

A Qualitative Study of Disaster Resilience of Chinese Adolescents Five Years after Super Typhoon Rammasun

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Abstract: Adolescents and younger children are more vulnerable during and after disasters than adults, and their ability to develop resilience depends on many factors, including culture and context. However, adolescents' experiences and voices need to be considered more often in disaster research, since their understanding of disaster resilience is not known in depth. This study aimed to understand Chinese adolescents' disaster resilience experiences five years after their exposure to the Super Typhoon Rammasun. A qualitative descriptive design was applied. As far as the researchers are aware, this was the first qualitative study in China to explore adolescents' disaster experiences and disaster resilience. In-depth interviews were conducted in Hainan province, on an island in the South China Sea, with 30 high school adolescents exposed to Super Typhoon Rammasun. Data were collected from March to October 2019 and analyzed using content analysis.

Analysis revealed rich findings and three categories emerged reflecting how the adolescents experienced disaster resilience: 1) Experiencing challenges, with three subcategories (Disrupted daily life, Loss and damage, and Negative emotions); 2) Coping and adaptive strategies, with four subcategories (Seeking support, Gaining strength from role models, Role engagement, and Self-managing); and 3) Adaptation after facing typhoon, with three subcategories (Being strong to deal with difficulty, Having good immunity, and Improved knowledge and skills in dealing with typhoons). The findings can provide understanding and inform nurses and other healthcare professionals in disaster preparation, disaster management and community resilience, as well as educators and policymakers, to support and develop disaster resilience in adolescents. Disaster resilience is enhanced by fostering interventions to help those exposed to disasters respond and recover from disaster impacts, considering culture and context. Future clinical screening and research could use the adaptive outcomes in our findings as indicators for developing long-term disaster resilience among adolescents.

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Introduction

Typhoons are also known as tropical cyclones, hurricanes, or powerful storms. Unlike the direct impact caused by disasters, the most extensive damage to human health and life caused by typhoons is often caused by accompanying secondary disasters, such as

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flooding, landslides, and tornadoes.¹ Disasters like typhoons generate various health consequences for adolescent survivors, including anxiety, mood disorder, depression, and post-traumatic stress disorders.^{2,3} Moreover, the adverse health consequences on adolescents after disasters may last for months, years, and even more than a decade.³ China is a country severely affected by typhoons, especially in the coastal region. On July 18, 2014, Rammasun hit Hainan province, a series of islands in the South China Sea, as a category five super typhoon. Eventually, it resulted in 12.08 million people being affected, 0.89 million evacuated, 73 dead, and 0.48 million houses destroyed in Hainan, Guangdong, Guangxi, and Yunnan provinces, leading to a direct economic loss of 44.89 billion yuan (RMB), equivalent to \$US7.06 billion.⁴

Adolescents are aged 10–19 years and in a pivotal developmental period full of change and transformation.⁵ Health problems during adolescence may lead to life-long deleterious health consequences such as developing harmful behaviors in adult life, including substance use and committing crimes; health problems may also lead to lower educational attainment, unemployment, or unhealthy social relationships during adult life.⁶ Fortunately, not all adolescents exposed to disasters suffer from poor outcomes. Many manifest relatively good mental health and developmental outcomes rather than suffer from long-term negative consequences.^{2,7} The concept of ‘resilience’ has often been used to describe this phenomenon where individuals overcome adversities, such as disasters, and adapt relatively well with positive outcomes.^{8,9}

Resilience refers to achieving positive adaptation despite experiencing stressful and adverse situations.^{9,10} Positive adaptation can be found in an individual who achieves resistance, recovery, or post-traumatic growth following significant adverse experiences.¹¹ Resistance means an individual maintains normal functioning, even after being exposed to an adverse situation.^{10,11} Recovery refers to an individual who “bounces back” to normal functioning after a short

period of disruption immediately in the aftermath of adversity.^{8,11} Post-traumatic growth indicates that a person not only recovers but achieves growth or better than their prior functioning after stressful or challenging events.¹² This process includes coping that integrates individual and social-ecological factors from multiple interconnected levels.^{11,13} Coping and resilience have been considered similar terms and used interchangeably. However, coping refers to one’s response to and actions taken to deal with stressful or challenging situations, but not all coping is associated with good outcomes,^{7,14} In contrast, resilience explains how one applies coping strategies that result in positive adaptation to adversities.¹³ Developing resilience has been recognized as an essential public strategy for promoting disaster response and recovery and reducing negative consequences. Consequently, promoting resilience and adaptation to disasters has become crucial for achieving the Sustainable Developmental Goals (SDGs).¹⁵

Despite increasing interest in resilience research, several gaps still exist in the literature. First, the literature is mainly based on resilience experiences in western settings, even though resilience experiences can differ between western and Asian countries.¹⁶ For example, a study investigated how youth experienced disaster resilience following a flood in Canada, finding that peer support was the most critical factor for their resilience development.¹⁷ However, findings from studies in Asian countries, including Sri Lanka, Nepal, and China, indicate that family support was the central source of support for participants to cope with disasters and achieve adaptation after facing earthquake or tsunami disasters.^{18,19} In addition, a study investigating resilience among trauma survivors from 19 western and eastern countries, revealed that culturally-specific factors of resilience exist in the participants from Asian countries.¹⁶

