-sectional study, which makes it difficult to determine the causal relationship between factors, and focuses only on some core psychosocial variables, while ignoring the potential impact of health behaviors, accessibility to healthcare services, and history of exposure to specific epidemics on the development of disease.

Declarations

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Data Availability Statement This statement is identical in both the submission system and the main manuscript. The data supporting this study are available for academic sharing in compliance with ethical regulations. De-identified datasets approved by the Ethics Committee can be obtained by contacting the corresponding author (wushj@fmmu.edu.cn)

Ethics approval This study was reviewed and approved by the Medical Ethics Committee of The First Affiliated Hospital of Air Force Medical University (Approval No.: KY20234187-1), and the research procedures adhere to the principles of the Declaration of Helsinki.

Consent to participate Written informed consent was obtained from the parents and written assent was obtained from the adolescents.

Consent to publish Written informed consent included publication of non-identifiable data that was signed by the participants.

Author Contributions Zhitao Yuan and Lixin Zhao contributed designed the study, coordinated data collection via the Questionnaire Star platform (validating 8,131 responses), performed statistical analyses (SPSS 21.0 and Process Macro 4.3), and drafted/revised the manuscript. Na Ni and Wu Shengjun overseeing theoretical frameworks, securing funding (National Natural Science Foundation of China, No. 72374208), and finalizing the manuscript. Mengyuan Yang, Xianyang Wang, Sheng Huang, and Shuyi Liang assisted with data processing, literature reviews.

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