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## The Psychological Experience of University Students During prolonged quarantine: A Qualitative Study

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**Title page****Title**

The Psychological Experience of University Students During prolonged quarantine: A Qualitative Study

**Abbreviated title**

A qualitative study of students' psychological experience

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**Declarations****AUTHOR CONTRIBUTIONS**

Anling Yao and MingLing Zhu were involved in the design of the study, data collection, analysis, drafting and revising the manuscript. Ling Li helped with the data analysis and provided

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35 supervision, guidance and support for this study. All authors have read and approved the  
36 final manuscript. The authors declare no conflicts of interest.  
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38 This study include experimental procedures were approves by Zhejiang Shuren University  
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43 No conflict of interest.  
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## Psychological Experiences of University Students During Prolonged Quarantine:

### A Qualitative Study

#### Abstract

**Objective:** To explore the psychological experiences of university students in prolonged quarantine during the coronavirus disease (COVID-19) pandemic.

**Design:** A qualitative descriptive study based on semi-structured interviews; data were analysed using a thematic topic analysis approach.

**Setting:** Interviews were conducted via WeChat Video

**Participants:** Twenty full-time undergraduate students from 16 provinces in China who experienced prolonged quarantine in Shanghai Province were interviewed from June to August 2022.

Primary and secondary outcome measures:

**Results:** The data analysis revealed three themes with corresponding sub-themes related to the psychological experiences of university students during prolonged quarantine: (1) dynamic and complex psychological experiences, encompassing the feelings of relief, confusion, anxiety, insecurity, loneliness, craving for catharsis, and emotional numbness; (2) desire for diverse support; and (3) self-reflection and growth, mainly including learning to be grateful, self-efficacy enhancement, reconsideration of the meaning of life, and restructuring of future planning.

**Conclusion:** It is necessary to formulate and teach coping mechanisms that can be applied by university students during prolonged quarantine; healthcare providers should pay attention to psychological changes (during quarantine) in university students to reduce the occurrence of negative emotions. Community nurses, university psychological nursing providers, and educators should provide students with sufficient social support, guide them towards gratitude, and help them find a clear purpose in life.

**Keywords:** Students; Qualitative Research; Quarantine; Pandemics; Adaptation; Psychological; Anxiety; Loneliness

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**STRENGTHS AND LIMITATIONS OF THIS STUDY**

- The methodology used to collate the views of the participants in this study can be applied in the future to identify any psychological problems in university students who experience prolonged quarantine.
- The coding of interview data performed in this study allows for an objective evaluation of study results.
- This was a qualitative study; our sample size was limited because it was difficult to access eligible subjects during the pandemic.

**INTRODUCTION**

Due to the rapid spread of coronavirus disease (COVID-19) in March 2022 and the severity of the epidemic, authorities decided to implement “city-wide static management” on 1 April in Shanghai. The residents of Shanghai were quarantined for 60–70 days (depending on the area) until 1 June, when work was comprehensively resumed and the average production was restored.

Quarantine measures limit the movement of people who may be exposed to the virus, thereby reducing the infection rates<sup>1</sup>. Therefore, quarantine measures are vital for the prevention and control of epidemics<sup>2</sup>. However, an extensive and prolonged quarantine may have a significant psychological impact on individuals, leading to emotional disturbances, increased stress, anxiety, and depression<sup>1</sup>. The threat of contracting an infection can lead individuals to feel additional psychological stress. In Toronto, 31.2% of people quarantined due to COVID-19 reported psychological problems<sup>3</sup>. Reduced socialisation and life changes due to a quarantine can also lead to severe psychological impairment<sup>4</sup>.

To make epidemic prevention and control more scientific and accurate, the Chinese government issued a series of measures. The Notice on Further optimising and implementing the prevention and control measures of COVID-19 includes the need to strengthen the care and provide psychological counselling for quarantined personnel, patients, and front-line medical workers<sup>5</sup>. Thus, the Chinese government

recognizes the importance of psychological nursing for quarantined individuals.

University students are considered to be a vulnerable group. Due to unbalanced psychological development, elevated sensitivity, and academic and employment-related pressures, they are more likely to suffer from anxiety and depression<sup>6</sup>. Previous studies found that among 2,485 quarantined university students, 9.0% exhibited depression and 2.7% experienced post-traumatic stress disorder<sup>7</sup>. A study among health sciences students in home quarantine during the COVID-19 pandemic showed that the prevalence of anxiety and depression was 15.7% and 10.7%, respectively<sup>8</sup>. Additionally, the incidence of risky behaviour tends to increase during youth<sup>9</sup>. Therefore, a prolonged quarantine may lead to risky behaviour and possible psychological damage to university students, leading to security risks to themselves and the society. It is thus important to examine the effects and inadequacies of psychological nursing during extended quarantine. While it is common for people in long quarantine periods to experience a decline in mental health<sup>10</sup>, the psychological needs of university students differ from those of the general population. Therefore, it is necessary to understand the thoughts and requirements of university students during prolonged quarantine to provide sufficient evidence for formulating coping strategies for psychological nursing.

The Ministry of Education of the People's Republic of China issued a circular on 25 March 2022<sup>11</sup>, stating that university students should strengthen their emotional self-adjustment during quarantine. Students need prompt help from family, friends, and medical professionals, and should receive psychological help when they experience anxiety, confusion, and other negative emotions. Though this country attaches great importance to the psychological health of students during quarantine, specific methods and procedures for psychological nursing interventions are yet undefined.

To the best of our knowledge, this is the first study that explores the psychological experience of university students who have experienced prolonged quarantine through qualitative interviews. We hope to provide evidence and references for community nurses, university administrators, psychological care



providers, and other relevant personnel for formulating and implementing psychological nursing strategies during future instances of quarantines. Moreover, we aim to help improve the process and content of response mechanisms for public health emergencies by adding psychological nursing components.

**METHODS**

**Design**

A descriptive, exploratory design that included semi-structured interviews was applied.

**Participants**

Eligible participants had the following characteristics: (1) full-time undergraduate student, (2) living in Shanghai and quarantined for at least two months, and (3) provided informed consent and participated voluntarily in this study. Participants with the following characteristics were excluded: (1) non-university students and (2) those not in Shanghai during quarantine. Recruitment was conducted at various universities in Shanghai, China. We used a purposive sampling and snowballing technique to select university students with different majors and grades, so as to reach a wide range in age, major, and enrollment year.

First, two researchers introduced the project to potential participants through phone calls/WeChat videos. Researchers then contacted and scheduled interviews with interested participants. Participants were asked to help introduce more eligible students to the study. Researchers also obtained the contact details of other university students willing to participate in the study by contacting the student union. Additionally, researchers also posted information online to recruit a wider range of eligible subjects.

Recruitment and subsequent interviews were conducted by two researchers familiar with the study plan. Another author supervised these two researchers, and ensured the rigor and accuracy of the recruitment, interview, data collection, and analysis processes.

A total of 28 university students were invited to participate in this study; 20 agreed to participate (10 men and 10 women; median age: 20 (19-22) years). The

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other students did not provide exact reasons for their refusal to participate. The participants had been quarantined for more than two months and had diverse professional backgrounds. Participant demographics are presented in Table 1.

(Table 1: Demographic information of the participants)

### Data collection

We collected data from June to August 2022. Based on the purpose of the study, the researchers prepared a preliminary interview outline through a literature review and group discussion. Before the formal interviews, we conducted pre-interviews with two quarantined university students and revised the outline based on the interview content and expert recommendations. ( Final interview outline, see Box 1)

#### Box 1 Semi-structured interview guide

##### Questions

- (1) How do you feel about the prolonged quarantine?
- (2) What is the impact of the prolonged quarantine on your life and study?
- (3) How do you cope with these changes during quarantine?
- (4) What kind of help do you need in this process?

In this study, we used WeChat video to conduct interviews, and asked participants to choose a quiet, separate room as the interview venue; the participants chose the time of interview. The interviews lasted for 35 to 40 minutes, and were audio-recorded. The interviewer adjusted the serial order of interview questions according to the interview outline and the interviewee's mood. During the interview, the researcher listened carefully and recorded nonverbal behaviours. To ensure the authenticity of the interview data, we did not elicit or criticise interviewees' views. To ensure privacy, the interview results have been presented anonymously; interviewees' names have been replaced by 'P + number'.

### Data analysis

The researchers transcribed the audio content into text within 24 hours of interview completion, paying close attention to changes in tone and expression to more accurately analyse the interviewee's feelings. Two researchers independently analysed the data based on a thematic analysis approach; disagreements were resolved

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through consultation with senior team members. Researchers initially encoded the interview data, and subsequently reviewed the data to identify similar phrases, emotions, experiences, and values that were frequently stated, to identify common themes. We also assessed whether the participants accurately described the phenomenon and whether the researchers accurately described the meanings assigned by the participants to the phenomenon. This process was reviewed and re-examined by both the researchers and participants<sup>12</sup>.