Second, existing resilience studies for adolescents primarily focus on adults’ reports of their resilience. Very few studies have explored adolescent resiliency

using the voices and experiences of the youth themselves. However, the perspectives and knowledge of adults may be more suitable for understanding how resilience develops in young people and how they prefer to be supported when confronted with adversities.²⁰

Third, although evidence suggests that a devastating storm can adversely affect the health of a small proportion of youth survivors for more than a decade,³ limited research has examined the long-term impact of major typhoon exposure on adolescent disaster resilience. Finally, studies that explored the disaster resilience of adolescents in China have predominantly relied on quantitative methods.²¹⁻²³ These quantitative studies mainly focused on exploring factors associated with adolescent disaster resilience,^{22,23} or tested disaster resilience instruments among an adolescent population.²¹

To the best of our knowledge, no research in China qualitatively explored resilience experiences among adolescents exposed to disasters before this study. Qualitative methods offer a valuable opportunity for gaining in-depth information, feelings, and authentic experiences for adolescents exposed to disasters. To sum up, it is crucial to qualitatively explore the long-term effect of major typhoon disasters on adolescent disaster resilience experiences in China to gain better understanding of the topic. Research can help fill the gaps in adolescent disaster resilience more deeply by involving adolescents' voices in Asia, such as in China, where qualitative studies are not prevalent. The findings of this study provide information for nurses and other health professionals involved in disaster, educators and policymakers to develop interventions and policies to improve adolescent disaster resilience and promote better disaster response and recovery for adolescents.

Study Aim

Our study aimed to qualitatively understand the longer-term disaster resilience experiences of Chinese adolescents in Hainan province five years

after Super Typhoon Rammasun. This study was conducted five years after the typhoon as we were interested in finding out the longer-term resilience experiences of the participants who were 15-18 years old when the study was conducted and 10-14 years old when exposed to the typhoon.

Methods

Study Design: A qualitative descriptive design was used, a straightforward, insightful, and pragmatic approach to describing phenomena or experiences under investigation.²⁴ Qualitative description enabled the researcher in this study to understand in-depth information, feelings, and life experiences of Chinese adolescents five years after their exposure to Super Typhoon Rammasun. The reporting of this study was undertaken using the Consolidated Criteria for Reporting Qualitative Research (COREQ).²⁵

Sample and Recruitment: The inclusion criteria for participants were adolescents exposed to Rammasun, studying at high school and willing to participate. Adolescents with a self-reported history of psychosis or diagnosed by doctors with previous or current chronic post-traumatic stress disorder were excluded. Participants were recruited from five high schools in Haikou city on the island province of Hainan, south China, one of the hardest-hit areas where Rammasun landed as a category five super typhoon. The sample size was determined by data saturation when no new information of importance to the study emerged from data analysis.²⁶

Ethical Considerations: The institutional review board of the Faculty of Nursing, Chiang Mai University gave ethics approval (Approval no. 033/2019), and permission to conduct the study was given by the schools involved in the study. The principal investigator (PI) explained to potential participants their rights, including confidentiality and anonymity and being able to withdraw from the study at any time. Written assent from the participants and consent from their parents

or legal guardians was obtained. Permission to record the interviews was also obtained from the participants. Psychological support was available during and after the interviews; however, this proved unnecessary. The PI had no hierarchical relationship with any participant.

Data Collection: Data were collected from March to October 2019. The interviews were conducted in quiet rooms in the participants' schools. The PI was a female nurse with previous disaster nursing research experience and a doctoral candidate with qualitative research training. She conducted the face-to-face interviews using an interview guide with open-ended questions. School principals facilitated staff who arranged for the PI to introduce herself, explain the study purpose and procedure to potential participants, and distribute the information package containing study information, and consent and assent forms. Participants willing to join the study (indicated by the return of written participants' assent and parents/legal guardians' consent) were selected purposively to create a diverse sample of participants regarding gender, age, and ethnicity. Before interviews, the PI had an informal meeting with each participant, during which snacks and drinks were shared to build rapport. In-depth interview appointments were made with each participant at the end of the meeting. Two participants decided to refrain from participating after in-depth interview appointments because they joined after-school programs at the same time as the interview. Each interview was conducted with only the participant and PI present. Two pilot interviews were conducted before formal interviews, and minor revision was made to the interview guide questions. Data from pilot interviews were not included in the analysis.

The formal interviews of 30 participants ranged from 50–110 minutes each. Interviews were transcribed by the PI and verified by the participants. After examining the data and discussing this with her doctoral advisors, ten interviews needed to be done a second time to probe for more information. The second interviews were scheduled and lasted 10–25

minutes each. PhD advisors supervised the process through regular reporting, feedback, and discussion. Each interview began with a broad question asking participants to describe how they experienced Super Typhoon Rammasun, especially the challenges they encountered. Detailed questions included “How did you feel and respond when you knew the typhoon was coming?” “How did you feel and respond during (or after) the typhoon?” and “Does this typhoon disaster have any ongoing impact on your life?”. Probing questions were also asked, for example: “Can you tell me more about this?”

