



Psychological Resilience and its Associated Factors among Hill Tribe Junior High School Students in Northern Thailand: A School-Based Cross-Sectional Study

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Abstract

A school-based cross-sectional study was carried out to explore the psychological resilience and its associated factors among junior hill tribe high school students in Chiang Rai Province, Thailand. A multistage sampling method was used to randomly select participants from four secondary schools located in a hill tribe village across three districts in Chiang Rai Province. Data were collected using validated questionnaires, including the Resilience Inventory (RI-9), from December 2023 to March 2024. Data were analyzed using descriptive statistics and binary logistic regression, with a statistically significant p-value set at <0.05. A total of 396 participants were included in this study. Of these, 63.9% were female, with an average age of 14.16 years (SD = 0.98), 40.9% identified as Akha, and 23.0% identified as Hmong. The prevalence of low psychological resilience was 26.8%. Multivariable logistic regression analysis identified five factors significantly associated with low psychological resilience: female sex (aOR = 2.35, 95% CI: 1.38–3.99), smoking (aOR = 2.43, 95% CI: 1.08–5.47), negative life events (aOR = 2.92, 95% CI: 1.41–6.04), low family support (aOR = 2.68, 95% CI: 1.13–6.38), moderate family support (aOR = 1.90, 95% CI: 1.03–3.49), and inadequate-to-problematic mental health literacy (aOR = 2.05, 95% CI: 1.11–3.80). In conclusion, a considerable proportion of junior hill tribe high school students had low psychological resilience. Targeted public health interventions should be developed to promote psychological resilience, particularly among students who are female, smoke, have experienced negative life events, report low family support, or have limited mental health literacy.

Keywords: Psychological resilience, Adolescent, Ethnic minority, Mental health literacy, Family support

What was Known

- Psychological resilience is the buffer against stressful situations.
- Low psychological resilience is associated with a higher risk of mental health problems and negative outcomes.
- There were limited studies on psychological resilience among hill tribe high school students.

What's New and Next

- Junior high school students from hill tribes in Chiang Rai Province demonstrated a low level of psychological resilience.
- Factors such as being female, smoking, experiencing negative life events, low perceived emotional family support, and inadequate to problematic mental health literacy were associated with low psychological resilience.
- Further research on interventions aimed at cultivating and enhancing resilience among junior high school students from hill tribes is recommended.

Introduction

Junior high school is the period of transition from children to adolescents therefore, it is the time of significant shift in development both psychological and physical⁽¹⁾. Moreover, it is the time for forming an identity which need these students to be adaptive to the environment⁽²⁾. Hence, at this age, there are several challenges that possibly can cause them to face with stressful event and later resulting in mental health problems⁽³⁾. According to the data from U.S. Center for Disease Control and Prevention (CDC), adolescents at the age of 12 to 17 years old, they tend to have high risk of experiencing mental health problems such as anxiety and depression. 20% of them reported having anxiety and 18% of them reported having depression. This can, later, lead to problems in school as well as affect the quality of their life and other people around them⁽⁴⁾. Moreover, being in vulnerable conditions such as facing with socioeconomics and health challenges can also lead to higher risks of developing an ineffective coping style⁽⁵⁾.

One vulnerable group of young population in Thailand that are often left behind is the hill tribe adolescents⁽⁷⁾. These young generation residing in northern part of Thailand usually encountering with several difficulties and inequality in life^(6,7). Several research shown that the junior hill tribe high school are prone to have mental health problems as they are not only growing up with poor economics background but also having limited education and healthcare as a result of not having Thai citizen identification^(6,8). Limited access to healthcare and education can obstruct the understanding in health information which can lead to many health problems including mental health^(9,10). Besides from encountering these physical challenges, they tend to face with psychological stigma experiences due to their unique cultures which differs from Thais⁽¹¹⁾. According to the social psychology, cultures and beliefs that are different can cause conflicts among people if individual is not respect and accept each other. Therefore, hill tribe students have come across adaptation challenges more than normal students^(6,11,12). In addition, at this age are about forming identity. If they can effectively adapt to environment, they will become a healthy individual in a long run. On the contrary, young hill tribe students who cannot adapt well will possess unhealthy personality which leads to many problems including physical health, mental health, and unhealthy lifestyles. Having protective factors against these life challenges are crucial for the junior high school students to be able to cope in a positive way. The protective factors are not only enhancing the well-being but also reducing the impact of these life challenges. They can be in many aspects including individual attributes, interpersonal relationships, or from environmental contexts^(13,14).