**Quality control**

Two trained researchers jointly participated in transcribing and integrating the raw data. Then, they refined and integrated the transcribed textual information independently. Any disagreements were resolved by panel discussions. During the collation and analysis, the researchers performed continuous iterative reflection to avoid misinterpreting the transcribed information. Interviewers also wrote reflection notes after each interview.

**Patient and public involvement**

In this qualitative study, the public was directly involved and participants were questioned about their experiences with prolonged quarantine. The development of the research questions was performed without direct public involvement. The manuscript was sent to all participants who provided their email addresses when the interviews were conducted.

**Ethics**

Participants were adequately informed of the interview procedure, purpose, and significance. They agreed to audio-recorded interviews, and signed informed consent forms; they were free to withdraw from the study at any time. All data were anonymised to ensure confidentiality.

**RESULTS**

The twenty participating college students lived in different areas of Shanghai during the implementation of ‘city-wide static management’. Their psychological experiences during the prolonged quarantine varied due to differences in residence area, age, life experience, educational experience, and personal values.

Our data analysis revealed three themes and corresponding sub-themes that characterized the psychological experience of the participants during the long-term quarantine. Table 2 shows the key information provided by the participants in the interviews; the researchers' interpretation has also been presented.

(Table 2. Examples of participants' responses)

### **Theme 1: Dynamic and complex psychological experience**

#### **Relief**

Due to the quarantine, students took online courses at their homes or dorms, and those with internships experienced work interruptions. This eliminated commute time and provided them with more time for rest and relaxation.

Huh, at first, I felt very relaxed. Finally, I was able to rest.

(Participant 9)

#### **Confusion**

As the pandemic progressed, the number of infections peaked, resulting in the extension of quarantine. As a result, some participants felt overwhelmed, which may be related to the disrupted pace of their lives, the increase in academic pressure, and family changes.

My parents went to take care of the elderly, leaving me alone at home, but I have never lived alone. (frown)

(Participant 2)

The quarantine affected the offline internship process for students pursuing professions such as nursing.

You know(sigh), what you learn in online internships is entirely different from that learnt with offline training. Now, I do not have access to patients at all and cannot even master the basic skills of my major. I am so confused about my future.

(Participant 20)

#### **Anxiety**

The quarantine had a significant impact on both employment and academic pursuits, placing university students under pressure, and severely affecting their

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269 physical and psychological health.

270 I was already worried about finding a job. Now, it has become even more

271 challenging.

272 (Participant 15)

273 I am distracted from lessons at home, but my classmates are studying hard. I

274 feel really anxious because I wasted a lot of time.

275 (Participant 11)

276 **Insecurity**

277 People's sense of security typically originates from certainty. With the continued

278 presence of the epidemic, some students expressed their feelings of insecurity. This

279 feeling came not only from sources around them (roommates as sources of infection),

280 but also from unreasonable epidemic prevention measures.

281 One of my roommates I jointly rent with, was back from the hospital; so I

282 would avoid him when I left my room. Even after returning from the washroom,

283 I had to disinfect myself.

284 (Participant 19)

285 Although I was quarantined in the dormitory, everyone in the school took

286 nucleic acid tests together on the playground. I am so afraid I might get

287 infected because of this.

288 (Participant 7)

289 **Loneliness**

290 The prolonged quarantine weakened the social network of university students, and

291 they disengaged from their friends circles. Although WeChat chats and other methods

292 can help students keep in touch with their friends, it cannot replace the traditional

293 communication methods. Therefore, university students were prone to loneliness

294 during quarantine.

295 My friends would comfort me at first. But as the quarantine lengthened, they

296 stopped listening to me. They had not experienced this (quarantine) and could

297 not understand my feelings at all.

298 (Participant 5)

Participants who were quarantined in the dormitory also expressed feelings of loneliness.

Although I lived in the dorm with my roommates, I still felt miserable. We were tired of looking at each other's faces every day, so we focused on our own business, which was no different from being quarantined alone.

(Participant 7)

### **Craving for catharsis**

University students in early adulthood are mentally immature and have weak self-control. Therefore, when negative emotions become unbearable, they may exhibit impulsive and risky behaviours.

There was a time when I would shut myself up in my room. I could not stop crying, and I did not know what was wrong with me.

(Participant 15)

### **Emotional numbness**

In this study, the students were in a state of tension and anxiety for an extended time period owing to the quarantine and potential health threats. This may have led them to treat the epidemic and quarantine as normal and led to emotional numbness. A steady stream of negative news may also have numbed students' nerves.

At the beginning, we would disinfect the supplies with alcohol, even coming in from the community. However, as the quarantine lengthened, I started caring less.

(Participant 4)

### **Theme 2: Desire for diverse support**

Social support is an essential external resource for psychological health. In this study, participants expressed their desire for diverse support. During the quarantine, daily necessities were in shortage. Some participants expressed a desire for support with reference to supplies.

We eat badly. Coke is a luxury for me. In the worst case, I do not even know if I will get my next meal.

(Participant 7)

Information support is essential for quarantined students. False and negative

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information about the epidemic can not only severely interfere with the correct perception of the current state of the epidemic among students but also amplify their anxiety.

There were various online messages about being released from quarantine, but many were fake. When the news came out that the quarantine would be released on 1 June, we were sceptical. I need accurate information!(frown)  
(Participant 4)

Emotional support may provide students with courage in the face of shortages of supplies and enormous psychological stress during prolonged quarantine.  
I wouldn't be so upset if my family members were there for me.  
(Participant 10)

**Theme 3: Self-reflection and growth**

**Learning to be grateful**

During the quarantine, most participants were grateful for the care they received from the community and medical staff. Neighbourhood relations also improved during this time.  
I am touched and grateful to see that the whole country supports us, and the community volunteers are busy taking care of us.  
(Participant 12)  
I used to avoid my neighbours when I met them, but now we exchange supplies.  
It feels like our relationship has improved.  
(Participant 6)

**Self-efficacy enhancement**

The quarantine gave university students additional time and energy to re-order their lives. Moreover, it limited students' dependence on their families, making them actively learn life skills, which is conducive to enhancing their independence.  
The most significant achievement during the quarantine is that my cooking skills have improved, and the dishes I made were more delicious.  
(Participant 9)  
Some participants also reported an increase in emotional self-efficacy. They



actively engaged in emotional self-regulation, paid attention to positive news, eliminated negative emotions, and maintained a positive attitude.

COVID-19 is a severe challenge to us, but I believe we will ultimately overcome the difficulties, and that nothing is impossible.

(Participant 14)

### **Reconsideration of the meaning of life**

The university students ranked their "physical and psychological health" and "family happiness" as the "most valuable things in life", rather than "making money". The change in these concepts also means that they may have gained a deeper understanding of the connotation of self-worth and meaning of life. It is possible that their experiences during the quarantine led them to respond in this manner.

I used to think I had to do my best to earn money. But now, I believe nothing is more important than health.

(Participant 9)

### **Restructuring of future plans**

The prolonged quarantine also restructured the thinking and future plans of university students.

Before this quarantine, I was preparing to study abroad, but now I think it is good enough to find a stable job near my home.

(Participant 8)

Since the outbreak of COVID-19, frontline medical workers caring for patients have had a great work mission, but have also been under tremendous psychological pressure; this has affected medical students.

I suddenly feel that my major is significant, so I will continue my clinical work in the future.

(Participant 18)

I think frontline health workers were exhausted from the epidemic prevention and quarantine..... I absolutely can not handle the pressure! If I had the chance, I would change my major or career as soon as possible.