All the interviews were conducted in Chinese and recorded with two digital recorders. Field notes were taken after each interview to record the participants' gestures and body language, and reflective journals were used to write down the researcher's thoughts and feelings during the study and data analysis process.

Data Analysis: Data collection and analysis were conducted simultaneously. The analysis was conducted using qualitative content analysis.²⁷ All the interviews were transcribed verbatim by the PI, then transcripts were read line-by-line, and statements relating to disaster resilience experiences were extracted and selected as meaning units. All the selected meaning units were then translated into English by the PI, who is fluent in Chinese and English, and double-checked for accuracy by an outside professional Chinese-English translator. Then the PI condensed and coded the meaning units. Similar codes were sorted together and subsumed into more comprehensive subcategories when all the meaning units were coded. Appropriate subcategories were clustered together to form the categories. Codes, subcategories, and categories were discussed with the advisory team until a consensus about the findings was finalized.

Trustworthiness: The criteria of credibility, dependability, confirmability, and transferability were considered to achieve the trustworthiness of the data; credibility is the most important one.²⁶ Credibility was ensured by member checking and peer debriefing. All

participants conducted member checking to ensure the accuracy of their transcribed transcripts, and a list of initial coding with subcategories was checked and agreed upon with six participants. Peer debriefing was undertaken with the PI by the PhD advisors. Participant quotes, an audit trail with records of decisions made throughout the study, and reflective journals during the data analysis process were used to increase the confirmability and dependability of the findings. Dependability was also enhanced by the PI collecting

all data with an interview guide. Transferability was enhanced with a detailed description of the research context and participant characteristics.

Findings

Thirty participants were interviewed; their ages ranged from 15 to 18 years, with an average of 16.27 years. Their characteristics are shown in **Table 1**. The participants' disaster-related information is displayed in **Table 2**.

Table 1. Demographic characteristics of participants (N = 30)

Characteristics	N	%
Gender		
Male	13	43.33
Female	17	56.67
Grade		
Senior high school grade one (10th Grade)	20	66.67
Senior high school grade two (11th Grade)	10	33.33
Religion		
No religion	29	96.67
Christian	1	3.33
Age (Years); (Mean = 16.27, SD = 0.91)		
15	6	20.00
16	13	43.33
17	8	26.67
18	3	10.00
Ethnicity		
Han	24	80.00
Minority	6	20.00
Family income		
High	-	-
Medium	30	100.00
Low	-	-
Marital status of parents		
Married	30	100.00
Single	-	-
Separated, Divorced, Widowed	-	-

Table 2. Participants’ response to disaster-related questions about Super Typhoon Rammasun (N = 30)

Questions	N	%
Have disaster experiences before Rammasun	30	100.00
Did not have disaster experiences before Rammasun	-	-
Home damaged because of Rammasun	14	46.67
Without home damage because of Rammasun	16	53.33
Injured because of Rammasun	-	-
Did not have any injury because of Rammasun	30	100
Had friends injured because of Rammasun	5	16.67
Did not have friends injured because of Rammasun	25	83.33
Had family members injured because of Rammasun	2	6.67
Did not have family members injured because of Rammasun	28	93.33
Had family property loss because of Rammasun	21	70.00
Did not have family property loss because of Rammasun	9	30.00

The data analysis identified three categories with ten subcategories (see **Table 3**). The findings described the experiences of how the participants coped with the challenges encountered during and after Super Typhoon Rammasun and achieved positive adaptation and resilience.

Table 3. Categories, subcategories, and codes of disaster resilience for Chinese adolescents

Categories	Subcategories	Codes
Experiencing challenges	Disrupted daily life	Power outages and lack of clean water supply
		Difficulty getting around
		Difficulty getting access to food and food prices increased
Odious smells and lack of sanitation		
	Loss and damage	Property damage
		Loss of significant loved ones
		Loss of family income source
	Negative emotions	Fear, helplessness, nervous, and anxious feelings during the typhoon
		Worry about the safety of themselves and family members
		Negative feelings related to damage, loss, and injury
		Anxious and irritational feelings caused by inconvenient daily life following Rammasun
		Negative emotions triggered by indirect exposure to media
		Seek support from parents and siblings during Rammasun
Coping and adaptive strategies	Seeking support	Revealing and sharing experiences with friends, community members or relatives
		Support from the government

Table 3. Categories, subcategories, and codes of disaster resilience for Chinese adolescents (Cont.)

Categories	Subcategories	Codes	
Adaptation after facing the typhoon	Gaining strength from role models	Gaining strength from parental role modeling	
		Gaining strength from people that the adolescents did not know	
	Role engagement	Engaged in helping with coping with Rammasun	
		Helping others more severely affected after Rammasun	
		The social value of studying as adolescents' primary responsibility prevented their engagement in disaster coping and recovery	
	Self-managing	Distract attention	
		Reframe the challenging situations in positive lights	
		Understand experiencing Rammasun as a collective adversity	
		Potential expectations of Rammasun damage	
	Adaptation after facing the typhoon	Being strong to deal with difficulties	Pray to God
			Become mature
Become stronger when dealing with life difficulties			
Having good immunity		Become more motivated to study hard	
		Cherish their family more	
		More confident to cope with future disasters	
		Typhoon preparation awareness improved	
Improved knowledge and skills in dealing with typhoons		Learned typhoon knowledge and skills from Rammasun experience	
		Improved typhoon knowledge and skills from learning in schools	
		Typhoon knowledge and skills improved through parents teaching them	

Category 1: Experiencing challenges

This category, divided into three subcategories, describes the challenges and adversities that participants experienced during and beyond Rammasun, the most powerful and destructive typhoon they had ever known.

Subcategory 1.1: Disrupted daily life

All experienced disruption to daily life, with a lack of electrical power and a clean water supply as the most frequently reported challenges. Power outages made them unable to connect with others because of poor signals and no access to the Internet during and immediately after Rammasun. These disruptions made them feel isolated, for example:

“[this] made me have a feeling of being isolated from the outside world. I could not connect with others.” (P6, male)

Other participants reported:

“In Hainan, the weather was hot during that season. We needed to take a shower every day. However, ... we did not have enough water.” (P14, female)

Food was difficult to buy, and food prices soared, affecting families:

“We had to eat food that did not need cooking, such as bread and biscuits, every day” (P9, male) and

“... vegetables and meat were in short supply, and the prices were very expensive.” (P28, female)

Damage and flooding after the typhoon were substantial. Getting around was difficult and unsafe:

“... many streets were submerged in the water, many fallen trees blocked streets. It was difficult to go to some places”(P9, male)

Moreover, due to the flooding, raw sewerage was abundant during and after the typhoon and problematic for all:

“The smell of debris soaking in the flooded water was so bad. It was a long time before the odious smell disappeared.” (P12, female)

Subcategory 1.2: Loss and damage

This subcategory consists of several domains, loss of loved ones, property damage, and loss of family income. A participant poignantly stated:

“One of my relatives slipped during the typhoon. We were not able to send her to hospital in time during the typhoon ... we lost her.” (P2, female)

Most participants reported that they experienced family property damage and severe destruction to the commercial crops of their family or relatives. The most frequently reported property damage was to cars, motorbikes, windows, and doors. Some said the primary income source of their family was lost, and this loss caused financial stress for their family. For example,

“Planting and selling flowers were our main income sources... all the flowers were destroyed, and we [the family] suffered a huge economic loss.” (P6, male)

Subcategory 1.3: Negative emotions

Participants experienced, witnessed, or learned through media about the extensive damage, chaos, injuries, or death caused to family, friends, and communities. They responded with a wide range of emotional distress during and after the typhoon, including anxiety, irritability, fear, and feelings of helplessness. Two participants expressed,

“The sound of pouring rain and violent wind hitting the window made me feel fearful.

At that time, it seemed to be non-stop. I could do nothing in my room. I felt helpless in that situation.” (P4, male); and

“... it was tough for me. I was anxious and irritable during those days.” (P17, female)

Another response was fear about the safety of family members who could not make it home before the storm made landfall, especially as participants were five years younger at the time and missing the comfort of their parents. For example,

“When Rammasun made landfall, and they [our parents] could not get back home ... we were worried about their safety.” (P29, female)

Category 2: Coping and adaptive strategies

This category comprises the coping strategies that participants used to try to overcome or manage to recover despite their adverse disaster experiences. These strategies included seeking support, gaining strength from role models, and self-managing, and manifested as the resilience process for managing positive adaptation for the participants exposed to that typhoon disaster.

Subcategory 2.1: Seeking support

Support-seeking was frequently mentioned as an essential resilience coping strategy. Reaching out and seeking support from family members were the most frequently reported coping strategies during the typhoon. For example,

“When I was afraid, I told my mother my fearful emotions. With her comforting and talking with me, I was distracted from Rammasun and felt much better.” (P28, female)

Similarly, another participant said, “... [my brother and I] were so afraid, we hugged together to make us feel better.” (P29, female)

Support from others, such as communicating and sharing experiences with trusted people, friends,

and classmates, helped participants cope with adversities and adapt better after the disaster. Most participants reported this was helpful, for they felt better emotionally after revealing or sharing their negative emotions, especially with their peers. For example,

“After Typhoon Rammasun passed, neighbors and friends cared for each other about the situation. I also communicated with my classmates about our experiences, and we encouraged each other.” (P14, female)

Support from first responders and the government was also significant for the participants to cope with challenges and help to promote positive outcomes. This support included rescues during the typhoon and financial aid. One participant described her experiences:

“The water was running into our house rapidly, and when the firemen arrived, the water level was deep ... Firemen helped us get out of the house ... I was so moved and was grateful for the firemen rescuing us.” (P16, female)

Another participant reported:

“My family got some money from the government as an aid to reimburse us for our loss caused by destroyed flowers [their main family income source] in the aftermath of Rammasun.” (P6, male)

Subcategory 2.2: Gaining strength from role models

Participants looked to role models for strength during and following that typhoon disaster. Some participants reported gaining strength from their parents' role modeling, which helped them overcome difficulties and adjust positively. One reported,

“Because my father is a policeman, I admired him greatly, and I wanted to be like him. So, although I was afraid during Rammasun, I helped my mother to get water out of the house and fix the door.” (P28, female)

The disaster was treated as a positive experience by some parents or family members,

allowing participants to adjust positively to Rammasun. For example,

“My parents thought that the disaster was a blessing in disguise for us, and they moved forward quite soon and coped with the damaged stuff positively. I was influenced by my parents and thought of the disaster in a positive way.” (P10, male)

The participants sometimes gained strength from people they did not know. They found people on the Internet whose behaviors inspired them to adjust and recover quicker from the disaster:

“When I browsed the Internet, I found out that many people had the same experiences as me. Many of them responded positively, and they helped their neighbors and the community in cleaning up ... I felt that if they could adjust themselves so fast and cope well with it, I could do that too.” (P16, female)

Subcategory 2.3: Role engagement

Engaging in disaster management work was reported as a resilience coping strategy. Rather than viewing themselves as powerless and passive victims, most participants became responsive to recovery efforts as helpers or volunteers during and after the typhoon disaster, helping parents in their homes and cleaning the neighborhood. Two explained:

“At midnight, ... water started to enter the room suddenly. My mother and I were scared of that. We [both] swept the water out immediately.” (P28, female)

“After the typhoon, people living in the community [including the participant and parents] voluntarily worked together and cleaned up a community road so all members can pass.” (P4, male)

The participants achieved a sense of commitment and a feeling of accomplishment through

helping those who were impacted more severely. One participant knew that some areas were much more severely damaged than where she lived, so she and her father donated necessary items to those affected. She described her sense of accomplishment:

“After we had finished donating, I felt so happy and honored.” (P8, female)

However, not all participants were encouraged to actively engage in response or recovery activities during or following that storm. They thought their parents would not support them in doing things other than studying. Furthermore, studying was considered their primary responsibility, and helping with disaster recovery was considered unnecessary. For example,

“I did not think that was what I should do at that time. As a student, what I am expected to do is to study hard. If I participated in doing something else, my parents would not agree.” (P5, male)

Subcategory 2.4: Self-managing

Participants applied self-managing strategies to help them cope with adverse impacts amid and beyond that disaster. Some preferred relaxing activities such as reading books, listening to music, or spending time with their hobbies to distract attention from the horrific atmosphere of that super typhoon and find a moment of peace.

“After my parents and my younger sister went to sleep, I learned music, which was my hobby, to let me forget the typhoon outside.” (P23, female)

A participant reported how she coped with agitation at the evacuation center:

“...I was agitated at that time. Then I started chatting with others and reading books there to make me feel better.” (P16, female)

Another expressed how she managed to cope with anxiety and irritation when she returned home immediately after Rammasun:

“To make myself calmer and feel better, I listened to songs that I had saved [in her phone] and read lyrics together with the song. Sometimes I read books. Those activities distracted my attention and made me feel relaxed.” (P17, female)

Participants also described reframing their challenging situation into a positive light, adjusting and shifting their perspectives as a practical self-managing strategy to regain normal functioning after experiencing that devastating disaster. Some viewed the disaster as an opportunity to connect closer to their family members and learn more about typhoons. For example:

“I shared my school life and my feelings about my recent life with my mother when we were mopping up the water on the floor [during the disaster]. I was happy at that time. It was a good chance for me to communicate with my mother as I usually did not have many talks with my parents.” (P24, female)

Some participants felt lucky not to be injured and found they were in a much better situation than others. They felt lucky but, at the same time, compassionate toward less fortunate people. Examples of feeling lucky were:

“... I felt so lucky because the stick [the main beam under the house roof] did not injure us” (P1, male)

“... I felt so lucky when compared with her experience [that of a friend]” (P8, female)

“I felt I was so lucky because my family members and I were safe while some others were dead.” (P18, male)

Participants understood that many people had been affected by the typhoon, believing millions of other Chinese collectively experienced trauma and adversity.