(Participant 11)



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**DISCUSSION**

This study explored the psychological experiences of university students during the prolonged quarantine and identified three themes. Participants reported feelings of relief, confusion, anxiety, insecurity, loneliness, craving for catharsis, and emotional numbness as the quarantine period lengthened, indicating that university students had dynamic and complex psychological experiences during the prolonged quarantine. During the initial quarantine period, participants experienced momentary relief as their fast-paced lives were forced to slow down, temporarily easing the pressures of studies and internships. As the pandemic continued and the quarantine period lengthened, sudden changes in living and learning habits may cause quarantined students to experience severe negative emotions, which is in agreement with that reported by Lara et al.<sup>13</sup>. Moreover, online education may affect the effectiveness of theoretical and practical courses for students and lead to anxiety regarding subsequent assessments and graduation. In this study, more than half the participants expressed anxiety. Studies have found that students who experience negative emotions have worsened academic performance, difficulty in graduating, and a worsened quality of life<sup>14</sup>. Therefore, university educators should strengthen supervision during online courses and arrange internships reasonably to relieve student anxiety. A retrospective study showed that people in quarantine develop frequent worries about whether they will develop infection-related symptoms<sup>1</sup>. This result was confirmed in the present study. Almost all participants experienced insecurity during the quarantine and wondered if they had contracted the disease, even if they were healthy. Moreover, our data revealed that loneliness occurred when outside emotional support did not meet the students' needs. Three participants reported an increasing need for catharsis as the quarantine continued. Students may express this emotion through increased aggression, which can lead to disruptive behaviour. A study in Greece reported a 63.3% increase in suicidal thoughts among university students quarantined due to COVID-19<sup>15</sup>. Hsu et al.<sup>16</sup> found that Twitter users across the United States who were quarantined were more aggressive than those who were not. Some individuals may commit self-injury and additionally harm societal stability. A monotonous and dull

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environment may lead students to try to relieve boredom through aggressive behaviour<sup>17</sup>. Preventive interventions are essential for combating self-injury and aggressive behaviour. Community nurses and university administrators should focus on psychological screening, self-injury prevention and control, and supervision of university students, especially among those with psychological problems. Once an abnormality or the possibility of aggressive behaviour is identified, psychological nursing intervention is necessary.

The provision of social support is essential to protect the psychological health of university students during prolonged quarantine. At the beginning of the quarantine, there was a scarcity of supplies due to insufficient workforce capacity, which led the quarantined students to request support with regard to supplies. Additionally, the primary sources of information for university students are social media and the Internet. However, the information obtained from the Internet is unreliable<sup>18</sup>. When misinformation is widely disseminated, the public's risk perception is higher, which may predict higher levels of fear, anxiety, and stress<sup>19</sup>. Most study participants stated that negative and false information caused panic and anxiety. True, objective, and scientific information helps individuals to understand the risks, correctly perceive the severity of public health emergencies, and take correct and effective actions to avoid risks; this also helps in epidemic prevention and control. Thus, communities and governments should provide the right information to enable vulnerable groups, such as university students, to have the right understanding of the current situation, risk perception, and self-efficacy. This is a key prerequisite for controlling disease transmission through behavioural interventions and by reducing negative emotions<sup>20</sup>. The prolonged quarantine also increased the degree of social isolation among university students. Son et al<sup>21</sup>. reported that about 54% of students reported a significant decrease in interaction with others during the COVID-19 epidemic, and about 31% expressed concern about the lack of face-to-face communication<sup>21</sup>. Participants in the current study expressed a similar desire for psychological support from friends and family and were willing to receive psychological health treatment when necessary. There is evidence for the role of short-term emotional support in

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ameliorating negative emotions<sup>22</sup>. Therefore, it is necessary to implement online psychological interventions for university students experiencing negative emotions during quarantine.

University students are in early adulthood (18–25 years old), a stage at which they begin to think more deeply about their emotions, careers, and worldview<sup>23</sup>. Consequently, university students experienced self-reflection and growth after enduring the prolonged quarantine and possible health threats. In this study, some participants expressed gratitude to the community workers, medical personnel, and neighbours. As per Maslow, gratitude is crucial as a tool to cope with difficult situations<sup>24</sup>. Therefore, we need to help college students appreciate and be grateful for social resources so that they can face difficulties caused by prolonged quarantine and other situations in more positive ways<sup>25</sup>.

In addition to negative emotions and difficulties, participants also reported that the quarantine gave them additional time and energy to organise their lives. Some participants stated that their self-efficacy in emotion regulation was enhanced after the quarantine. Several studies have suggested that emotional self-efficacy promotes psychological health and lowers the risk of psychological problems such as anxiety and depression<sup>26</sup>. Emotional self-efficacy can help university students maintain psychological health during prolonged quarantine and possible health crises<sup>27</sup>, and thus may be an important goal for psychological nursing interventions. Mindfulness-based stress reduction interventions can help students reduce anxiety and stress, and improve emotional self-efficacy<sup>28</sup>.

When prolonged quarantine and potential health threats occur together, it may facilitate reconsideration of the meaning of life and future career plans in this population. A previous study has shown that people with an elevated life purpose tend to have higher well-being and psychological health than those who do not<sup>28</sup>. Therefore, it is essential for the psychological well-being of the students to guide them to recognise the value of their lives. In this study, we observed that the quarantine affected the future career planning of medical-related major students in two diametrically opposite ways. Some saw it as their responsibility to devote

themselves to the prevention and control of infectious diseases. However, healthcare workers are reported to be stigmatized by the public and face severe psychological and physical symptoms during quarantine<sup>29</sup>. Accordingly, some students may have wished to change their career goals. Therefore, in the future, it is important to guide students in implementing career planning and improving their professional identity during prolonged quarantine.

## STRENGTHS AND LIMITATIONS

This study provides insights into the psychological experiences of university students during prolonged quarantine through qualitative interviews. Our findings can guide psychological nursing strategies for university students during quarantine. This study also provides evidence and references for community nurses, university administrators, university psychological nursing providers, and other relevant personnel to implement psychological nursing in the event of quarantines in the future.

However, this study had some limitations. Firstly, the participants were university students from Shanghai. Thus, our results may not be generalisable to university students quarantined in different regions, especially abroad. Secondly, the sample size is limited; future studies should consider that university students with different majors/grades may have different psychological experiences. Additionally, the frequency and severity of the students' psychological conditions could not be estimated due to the qualitative nature of the study, so future quantitative research is needed in this regard.

## CONCLUSION

University students experienced dynamic and complex psychological experiences and a desire for social support during the prolonged quarantine. The provision of social support and gradual adaptation to the quarantine led to increased self-efficacy, and students began to reflect on the meaning of their lives and restructure their career plans. Our results reveal the need for establishing appropriate coping mechanisms during prolonged quarantine. Psychological care for university students requires concerted effort by community nurses, university psychological nursing providers,

and educators. The above should cooperate in assessing, screening, diagnosing, and caring for the psychological health of university students to ensure their physical and mental health and maintain social stability.

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Table 1

Table 1 Demographic information of the participants(n=20)

Gender	Woman	10 (50%)
	Man	10 (50%)
Age (years)	19	3 (15%)
	20	4 (20%)
	21	6 (30%)
	22	7 (35%)
District Of Residence	Minhang District	4 (20%)
	Qingpu District	3 (15%)
	Baoshan District	2 (10%)
	Pudong New District	6 (30%)
	Jiading District	1 (5%)
	Yangpu District	2 (10%)
	Putuo District	2(10%)
Specialty	Nursing	6 (30%)
	English	2(10%)
	Rehabilitation Medicine	4(20%)
	Civil Engineering	2(10%)
	Chinese Language and Literature	2(10%)
	Computer Science and Technology	2(10%)
	Marketing	2(10%)
Duration of Quarantine (days)	60-69	13(65%)
	≥ 70	7(35%)



Table 2. Examples of participants’ responses.

Themes	Sub-themes	Extract	Authors' explanation	Participant
Dynamic and complex psychological experience	Relief	“At first, I felt really happy. There was no commuting between home and school, I could save a lot of time..... Being quarantined also allowed me to spend more time with my parents.”	Home quarantine allows students to have a much shorter commute, less academic stress, and also allows them to spend more time with their families, which makes them relieved.	P8
	Confusion	“I was preparing for the nurse qualification certificate examination, but now I do not know when it will be postponed. Now I feel like I have suddenly lost my goal.”	Prolonged quarantine makes the daily life and study habits of university students change dramatically in a short period of time, which makes them confused and overwhelmed.	P5
		“During quarantine, my mom was hospitalized after cancer surgery..... But I was quarantined, and I did not know how she was going to take care of herself alone. (Wiping away tears)”		P6
	Anxiety	“Examinations for public institutions I arranged have been postponed or canceled. Hospitals also delayed hiring and focus on epidemic prevention. How is it so difficult to find a job? (In an urgent voice)”	Senior students are facing employment. However, looking for a job has become difficult due to quarantine and preventive measures, resulting in anxiety among participants.	P2
		“Even though we are taking online courses in the dormitory, there is still great pressure on me!..... I have poor self-control, after a semester just like learning nothing.”	Online courses, despite their convenience, are sometimes considered ineffective. As a result, for some students, online courses do not allow them to achieve their learning goals, but instead create anxiety and stress about their academic record.	P7
	Craving for catharsis	“I hate my roommate more and more! It's really depressing being quarantined in such a crowded room with him every day. There is also the possibility of disease(COVID-19). I really want to beat him up sometimes..... I am bored to death, but nothing can be done.”	During quarantine, Participant 16 gradually developed an aversion to his roommate and showed a tendency to hurt others. This may indicate that university students in quarantine have been repressed for a long time and then develop a craving for catharsis.	P16
	Desire for diverse support	“I can only eat instant noodles and box lunch every day, which makes me feel sick.... But it's nice to have something to eat, and I can't ask for more.”	Meeting the basic needs of students has been a top priority due to shortages of supplies during the early quarantine period. Therefore, material support is essential for university students during quarantine, including daily necessities (such as toilet paper) and food.	P5
		“Some people on the Internet say that cabbage sells for 100 yuan each. I was not sure if it was true or not, anyway, and I felt very scared.”	False or negative information may spread widely during quarantine, which will not only disturb university students' correct cognition of the current situation, but also aggravate their negative emotions. For example, participant17 mentioned that he was afraid of price gouging, which also reflects the importance of information support.	P7