This understanding helped the participants accept and adapt to the adverse impacts, move forward, and develop their resilience. They described how they handled the negative experiences in the typhoon aftermath:

“Many families had suffered from the impact caused by Rammasun. We were not alone.” (P24, female)

“My family accepted that [minor house damage and car damage] because many other families suffered similar damage.” (P13, female)

“I thought that such a strong typhoon was bound to cause economic loss, and we could not avoid it. So, it was easier for me to accept the economic loss of my family.” (P8, female)

Only one participant stated she had a religious affiliation, relying on her faith for strength through prayer:

“All my family members are Christian. During Rammasun, we prayed to God to make it pass soon, not to hurt my family members, and not cause too many economic losses for my family. We believed that this would be useful.” (P23, female)

Category 3: Adaptation after facing the typhoon

The participants described deep impressions of the devastating destruction caused by the super typhoon. At the time of interviews, all considered themselves fully recovered, had made the experience part of their life, and did not report negative impacts, indicating a high level of resilience. However, the functional level of the participants varied; some maintained their pre-typhoon level of well-being, while others not only recovered to baseline functioning but also achieved growth and positive change in their lives. Participants who achieved growth or better than pre-disaster functioning included being strong enough to deal with difficulties, building good immunity to disasters, and

improving knowledge and skills in dealing with typhoons.

Subcategory 3.1: Being strong to deal with difficulties

Participants' perspectives toward many things in life changed after the disaster. The changes manifested in improved confidence in coping with disasters and life difficulties. Although some of this could be attributed to normal adolescent maturation, they felt more mature and more robust mentally because of their disaster experiences.

“After that typhoon, I felt much stronger than before in dealing with the difficulties in life.” (P1, male)

“I feel that I have become more mature after I experienced Rammasun, as I started to help more around the house.” (Participant 16, female)

Subcategory 3.2: Having good immunity

This subcategory describes both physical and family immunity. Physical immunity manifested as participants became confident to cope with future disasters as if they were immune to disasters, for example:

“I would be more confident and calmer to cope with future disasters... It is like I am immune to typhoons after I had experienced Super Typhoon Rammasun, just the same as when we are immune to some disease after we had it once.” (P3, female)

Family immunity referred to participants beginning to cherish family more,

“After Rammasun, the relationship between my brother and me became especially good. And my parents and I became closer. I started to cherish my relationship with my family members more than before.” (P29, female)

Interestingly, a participant whose house was flooded during the typhoon was motivated to study

hard, not for herself but to provide better living conditions for her parents in the future. She stated that her academic performance had significantly improved since the time of Rammasun to the time she was interviewed.

“My Rammasun experience made me have more motivation to study hard. I want to have the ability to provide a better place for my parents.”
(P16, female)

Subcategory 3.3: Improved knowledge and skills in dealing with typhoons

Participants learned from their Rammasun experience and felt they had more knowledge and competence regarding preparing for, responding to, and coping with disasters. Many learned from their experience regarding how to deal with typhoon disasters. Others enhanced their knowledge because their parents educated them on dealing with typhoons. Some proactively gained more knowledge and skills because they were motivated by what happened during and after that typhoon disaster. For example,

“I think that experience was an excellent one for me, as my emergency response competence has become much better after that disaster.”
(P1, male)

“I think that my knowledge of typhoon disasters has increased because my parents kept teaching me skills about how to cope with typhoons after Rammasun.” (P8, female)

Discussion

This study explored how Chinese adolescents coped with Typhoon Rammasun, and through listening to their voices, rich data emerged from interviews. This portrayed a better understanding of their disaster resilience experiences, including the challenges they encountered during and after Super Typhoon Rammasun, the coping strategies they applied, and how they adapted afterward.

Experiencing challenges and adversities during and following the typhoon was common for our participants. Most experienced negative emotions, consistent with literature evidencing that psychological distress is a normal response for children and adolescents amid disasters in China and other countries.¹⁸ However, our participants described applying various strategies, coping successfully with their negative feelings, and fostering strength and growth. This finding is essential for understanding how a resilient response may alleviate negative impacts for it supports the view that resilience does not eliminate adversities or challenges, and resilient individuals still experience distress following a traumatic event, but face it and work through those feelings.²⁸

Our participants applied various coping and adaptive strategies to overcome the challenges and adversities in the typhoon and to enhance their resilience. Seeking support was reported as essential. This finding is in line with evidence that social support is crucial for resilience in the disaster recovery process and is positively associated with effective coping following crisis events.^{7,23} Support can be from the family, community, or society,^{7,23,29} and this was confirmed in our findings. Support from family members was the most prominent support source for our participants. This phenomenon has been found in other studies involving Sri Lankan, Nepalese, and Chinese participants, which revealed that people draw strength mainly from family members to overcome distress and move on after experiencing disasters.^{18,19} However, our finding is contrary to a western study which suggested peer support was the central support source for youth flood survivors to recover and develop resilience.¹⁷ This finding may also be applicable in some other Asian countries. Our finding that family played a central role in supporting their children is contrary to a study²³ suggesting that support from classmates and teachers, rather than family and friends, was the most substantial factor in enhancing the resilience of Tibetan adolescents five years following an earthquake disaster. This inconsistency may be

because our participants lived in a Han-majority province, while the participants in Lu et al.'s study in Tibet lived in a Han-minority province.²³ Thus, the disaster resilience experiences of adolescents living in a minority province may differ from our participants. Further research is needed to clarify how adolescents in minority groups cope with disasters and their devastating impacts.

Our participants also drew strength from their role models, family members and previously unknown people serving as role models. This finding is supported by evidence that role models are valuable for adolescents in adversities, and role models do not have to be people with whom they are familiar.^{28,30} Having a role model is associated with higher self-esteem, higher academic grades, and decreased risk behaviors in adolescents.³⁰ Our participants reported that engaging in response and recovery activities of the typhoon was a vital strategy to develop resilience. Evidence suggests that youth engaged in activities to help with post-disaster reconstruction for families, schools, and communities contributes to resilience building following disasters. The adolescents themselves also benefit developmentally, psychosocially, and academically.³¹ The benefits of the youth participating in disaster preparation and response activities have been recognized by the United Nations Office for Disaster Risk Reduction,³² calling for youth to be treated as active members in disaster response and resilience building. However, many of our participants regarded studying as their primary responsibility and were unwilling to participate in disaster recovery and social activities. One explanation for this is that the primary social role of Chinese adolescents is to study. Academic excellence is strongly emphasized in Chinese society and considered key to achieving financial success and high social status in later life.^{23,33} Thus, we recommend that future interventions for enhancing adolescents' resilience by promoting their engagement in disaster response and recovery activities should consider culture not only in China but elsewhere.

Self-managing techniques, such as distraction and reframing adverse events in a positive light, emerged as essential strategies for participants to prevent themselves from over-indulging in negative emotions and recover from the adverse impacts of Rammasun. This finding is consistent with previous literature highlighting the importance of having a positive attitude toward negative experiences and using self-managing activities, such as leisure activities, hobbies, and other distraction skills, to improve the resilience of individuals.³⁴ Having a positive attitude is consistent with Chinese culture regarding how adversities are perceived. Influenced by Confucianism, Buddhism, and Taoism, Chinese culture encourages accepting adversities and believes that adversities are inevitable. Adopting an optimistic attitude when facing challenges is encouraged in Chinese culture.³⁵ Only one participant identified as having religious beliefs and applied these as a self-managing strategy to deal with the adverse impacts of that typhoon in our study. A partial explanation for this is that Chinese people living in a communist country have a much lower proportion of identification with a religion. At the same time, more than 80% of the global population has a religious affiliation, equivalent to double the total number of the US population in China who identified themselves as religiously unaffiliated.³⁶ Other possible reasons might be that some Chinese adolescents may be unwilling to identify as having a religion compared to adolescents globally or are less likely to rely on religion as a coping strategy. Thus, disaster nurses and clinical nurses, and other health professionals should consider religious affiliations and cultural situations when working on the frontline, helping adolescents and their families to respond to and recover from disasters.

The participants achieved adaptation after facing Typhoon Rammasun despite experiencing challenges and adversities during and after the disaster. All participants reported no ongoing negative impacts five years after the disaster and considered they

recovered and adapted well afterward, highlighting their resilience. Some recovered from the disaster with growth in life. For example, they cherished family relationships more, became better motivated to study, and became more mature, not just due to the natural maturation of adolescents. Our findings about Chinese participants' adaptive outcomes are consistent with two studies^{10,11} evidencing resilient individuals not only maintain health or recover from difficulties but also display more strength and growth. Our findings also suggest that participants' disaster knowledge improved, and their willingness to prepare themselves with more disaster skills and knowledge increased. Chinese and Nepalese adolescent earthquake survivors also reported such experiences.¹⁸ Thus, future research could consider the adaptive outcomes achieved by our participants as indicators for disaster resilience among adolescents.

Limitations

We investigated resilience experiences in adolescents after a super typhoon disaster. The resilience experiences of adolescents in other types of disasters may be different. In addition, we used self-report instead of a screening tool to identify and exclude the participants with mental health problems. Furthermore, the interviews were conducted five years after the typhoon, so we may not get the complete experience because some details may have been forgotten. Lastly, high school students with mental health problems such as post-traumatic stress disorder were excluded from this study, so findings about all the participants having healthy adaptation after the typhoon need to be viewed in the context of the sample.

Conclusions and Implications for

Nursing Practice

This research adds to the literature by contributing a more thorough understanding of how Chinese adolescents exposed to a major typhoon experienced disaster resilience. Despite the challenges and difficulties

during and following Rammasun, the participants applied various coping and adaptive strategies to handle those challenges and achieved adaptation after facing the typhoon.

Our findings have important implications for frontline and community practitioners in health sectors, especially disaster nurses, clinicians, nurse educators, other health workers, education leaders and importantly, policymakers. The evidence from this study can help nurses who work with adolescents in short and long-term recovery work to develop community disaster resilience interventions that are easily accessible and appropriate. Nurses' interventions to help adolescents recover from disasters and build disaster resilience should value more of the support from their families. Culture should also be considered when tailoring disaster resilience-building interventions. It is also recommended that future research consider the adaptive outcomes achieved by our participants after facing a major typhoon as indicators for long-term disaster resilience among adolescents exposed to various disasters.