Self-reflection and growth	Learn to be grateful	“When I was an intern, teachers at the hospital were very responsible. When there was a red code person in the hospital (you are given a red code if you infect COVID-19, or come into contact with an infected person), they take immediate control measures. So I am especially grateful to the hospital and the community for their timely management.”	Participants received more or less help and support from others during the quarantine and expressed their gratitude for this. Participant 5 expressed gratitude to the intern hospital the teachers, while participant 2 expressed gratitude to the neighborhood care during the quarantine.	P5
		“As my neighbors knew that I lived alone, they often shared food supplies with me, which helped me a lot during the quarantine! In return, I would share handmade desserts (Smile).”		P2
		Self-efficacy enhancement “I used to be particularly scared or anxious when I saw negative news on the Internet. But now I think that as long as we protect ourselves, one day we will overcome COVID-19.”	In addition to the negative impact of quarantine on university students, it was also likely to enable them to develop stronger strength and achieve positive personal growth.	P13
Reconstructing of future planning		“I think the online courses are great..... I was able to time my studies better, and I became more disciplined than before.”	After the prolonged quarantine, participants showed positive and optimistic psychological qualities and became adept at using positive problem-solving strategies.	P18
		“Since I live alone, I have to do laundry and cooking by myself. So after being quarantined for such a long time, I can do housework very well now!”	Online courses give students great freedom, which may improve their learning ability for students with strong self-control. (e.g. Participant 18).	P2
		“Now I am thinking about looking for a job closer to home. If my family members get sick or have an accident, I can accompany them instead of feeling panic.”	In addition, some participants claimed that they could gradually complete housework independently during quarantine, and gained growth. What Participant 19 saw in the quarantine and epidemic led him to reconsideration his future work plans and focus more on family ties.	P9

# BMJ Open

## Psychological Experience of University Students During Prolonged Quarantine in China: A Qualitative Study

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**Psychological Experience of University Students During Prolonged Quarantine  
in China: A Qualitative Study**

**Abbreviated title:** A qualitative study of students' psychological experience

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25     **Abstract**

26     **Objective:** To explore the psychological experiences of university students  
27     in prolonged quarantine during the coronavirus disease (COVID-19)  
28     pandemic.

29     **Design:** A qualitative descriptive study based on semi-structured interviews;  
30     data were analysed using a thematic topic analysis approach.

31     **Setting:** Interviews were conducted via WeChat Video

32     **Participants:** Twenty full-time undergraduate students from 7 districts in  
33     Shanghai Province who experienced prolonged quarantine were interviewed  
34     from June to August 2022.

35     **Results:** The data analysis revealed three themes with corresponding  
36     sub-themes related to the psychological experiences of university students  
37     during prolonged quarantine: (1) dynamic and complex psychological  
38     experiences, encompassing the feelings of relief, confusion, anxiety,  
39     insecurity, loneliness, craving for catharsis, and emotional numbness; (2)  
40     desire for diverse support; and (3) self-reflection and growth, mainly  
41     including learning to be grateful, self-efficacy enhancement, reconsideration  
42     of the meaning of life, and restructuring of future planning.

43     **Conclusion:** This study explored the psychological experiences of  
44     university students in prolonged quarantine through qualitative interviews,  
45     which contributed to our understanding of their emotions, needs, and  
46     conceptual changes during quarantine. Combined with the experiences of

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4 47 university students in quarantine, they reported complex emotional changes  
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6 48 and diverse needs, as well as the impact of prolonged quarantine on their  
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9 49 outlook on life. These findings can serve as a reference and basis for the  
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11 50 development of future psychological intervention measures in line with  
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14 51 national conditions.  
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18  
19 53 **Keywords:** Students; Qualitative Research; Quarantine; Pandemics; Adaptation;  
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**STRENGTHS AND LIMITATIONS OF THIS STUDY**

- This is the first qualitative descriptive study that has explored the psychological experiences of university students who experienced prolonged quarantine in China.
- The qualitative descriptive design ensured an extensive and deep exploration of the university students' psychological experience during prolonged quarantine.
- Semi-structured individual interviews provided sufficient time for participants to recall and give detailed information about their psychological experience during the prolonged quarantine.
- As the participants in this study were mainly from Shanghai, China, caution should be exercised when using the findings of this study in different regions.
- This was a qualitative study; our sample size was limited because accessing eligible subjects during the pandemic was difficult.



## INTRODUCTION

Due to the rapid spread of coronavirus disease (COVID-19) in March 2022 and the severity of the epidemic, authorities decided to implement “city-wide static management” on 1 April in Shanghai. The residents of Shanghai were quarantined for 60–70 days (depending on the area) until 1 June, when work was comprehensively resumed and the average production was restored. Shanghai already has one of the longest quarantines in China during the pandemic.

Quarantine measures limit the movement of people who may be exposed to the virus, thereby reducing the infection rates(1). Therefore, quarantine measures are vital for the prevention and control of epidemics(2). However, the pandemic of COVID-19 and prolonged quarantine may have a significant psychological impact on individuals, leading to emotional disturbances, increased stress, anxiety, and depression(1). The generation of these emotions is mainly related to such things as social isolation, stigmatization, occupational exposure to risk of disease, the collapse of social activities, and whether to return to work. The risk of infection can also make individuals feel extra psychological pressure(3, 4).

University students are always considered a vulnerable group(5). Due to unbalanced psychological development, elevated sensitivity, and academic and employment-related pressures, they are more likely to suffer from mental symptoms(6). In previous studies, due to the COVID-19 pandemic,

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96 university students have experienced moderate to severe depression (62.9%),  
97 anxiety (63.6%), and stress (58.6%)(7), and 2.7% of them suffered from  
98 post-traumatic stress disorder(8). A study among health sciences students in  
99 home quarantine during the COVID-19 pandemic showed that the prevalence  
100 of anxiety and depression was 15.7% and 10.7%, respectively(9). University  
101 students tend to be emotionally unstable and impulsive, and the incidence of  
102 risk behaviors tend to be higher(10). In the face of stressful events such as  
103 long-term isolation, they may produce agitated behavior, which may  
104 endanger their own and social safety. While it is common for people to  
105 experience a decline in psychological health after prolonged quarantine(11),  
106 the ideas and demands of university students typically differ from the  
107 general population, as the university period is a particular stage of life.  
108 Thus, it is crucial to ascertain the psychological experience of university  
109 students, as it involves the psychological impact of prolonged quarantine on  
110 students, including their thoughts, attitudes, feelings, emotions, needs, and  
111 changes.

112 The Chinese government issued a series of measures to make epidemic  
113 prevention and control more scientific and accurate. Notice on Further  
114 Optimising and Implementing the Prevention and Control Measures of  
115 COVID-19 include the need to strengthen care and provide psychological  
116 counseling for quarantined personnel, patients, and frontline medical  
117 workers(12). The Ministry of Education of the People's Republic of China

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issued a circular on 25 March 2022(13), stating that university students should strengthen their emotional self-adjustment during quarantine. Students need prompt help from family, friends, and medical professionals and should receive psychological help when they experience anxiety, confusion, and other negative emotions. The Chinese government attaches high attention to the importance of psychological intervention for the quarantined groups, especially university students, and has raised measures for psychological intervention. However, a specific and targeted emergency response plan has not yet been available.

Through this study, we hope to explore the psychological experience of university students experiencing prolonged quarantine. Specifically, the research question driving this study is: What emotional experiences do university students experience during prolonged quarantine? What are the needs of university students during the prolonged quarantine? How did their perceptions change during and after the prolonged quarantine? Thus, it provides a theoretical basis for formulating psychological intervention programmes in line with China's national conditions in the face of public health emergencies or inevitable prolonged quarantine in the future and, at the same time, providing a reference for the practical work of psychological health workers, community managers, and university administrators.

## METHODS

**Design**

A descriptive phenomenology method that included semi-structured interviews was applied, as our main objective is to explore the psychological experience of university students who experienced prolonged quarantine. We employed the Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist as a guideline(14).

**Participants**

Based on the research objectives of this study, eligible participants had the following characteristics: (1) full-time undergraduate student, (2) living in Shanghai and quarantined for at least two months, and (3) provided informed consent and participated voluntarily in this study. Participants with the following characteristics were excluded: (1) non-university students and (2) those not in Shanghai during quarantine.

**Recruitment**

Participant recruitment was carried out at numerous universities in Shanghai. We used a purposive sampling and snowballing technique to select university students in Shanghai who underwent uninterrupted quarantine from March to June 2022 as study subjects.

Our study selected university students with different majors and grades to reach a wide range in age, major, and enrollment year. First, two researchers introduced the project to potential participants through phone

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calls/WeChat videos. Researchers then contacted and scheduled interviews with interested participants. Participants were asked to help introduce more eligible students to the study. Researchers also obtained the contact details of other university students willing to participate in the study by contacting the student union. Researchers also posted information online to recruit a wider range of eligible subjects.

Two researchers familiar with the study plan conducted recruitment and subsequent interviews. Another author supervised these two researchers and ensured the rigor and accuracy of the recruitment, interview, data collection, and analysis processes.

Following the principle of maximising the difference in purpose sampling, participants who could provide maximum information were selected as candidates according to the purpose of the study, and university students with different majors and grades were selected to achieve a wide range in age, major, and year of enrollment. First, researchers contacted their former classmates and obtained the contact information of students' union members of some universities in Shanghai. Then, they introduced the project to them and invited students who met the inclusion criteria to participate in the study. Interviews were arranged with potential participants after contact and informed consent was obtained. After this, participants were asked to help refer more eligible students. In addition, researchers posted the recruitment information through WeChat groups to recruit more

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eligible participants. Before the interview, participants were given a short questionnaire to collect their general information (including age, grade, major, district they live, and duration of quarantine). The recruitment of participants and the interviews were conducted by ALY and MLZ, who were familiar with the study. Another author, LL, supervised the two researchers and ensured the rigour and accuracy of the recruitment, interviews, data collection, and analysis processes. Recruitment was stopped when data were saturated; no new information appeared in the last two interviews.

A total of 28 university students were invited to participate in this study; 20 agreed to participate (10 men and 10 women; median age: 20 (19-22) years). Of these, 8 declined to participate, 3 explained that they had difficulty coping with negative emotions when recalling the quarantine experience, and the others did not provide exact reasons for their refusal. The participants had been quarantined for over two months and had diverse professional backgrounds. Participant demographics are presented in Table 1.

Table 1 Demographic information of the participants(n=20)		
Gender	Woman	10 (50%)
	Man	10 (50%)
Age (years)	19	3 (15%)
	20	4 (20%)
	21	6 (30%)
	22	7 (35%)
District Of Residence	Minhang District	4 (20%)
	Qingpu District	3 (15%)
	Baoshan District	2 (10%)
	Pudong New District	6 (30%)

Specialty	Jiading District	1 (5%)
	Yangpu District	2 (10%)
	Putuo District	2(10%)
	Nursing	6 (30%)
	English	2(10%)
	Rehabilitation Medicine	4(20%)
	Civil Engineering	2(10%)
	Chinese Language and Literature	2(10%)
	Computer Science and Technology	2(10%)
	Marketing	2(10%)
Duration of Quarantine (days)	60-69	13(65%)
	≥70	7(35%)

## Data collection

We collected data from June to August 2022. Based on the purpose of the study, the researchers prepared a preliminary interview outline through a literature review and group discussion. Before the formal interviews, we conducted pre-interviews with two quarantined university students and revised the outline based on the interview content and expert recommendations. ( Final interview outline, see Box 1)

### Box 1. Semi-structured interview guide

#### Questions

- (1) How do you feel about the prolonged quarantine?
- (2) What is the impact of the prolonged quarantine on your life and study?
- (3) How do you cope with these changes during quarantine?
- (4) What kind of help do you need in this process?

All interviews were conducted by ALY and MLZ, female graduate students in nursing who have been systematically trained in qualitative

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research and have mastered the semi-structured interview method. In this study, researchers used WeChat video to conduct interviews, and asked participants to choose a quiet, separate room as the interview venue; the participants chose the time of interview and were interviewed alone. The interviews lasted for 35 to 40 minutes, and were video-recorded. The interviewer adjusted the serial order of interview questions according to the interview outline and the interviewee's mood. During the interview, the researcher listened carefully and recorded nonverbal behaviours. To ensure the authenticity of the interview data, we did not elicit or criticise interviewees' views. To ensure privacy, the interview results were presented anonymously; interviewees' names were replaced with 'P + number'.

**Data analysis**

After the interview, ALY transcribed the audio into text within 24 h of the interview completion, and listened to it twice to ensure the accuracy of the transcription. During transcription, ALY simultaneously watched the video recordings, paying close attention to changes in intonation and expression to analyse the interviewee's feelings more accurately. Transcriptions were returned to participants for correction.

This study used Colaizzi's data analysis method for data analysis(15), so the analysis was data-driven rather than theory-driven. These steps include: (1) reading all interview materials carefully, (2) extracting significant



statements related to the psychological experiences of university students during prolonged quarantine,(3) creating meanings for each significant statement, (4) organising common features or concepts of meaning to form themes, thematic groups and categories, (5) combining results into an exhaustive description of the psychological experience, (6) framing the exhaustive description into a statement of identification of its essential structure, (7) feedback the result to the participants for confirmation to improve the validity of the data analysis. Repeat the above steps as necessary to ensure complete understanding of the statement and data saturation.

Two researchers independently analysed the data using a thematic analysis approach; disagreements were resolved through consultation with senior team members. Researchers initially encoded the interview data, and subsequently reviewed the data to identify similar phrases, emotions, experiences, and values frequently stated, to identify common themes. We also assessed whether the participants accurately described the phenomenon and whether the researchers accurately described the meanings assigned by the participants to the phenomenon. This process was reviewed and re-examined by both the researchers and participants(16).

### Quality control

Before the interview, the researcher communicated properly with the

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participants through WeChat to establish trust. In the process of data collection and data analysis, the researchers suspended their personal views, immersed themselves in the text materials, read them repeatedly, and thought deeply about the real feelings and thoughts of the participants. ALY and MLZ jointly participated in transcribing and integrating the raw data. Then, they refined and integrated the transcribed textual information independently. Panel discussions resolved any disagreements. The researchers performed continuous iterative reflection during the collation and analysis to avoid misinterpreting the transcribed information. Interviewers also wrote reflection notes after each interview.

**Patient and public involvement**

The public were not involved in the design, conduct, reporting of this research. During the recruitment phase of the study, the researchers invited some students to help invite potential participants. The manuscript was sent to all participants who provided their e-mail addresses when the interviews were conducted.

**Ethics**

This study was approved by ethics Committee of Zhejiang Shuren University (approval No.202202032). Participants were adequately informed of the interview procedure, purpose, and significance. They agreed to audio-recorded interviews, and signed informed consent forms; they were

free to withdraw from the study at any time. All data were anonymised to ensure confidentiality.

## RESULTS

The twenty participating college students lived in different areas of Shanghai during the implementation of ‘city-wide static management’. Their psychological experiences during the prolonged quarantine varied due to differences in residence area, age, life experience, educational experience, and personal values.

Our data analysis revealed three themes and corresponding sub-themes that characterized the psychological experience of the participants during the long-term quarantine. Table 2 shows the key information provided by the participants in the interviews; the researchers’ interpretation has also been presented.