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การศึกษาเชิงคุณภาพของการฟื้นตัวจากภัยพิบัติของวัยรุ่นจีนในห้าปีหลังจากเผชิญกับพายุไต้ฝุ่นรามสูร

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บทคัดย่อ: วัยรุ่นและเด็กเล็กจัดเป็นกลุ่มเปราะบางทั้งในช่วงระหว่างและหลังจากประสบภัยพิบัติเมื่อเทียบกับผู้ใหญ่ และความสามารถในการฟื้นตัวของกลุ่มเปราะบางนี้ขึ้นอยู่กับหลายปัจจัยรวมถึงวัฒนธรรมและบริบท อย่างไรก็ตามประสบการณ์และความคิดเห็นของวัยรุ่นจำเป็นต้องถูกนำมาพิจารณาบ่อยครั้งยิ่งขึ้นในงานวิจัยเกี่ยวกับภัยพิบัติเนื่องจากความเข้าใจในการฟื้นตัวจากภัยพิบัติของกลุ่มเปราะบางยังไม่ทราบถึงข้อมูลเชิงลึก ดังนั้นการศึกษาในครั้งนี้มีวัตถุประสงค์เพื่อให้เข้าใจประสบการณ์ในการฟื้นตัวจากภัยพิบัติของวัยรุ่นจีนในห้าปีหลังจากเผชิญกับพายุไต้ฝุ่นรามสูร การวิจัยครั้งนี้เป็นการวิจัยคุณภาพเชิงพรรณนาเท่าที่ผู้วิจัยได้ทบทวนงานวิจัยนี้เป็นการศึกษาเชิงคุณภาพครั้งแรกในประเทศจีนที่ศึกษาประสบการณ์จากภัยพิบัติและการฟื้นตัวจากภัยพิบัติของวัยรุ่น การสัมภาษณ์เชิงลึกได้ถูกนำมาใช้ในการเก็บข้อมูลในจังหวัดไต้หวันบนเกาะในทะเลจีนใต้กับวัยรุ่นระดับมัธยมศึกษาตอนปลายจำนวน 30 คน โดยได้เก็บรวบรวมข้อมูลจากเดือนมีนาคมถึงเดือนตุลาคม พ.ศ. 2562 และได้วิเคราะห์โดยใช้วิธีการวิเคราะห์เนื้อหา การวิเคราะห์ทำให้เห็นการค้นพบมากมาย และสามประเด็นที่สะท้อนออกมาว่าวัยรุ่นมีประสบการณ์ในการฟื้นตัวจากภัยพิบัติได้อย่างไร ได้แก่ 1) การเผชิญหน้ากับความท้าทาย ประกอบด้วยสามประเด็นย่อย (การขัดขวางหรือรบกวนการใช้ชีวิตประจำวัน การสูญเสียและการเกิดความเสียหาย และการแสดงออกทางอารมณ์เชิงลบ) 2) การจัดการเผชิญปัญหาและการปรับตัว ประกอบด้วยสี่ประเด็นย่อย (การแสวงหาการสนับสนุน การได้รับความเข้มแข็งจากบุคคลต้นแบบ บทบาทการมีส่วนร่วม และการจัดการตนเอง) และ 3) การปรับตัวหลังจากเผชิญกับพายุไต้ฝุ่น ประกอบด้วยสามประเด็นย่อย (มีความเข้มแข็งเพื่อจัดการกับความยากลำบาก มีภูมิคุ้มกันที่ดี และพัฒนาความรู้และทักษะในการจัดการกับพายุไต้ฝุ่น) ผลการวิจัยในครั้งนี้สามารถนำไปใช้เป็นข้อมูลสร้างความเข้าใจและเป็นแนวทางสำหรับพยาบาลและผู้เชี่ยวชาญด้านสุขภาพอื่นๆ ในการเตรียมความพร้อมและพัฒนาความสามารถในการจัดการต่อภัยพิบัติและการฟื้นตัวของชุมชน เช่น นักการศึกษา และผู้กำหนดนโยบาย เพื่อสนับสนุนและพัฒนาการฟื้นตัวจากภัยพิบัติในวัยรุ่น การฟื้นตัวจากภัยพิบัติถูกยกระดับโดยการแทรกแซงแบบอุปถัมภ์เพื่อช่วยตอบสนองต่อภัยพิบัติและฟื้นตัวจากผลกระทบของภัยพิบัติโดยให้คำปรึกษาถึงวัฒนธรรมและบริบท การวิจัยและการคัดกรองทางคลินิกในอนาคตสามารถใช้ผลลัพธ์ในการศึกษานี้เป็นตัวบ่งชี้สำหรับการฟื้นตัวจากภัยพิบัติในระยะยาวในกลุ่มของวัยรุ่น

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คำสำคัญ: การปรับตัว วัยรุ่น ประเทศจีน การเผชิญปัญหา การฟื้นตัวจากภัยพิบัติ การพยาบาล ภัยพิบัติ การพยาบาล การพรรณนาเชิงคุณภาพ พายุไต้ฝุ่นรามสูร

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