290 Table 2. Examples of participants’ responses

Themes	Sub-themes	Extract	Authors' explanation	Participant
Dynamic and complex psychological experience	Confusion	"I was preparing for the nurse qualification certificate examination, but now I do not know when it will be postponed. Now I feel like I have suddenly lost my goal."	Prolonged quarantine makes the daily routine and study habits of university students change dramatically in a short time, making them confused and overwhelmed.	P5
	Anxiety	"Examinations for public institutions I arranged have been postponed or canceled. Hospitals also delayed hiring and focus on epidemic prevention. How is it so difficult to find a job? (In an urgent voice)"	Senior students are facing employment. However, looking for a job has become difficult due to quarantine and preventive measures, resulting in anxiety among participants.	P2
Desire for diverse support		"I can only eat instant noodles and box lunch every day, which makes me feel sick.... But it's nice to have something to eat, and I can't ask for more."	Meeting students' basic needs has been a top priority due to shortages of supplies during the early quarantine period. Therefore, material support is essential for university students during quarantine, including daily necessities (such as toilet paper) and food.	P5
		"Some people on the Internet say that cabbage sells for 100 yuan each. I was not sure if it was true or not, anyway, and I felt very scared."	False or negative information may spread widely during quarantine, disturbing university students' correct cognition of the current situation and aggravating their negative emotions. For example, participant17 mentioned that he was afraid of price	P7

				gouging, which also reflects the importance of information support.	
Self-reflecti	Learn to be	“When I was an intern, teachers at the hospital were very responsible.	Participants received more or less help and support from others during the quarantine	P5	
on and grateful		When there was a red code person in the hospital (you are given a red	and expressed their gratitude for this. Participant 5 expressed gratitude to the intern		
growth		code if you infect COVID-19, or come into contact with an infected	hospital and the teachers, while Participant 2 expressed gratitude to the		
		person), they take immediate control measures. So I am especially grateful	neighborhood care during the quarantine.		
		to the hospital and the community for their timely management.”			
		“As my neighbors knew that I lived alone, they often shared food supplies		P2	
		with me, which helped me a lot during the quarantine! In return, I would			
		share handmade desserts (Smile).”			
Self-efficacy		“I used to be particularly scared or anxious when I saw negative news on	In addition to the negative impact of quarantine on university students, it was also	P13	
enhancement		the Internet. But now I think that as long as we protect ourselves, one day	likely to enable them to develop strong inner strength and achieve positive personal		
		we will overcome COVID-19.”	growth. After the prolonged quarantine, participant 13 showed positive and		
		“I think the online courses are great..... I was able to time my studies	optimistic psychological qualities and became adept at using positive	P18	
		better, and I became more disciplined than before.”	problem-solving strategies. Online courses give students great freedom, which may		
		“Since I live alone, I have to do laundry and cooking by myself. So after	improve their learning ability for students with strong self-control. (e.g. Participant	P2	
		being quarantined for such a long time, I can do housework very well	18). In addition, some participants claimed they could gradually complete housework		
		now!”	independently during quarantine and gain growth		

**Theme 1: Dynamic and complex psychological experience**

**Relief**

Due to the quarantine, students took online courses at their homes or dorms, and those with internships experienced work interruptions. This eliminated commute time and provided them with more time for relaxation.

“There was no commuting between home and school, I could save a lot of time..... Being quarantined also allowed me to spend more time with my parents.”

(Participant 8)

**Confusion**

As the pandemic progressed, the number of infections peaked, resulting in the extension of quarantine. As a result, some participants felt overwhelmed, which may be related to the disrupted pace of their lives, increased academic pressure, and family changes.

“My parents went to take care of the elderly, leaving me alone at home, but I have never lived alone. (frown)”

(Participant 2)

“During quarantine, my mom was hospitalized after cancer surgery..... But I was quarantined, and I did not know how she was going to take care of herself alone. (Wiping away tears)”

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(Participant 6)

The quarantine affected the offline internship process for students pursuing professions such as nursing.

“You know(sigh), what you learn in online internships is entirely different from that learnt with offline training. Now, I do not have access to patients at all and cannot even master the basic skills of my major. I am so confused about my future.”

(Participant 20)

### **Anxiety**

The quarantine had a significant impact on both employment and academic pursuits, placing university students under pressure, and severely affecting their physical and psychological health.

“I was already worried about finding a job. Now, it has become even more challenging.”

(Participant 15)

Moreover, Online courses, despite their convenience, are sometimes considered ineffective. As a result, for some students, online courses do not allow them to achieve their learning goals, but instead create anxiety and stress about their academic record.

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336 “I am distracted from lessons at home, but my classmates are studying  
337 hard. I feel really anxious because I wasted a lot of time.”  
338 (Participant 11)

339  
340 “Even though we are taking online courses in the dormitory, there is  
341 still great pressure on me!..... I have poor self-control, after a  
342 semester just like learning nothing.”  
343 (Participant 7)

345 **Insecurity**

346 People's sense of security typically originates from certainty. With the  
347 continued presence of the epidemic, some students expressed their feelings  
348 of insecurity. This feeling came not only from sources around them  
349 (roommates as sources of infection), but also from unreasonable epidemic  
350 prevention measures.

351 “One of my roommates I jointly rent with, was back from the hospital;  
352 so I would avoid him when I left my room ( to the living room, dining  
353 room, bathroom and other public space). Even after returning from the  
354 washroom, I had to disinfect myself.”  
355 (Participant 19)

356  
357 “Although I was quarantined in the dormitory, everyone in the school



took nucleic acid tests together on the playground. I am so afraid I might get infected because of this.”

(Participant 7)

### Loneliness

The prolonged quarantine weakened the social network of university students, and they disengaged from their circle of friends. Although WeChat chats and other methods can help students keep in touch with their friends, it cannot replace the traditional communication methods. Therefore, university students were prone to loneliness during quarantine.

“My friends would comfort me at first. But as the quarantine lengthened, they stopped listening to me. They had not experienced this (quarantine) and could not understand my feelings at all.”

(Participant 5)

Participants who were quarantined in the dormitory also expressed feelings of loneliness.

“Although I lived in the dorm with my roommates, I still felt miserable. We were tired of looking at each other's faces every day, so we focused on our own business, which was no different from being quarantined alone.”

(Participant 7)

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**Craving for catharsis**

University students in early adulthood are mentally immature and have weak self-control. Therefore, they may exhibit impulsive and risky behaviours when negative emotions become unbearable.

“There was a time when I would shut myself up in my room. I could not stop crying, and I did not know what was wrong with me.”

(Participant 15)

In addition to self-harm, university students who have experienced prolonged quarantine have shown a tendency to harm others. One of our participants gradually developed an aversion to his roommate.

“I hate my roommate more and more! It's really depressing being quarantined in such a crowded room with him every day. There is also the possibility of disease(COVID-19). I really want to beat him up sometimes..... I am bored to death, but nothing can be done.”

(Participant 16)

**emotionally numb**

In this study, due to the long-term effects of negative emotions, some participants claimed that as the quarantine period lengthened, they no longer expressed the strong emotions that they did at the beginning and began to

feel emotionally numb. This sense of numbness may affect the individual's awareness of preventing and controlling infectious diseases and the ability to communicate with others.

“At the beginning, we would disinfect the supplies with alcohol, even coming in from the community. However, the as the quarantine lengthened, I started caring less.”

(Participant 4)

## Theme 2: Desire for diverse support

Social support is an essential external resource for psychological health. In this study, participants expressed their desire for diverse support. During the quarantine, daily necessities were in shortage. Some participants expressed a desire for support concerning supplies.

“We eat badly. Coke is a luxury for me. In the worst case, I do not even know if I will get my next meal.”

(Participant 7)

Information support is essential for quarantined students. False and negative information about the epidemic can not only severely interfere with the correct perception of the current state of the epidemic among students but also amplify their anxiety.

“There were various online messages about being released from

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424 quarantine, but many were fake. When the news came out that the  
425 quarantine would be released on 1 June, we were sceptical. I need  
426 accurate information!(frown)”

427 (Participant 4)

428

429 Emotional support may give students courage in the face of shortages of  
430 supplies and enormous psychological stress during prolonged quarantine.

431 “I wouldn't be so upset if my family members were there for me.”

432 (Participant 10)

433

434 **Theme 3: Self-reflection and growth**

435 **Learning to be grateful**

436 During the quarantine, most participants were grateful for the care they  
437 received from the community and medical staff. Neighbourhood relations  
438 also improved during this time.

439 “I am touched and grateful to see that the whole country supports us,  
440 and the community volunteers are busy taking care of us.”

441 (Participant 12)

442

443 “I used to avoid my neighbours when I met them, but now we  
444 exchange supplies. It feels like our relationship has improved.”

445 (Participant 6)

### Self-efficacy enhancement

The quarantine gave university students additional time and energy to re-order their lives. Moreover, it limited students' dependence on their families, making them actively learn life skills, which is conducive to enhancing their independence.

"The most significant achievement during the quarantine is that my cooking skills have improved, and the dishes I made were more delicious (Smile)."

(Participant 9)

Some participants also reported an increase in emotional self-efficacy. They actively engaged in emotional self-regulation, paid attention to positive news, eliminated negative emotions, and maintained a positive attitude.

"COVID-19 is a severe challenge to us, but I believe we will ultimately overcome the difficulties, and that nothing is impossible."

(Participant 14)

### Reconsideration of the meaning of life

The university students ranked their "physical and psychological health" and "family happiness" as the "most valuable things in life", rather than

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"making money." The change in these concepts also means that they may have gained a deeper understanding of the connotation of self-worth and the meaning of life. It is possible that their experiences during the quarantine led them to respond in this manner.

“I used to think I had to do my best to earn money. But now, I believe nothing is more important than health.”  
(Participant 9)

**Restructuring of future plans**

The prolonged quarantine also restructured the thinking and future plans of university students.

“Before this quarantine, I was preparing to study abroad, but now I think it is good enough to find a stable job near my home.”  
(Participant 8)

“Now I am thinking about looking for a job closer to home. If my family members get sick or have an accident, I can accompany them instead of feeling panic.”  
(Participant 9)

Since the outbreak of COVID-19, frontline medical workers caring for patients have had a great work mission, but have also been under

tremendous psychological pressure, affecting medical students.

“I suddenly feel that my major is significant, so I will continue my clinical work in the future.”

(Participant 18)

“I think frontline health workers were exhausted from the epidemic prevention and quarantine..... I absolutely can not handle the pressure! If I had the chance, I would change my major or career as soon as possible.”

(Participant 11)

## DISCUSSION

To the best of the authors' knowledge, this study is the first qualitative study in China to explore the psychological experience of university students experiencing prolonged quarantine. Students experience dynamic and complex emotional changes with prolonged quarantine. However, due to the influence of negative emotions, lack of material supplies, and uneven information quality, participants expressed a desire for diversified support. Finally, prolonged quarantine was a stressful event for university students, which greatly affected their outlook on life and career.

**University students in prolonged quarantine experienced complex and**

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**diverse emotional changes**

Lazarus' cognitive theory of emotion(17) believes that cognitive activities guide emotional activities, and individuals will produce different emotional responses by continuously evaluating the relationship between the stimulus event and themselves (such as stakes, emotions, and behavioural responses). Our study found that as the quarantine lengthened, the cognitive of university students shifted, and variations in stressors created multiple complex emotional experiences, both positive and negative. At the beginning of the quarantine, students' fast-paced lives are forced to slow down and the pressure of studying and interning is temporarily eased, creating a sense of relief.

The university phase is one of the most memorable phases of life. About half of all mental illnesses occur in the middle of adolescence(18), and the incidence of psychological illness in university students has nearly doubled in the past decade(19). Therefore, it is crucial to pay attention to the psychological well-being of university students, mainly when stressful events occur. However, a worrying observation in this study was that quarantined students experienced various degrees of negative emotions, such as confusion, anxiety, insecurity, and loneliness, which is consistent with previous reports(20-22). The main reasons for this phenomenon is the main reason for campus life being entirely changed, restricted activity, threats to health, etc(5). In addition, our study found that one of the leading causes for



negative emotions mentioned by the participants was the unprecedented pressure from study and recruitment. As a result of quarantine, students' learning method was changed from face-to-face to online. At the same time, Dost S et al.(23) pointed out that due to the lack of teacher preparation and technical difficulties, students rated online teaching as less effective and low learning efficiency. In addition, the prolonged quarantine affected the recruitment of work units, leading to the anxiety and worry of senior students about their careers, which is consistent with the research results of La Rosa VL et al.(24) For subjects with higher practical requirements, such as medicine, halting clinical placements will undoubtedly impact their career development(23). Students who experience negative emotions have worse academic performance, difficulty graduating, and worse quality of life(23). Valuable implications for educators can be assisting with employment and exploring ways to improve the effectiveness of online learning systems to alleviate negative emotions during and after the quarantine.

Another common emotion during quarantine is loneliness, which is caused by not having enough peer support or being isolated from the community or society(25). The participants in this study also expressed different levels of loneliness. This sentiment may be addressed by increasing quarantined students' online social activities. A retrospective study showed that an individual in quarantine frequently worries about whether they would

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develop infection-related symptom(1). This result was confirmed in our study, where nearly all participants experienced insecurity during quarantine and wondered if they had contracted the disease, despite being healthy. However, there was research(22) suggesting that only 5.3% of the sample thought that the probability of being infected with COVID-19 was high, and 72.3% expressed little or no concern about getting infection. This is likely to be mainly related to the policies of different countries. Due to China's strict quarantine policy, the emphasis on the severity of COVID-19 may lead to increased insecurity among those under quarantine. This is likely to be mainly related to the policies of different countries. Due to China's strict policy of quarantine, the emphasis on the severity of COVID-19 may lead to increased insecurity among those under quarantine. It may also be related to the fact that all the participants came from areas that were experiencing severe outbreaks.

It is also worrisome that participants expressed the desire for catharsis and emotional numbness after prolonged accumulation of negative emotions. Three participants reported an increasing desire for catharsis as the quarantine continued. The suicide intention of students who experienced quarantine during COVID-19 ranged from 12.3% to 18.04%(5, 26), which deserves high attention. In addition to harming themselves, a monotonous environment may lead students to try to alleviate boredom through aggressive behavior(27). Hsu JT et al.(28) found that quarantines Twitter

users were more aggressive than non-quarantines, and in the present study, participants even expressed the attempt to commit violent acts against their roommates, which could further jeopardize social stability. Preventive interventions are, therefore, essential to halting self-harm and injury events.

Moreover, some participants became emotionally numb after the prolonged quarantine, resulting in inadequate implementation of epidemic prevention measures. Mental health workers and university administrators should pay close attention to students with underlying mental illness to precaution against the occurrence of self-injury and agitation. Once abnormalities are identified or the possibility of aggressive behavior, timely psychological nursing intervention is required.

**It is necessary to provide diversified support for university students to reduce their psychological pressure during quarantine**

The provision of social support is essential to protect the psychological health of university students during prolonged quarantine. At the beginning of the quarantine, supplies were scarce due to insufficient workforce capacity, which led the quarantined students to request support concerning supplies. Additionally, the primary sources of information for university students are social media and the Internet(22). However, the information obtained from the Internet is sometimes unreliable(29). Public perception can be influenced by online social support(30). When misinformation is

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widely disseminated, the public's risk perception is higher, which may predict higher levels of scare, anxiety, and stress(31). Receiving real, objective, and scientific news predicts positive emotions<sup>31</sup>, which helps individuals understand risks, perceive the severity of public health emergencies correctly, and take effective actions to avoid risks. Thus, communities and governments should provide the right information to enable vulnerable groups, especially university students, to understand the current situation, risk perception, and self-efficacy. This is a key prerequisite for controlling disease transmission through behavioural interventions and by reducing negative emotions(32).

Prolonged quarantine also increased the degree of social isolation among university students. Son et al.(33) reported that about 54% of students reported a significant decrease in interaction with others during the COVID-19, and about 31% expressed concern about the lack of face-to-face communication(33). The support of friends and family was the most needed psychological resource for university students during quarantine, and they were willing to receive psychotherapy if necessary. There is evidence for the influential role of short-term social and emotional support in ameliorating negative emotions(34). Therefore, by strengthening family contact and remote behavioral interventions, educators and psychological health workers can focus on the psychological health status of students, while providing basic psychological support and knowledge of psychological first aid.

**Increase the positive psychological impact, guide students to establish the correct outlook on life and career**

While previous studies have detailed possible negative psychological sequelae, there are still potential positive psychological effects of COVID-19 and prolonged quarantine. Cohen-Louck K suggests that the longer the quarantine, the higher the level of post-traumatic growth(35). Stallard P et al.'s research(36) also showed that 88.6% of the 341 respondents believed that COVID-19 and quarantine would bring positive effects, including more intimate family relationships and greater appreciation of life and others, which was consistent with the conclusions drawn in our study. Participants expressed gratitude to the community workers, medical personnel, and neighbours because of their help obtained during the quarantine, and also placed more emphasis on emotional connection with family members. As per Maslow, gratitude is crucial as a tool to cope with difficult situations(37). By helping university students appreciate social resources, they can face the difficulties caused by prolonged quarantine and other situations in a more positive way(38). In addition, participants also reported that the quarantine gave them additional time and energy to organise their lives, their self-efficacy in emotion regulation was also enhanced. Numerous studies have shown that self-efficacy of emotions reduces the risk of anxiety, depression, and other

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644 psychological problems(39), and promotes the psychological well-being of  
645 university students during quarantine and other possible health crises(40).  
646 Therefore, one of the essential goals of providing psychological nursing for  
647 university students during and after quarantine is to improve their emotional  
648 self-efficacy(41). Mindfulness-based stress reduction interventions can help  
649 students reduce anxiety and stress, and improve emotional self-efficacy(41).  
650 Implementing mindfulness-based stress reduction interventions may be  
651 effective in helping students reduce negative emotions and improve their  
652 emotional self-efficacy.

653       In this study, the participants were no longer desperate for a decent job  
654 and large amounts of money, but regarded physical health and family  
655 relationships as the most valuable things. It's worth noting that the  
656 quarantine affected the future career planning of medical-related major  
657 students in two diametrically opposite ways in our study. Some saw it as  
658 their responsibility to devote themselves to preventing and controlling  
659 infectious diseases. However, healthcare workers are reported to be  
660 stigmatized by the public and face severe psychological and physical  
661 symptoms during quarantine(42). Accordingly, some students may have  
662 wished to change their career goals. For university students in early  
663 adulthood (18 to 25 years old), the beginning of university study coincides  
664 with the transition stage of adulthood and independence; their minds are not  
665 yet mature(43, 44). As a stressful event, prolonged quarantine may

significantly impact their outlook on life and employment preferences. In the post-pandemic era, the employment situation for graduates is more severe and complex. At the moment, however, graduates are still receiving inadequate instruction in employment, and their perception of employment is still relatively shallow(45). Moreover, after a prolonged quarantine, graduates generally have negative and pessimistic ideas about employment(45). Therefore, how to help graduates improve their career planning and develop employment guidance to keep pace with The Times is an essential issue for future university educators to explore.

### **Practical implications**

Our findings suggest that university students experience complex and variable psychological experiences during the long-term quarantine, which indicates that psychological intervention is not achieved overnight. Psychological health workers need to develop targeted psychological interventions based on the psychological status of different students which also conform to the national conditions. The combination of online and offline psychological services may be extremely effective in improving the psychological health of students.

In addition, because of the large population in China, the situation is more complex and the management of students is more difficult during the quarantine. Therefore, the implementation of psychological nursing for university students during quarantine needs joint efforts in many aspects. At the same time, the nation needs to

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promote the cooperation between family, community and school through the formulation of relevant policies to jointly maintain the psychological health of university students.

In the future, large-scale national cross-sectional surveys can be conducted to study the psychological experience of university students who experienced the epidemic and long-term quarantine. Research on the psychological situation of university students in the post-pandemic era is recommended, to explore whether long-term quarantine and the pandemic have had a prolonged psychological impact on them, and explore ways to help students better adapt to life in the post-pandemic era.

**CONCLUSION**

Our study help us to fully understand the changes and needs of university students who have experienced prolonged quarantine. Based on the result, we gained a deeper understand of the impact of the pandemic and quarantine on the emotions, psychology, attitudes, needs, and outlook on life of university students in China. University students experience dynamic and complex emotional changes during prolonged quarantine including positive and negative emotions at different levels. For a variety of reasons, they expressed a desire for diversified support. As a stressful event, prolonged quarantine greatly impacts immature university students' outlook on life and career. The results of this study can be taken into account in the construction of psychological interventions and emergency response plans in the future. According to the characteristics and needs of university students who have experienced stressful

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events, mental health workers and university administrators can provide individualized psychological intervention and support to help them sustain their mental health and better navigate early adulthood.

## STRENGTHS AND LIMITATIONS

To the best of our knowledge, our study is the first in China to explore the psychological experience of university students who have experienced prolonged quarantine through qualitative interviews. However, there are still some limitations to this study. First of all, the results of this study were derived from qualitative interviews rather than quantitative research, and its universality may be affected. However, it is essential to acknowledge that these results are derived from the inner real experience of quarantined university students and are unaffected by the scale. Second, we could not conduct face-to-face interviews with participants due to the pandemic limitations, which may have affected the validity of the interviews. Ultimately, the participants were all university students from Shanghai, China. Therefore, our results may not apply to university students who are quarantined in different regions, especially in other countries.

## AUTHOR CONTRIBUTIONS

ALY and MLZ were involved in the design of the study, data collection, analysis, drafting and revising the manuscript. LL helped with the data analysis and provided

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supervision, guidance and support for this study. All authors have read and approved the final manuscript. The authors declare no conflicts of interest.

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**CONFLICT OF INTEREST**

None declared.

**PUBLIC INVOLVEMENT STATEMENT**

Some of our participants were involved in the recruitment to the study. They referred their friends who met the inclusion criteria to participate in the study.

**DATA AVAILABILITY STATEMENT**

The data that support the findings of this study are available from the corresponding author, LL, upon reasonable request.

**FUNDING STATEMENT**

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

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## Consolidated criteria for reporting qualitative studies (COREQ): 32-item checklist

Developed from:

Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

No. and Item	Guide questions/description	Reported on Page No.
<b>Domain 1: Research team and reflexivity</b>		
<i>Personal Characteristics</i>		
1. Interviewer/facilitator	Which author/s conducted the interview or focus group?	<b>P11:</b> All interviews were conducted by ALY and MLZ.
2. Credentials	What were the researcher's credentials? E.g. PhD, MD	<b>P11:</b> Female graduate students in nursing.
3. Occupation	What was their occupation at the time of the study?	<b>P11:</b> Female graduate students in nursing.
4. Gender	Was the researcher male or female?	<b>P11:</b> Female graduate students in nursing.
5. Experience and training	What experience or training did the researcher have?	<b>P11:</b> Students who have been systematically trained in qualitative research and have mastered the semi-structured interview method.
<i>Relationship with participants</i>		
6. Relationship established	Was a relationship established prior to study commencement?	<b>P13:</b> Before the interview, the researcher communicated properly with the participants through WeChat to establish trust.
7. Participant knowledge of the interviewer	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	<b>P14:</b> Participants were adequately informed of the interview procedure, purpose, and significance.



8. Interviewer characteristics	What characteristics were reported about the inter viewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	No.
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<b>Domain 2: study design</b>		
<i>Theoretical framework</i>		
9. Methodological orientation and Theory	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	<b>P7:</b> A descriptive phenomenology method that included semi-structured interviews was applied.
<i>Participant selection</i>		
10. Sampling	How were participants selected? e.g. purposive, convenience, consecutive, snowball	<b>P8:</b> We used a purposive sampling and snowballing technique to select university students in Shanghai
11. Method of approach	How were participants approached? e.g. face-to-face, telephone, mail, email	<b>P11:</b> In this study, researchers used WeChat video to conduct interviews
12. Sample size	How many participants were in the study?	<b>P10:</b> 20 participants involved in our study.
13. Non-participation	How many people refused to participate or dropped out? Reasons?	<b>P10:</b> Of these, 8 declined to participate, 3 explained that they had difficulty coping with negative emotions when recalling the quarantine experience, and the others did not provide exact reasons for their refusal.
<i>Setting</i>		
14. Setting of data collection	Where was the data collected? e.g. home, clinic, workplace	<b>P11:</b> Researchers asked participants to choose a quiet, separate room as the interview venue.
15. Presence of non-participants	Was anyone else present besides the participants and researchers?	<b>P11:</b> The participants were interviewed alone.
16. Description of sample	What are the important characteristics of the sample? e.g. demographic data, date	<b>P8:</b> Characteristic of participants.
<i>Data collection</i>		
17. Interview guide	Were questions, prompts, guides provided by the authors? Was it pilot tested?	<b>P11:</b> Before the formal interviews, we conducted pre-interviews with two quarantined university students
18. Repeat interviews	Were repeat interviews carried out? If yes, how many?	No
19. Audio/visual recording	Did the research use audio or visual	<b>P11:</b> Interviews were

	recording to collect the data?	video-recorded
20. Field notes	Were field notes made during and/or after the interview or focus group?	<b>P11:</b> During the interview, the researcher listened carefully and recorded nonverbal behaviours.
21. Duration	What was the duration of the inter views or focus group?	<b>P11:</b> The interviews lasted for 35 to 40 minutes.
22. Data saturation	Was data saturation discussed?	<b>P9-10:</b> Recruitment was stopped when data were saturated; no new information appeared in the last two interviews.
23. Transcripts returned	Were transcripts returned to participants for comment and/or correction?	<b>P12:</b> Transcriptions were returned to participants for correction.
<b>Domain 3: analysis and findings</b>		
<i>Data analysis</i>		
24. Number of data coders	How many data coders coded the data?	<b>P12-13:</b> Two researchers independently analysed the data using a thematic analysis approach
25. Description of the coding tree	Did authors provide a description of the coding tree?	No
26. Derivation of themes	Were themes identified in advance or derived from the data?	<b>P12:</b> The analysis was data-driven rather than theory-driven
27. Software	What software, if applicable, was used to manage the data?	Not applicable
28. Participant checking	Did participants provide feedback on the findings?	No.
<i>Reporting</i>		
29. Quotations presented	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	<b>P14-27</b>
30. Data and findings consistent	Was there consistency between the data presented and the findings?	<b>P14-27</b>
31. Clarity of major themes	Were major themes clearly presented in the findings?	<b>P14-27</b>
32. Clarity of minor themes	Is there a description of diverse cases or discussion of minor themes?	<b>P14-27</b>