Junior hill tribe high school students who face with life challenges some develop mental health problems, while others possess psychological resource called resilience. Psychological resilience is one of the protective factors for junior hill tribe high school students to have and fight against life challenges. It is an individual psychological resource that is generally defined as “the capacity of an individual to adapt successfully to a significant challenge that threatens their function, viability, or development”⁽¹⁴⁾. Resilience is the mental ability that helps individual adjust and adapt when facing with adversity⁽¹⁵⁾. Several studies have point out that psychological resilience is not only contribute to lower in stress but also higher in academic achievements^(16,17). It is not just a factor impacting on health as it displays a positive adaptation to difficulties in life conditions. Thus, people with higher psychological resilience have more capacity to bounce back from life challenges⁽¹⁴⁾.

However, few studies have studied psychological resilience among junior high school students in hill tribe communities, particularly in school-based settings. Therefore, this study aims to explore resilience and its associated factors among students in Chiang Rai Province. The findings provide important public health information to inform targeted mental health interventions and future policy development.

Materials and Methods

Study design and study population

This study employed a school-based cross-sectional study approach to assess the psychological resilience level and its associated factors among junior hill tribe high school students in Chiang Rai Province. The data was collected during December 2023–March 2024 via the self-administration of the questionnaires.

Sample size and sampling

The sample size was determined using Cochran’s proportion formula⁽¹⁸⁾, which was applied to calculate the necessary sample size. With the previous proportion of resilience was 64% “ $p=0.63$ ”⁽¹⁹⁾, “ $1-p=0.37$ ”, “ $Z_{\alpha/2} = 1.96$ at 95% CI”, margin of error 5%. The calculated sample size was 358 participants. To account for approximately 10% potential non-response and incomplete data, the required sample size was increased to 396 participants.

A multistage sampling approach was used. First, purposive sampling was used to select three districts known for their large hill tribe population namely, Mae Fah Luang, Mae Chan, and Mae-Suai district. In the next stage, simple random sampling was used to select high schools: two

from Mae Fah Luang, one from Mae Chan, and one from Mae-Suai district. Then, for the third stage, simple random sampling was, again, employed to select 33 students from each grade 7–9 in the four chosen schools. Finally, after determining the participant numbers, simple random sampling was used to select participants for the questionnaire via self-administration.

The inclusion criteria required that junior high school students from hill tribes, studying in grades 7–9, identify themselves as members of a hill tribe, both male and female, able to communicate well, willing to participate in this study, and providing written informed consent signed by their parents or legal guardians. In contrast, participants were excluded if they were absent on the day of data collection.

Research instruments

The validated structural questionnaires have 7 parts and are self-administered.

Part 1: The personal characteristics collected include sex, age, tribe, smoking status, and alcohol use.

Part 2: Negative life events were assessed using questionnaires adopted from the literature review^(6,20). It comprises twelve items, including loss of a loved one, family financial problems, relationship issues, events causing physical or psychological stress, and significant life changes. It is the dichotomous response, which yes means having experience of the negative life events and no means have no experiences. The total scores ranging from 0 to 12. Scores were categorized as yes (≥ 1) and no (0). The IOC in the present study was 1, and Kuder–Richardson (KR) was 0.71.

Part 3: Stress was assessed using the Srithanya stress scale–5 (ST-5)⁽²¹⁾. It comprised 5 items rated on a five-point Likert scale, with total scores ranging from 0 to 15. Scores were categorized as mild (0–4), moderate (5–7), high (8–9), and severe (10–15). The IOC in the present study was 1, and Cronbach’s alpha was 0.78.

Part 4: Perceived peer support was assessed using the Friendship Intimacy (FI) questionnaires⁽²²⁾. It comprised 12 items rated on a five-point Likert scale, with total scores ranging from 12 to 60. Scores were categorized as low (12–28), moderate (29–44), and high (45–60). The IOC in the present study was 1, and Cronbach’s alpha was 0.89.

Part 5: Perceived emotional family support was assessed using the Family Connectedness questionnaire⁽²³⁾. It comprised 12 items rated on a five-point Likert scale, with total scores ranging

from 12 to 60. Scores were categorized as low (12–28), moderate (29–44), and high (45–60). The IOC in the present study was 1, and Cronbach's alpha was 0.73.

Part 6: Mental Health Literacy (MHL) was assessed using the questionnaire developed from previous studies^(24,25). The MHL contains five dimensions including accessing, understanding, questioning, decision-making, and applying the mental health information. It comprises eighteen questions with five Likert scale responses, with scores ranging from 18 to 90 points. The MHL score using the formula “(Index score/Total score) * 100.” scaled by 4 levels: inadequate (< 60 points), problematic (60–74.9 points), sufficient (75.0–89.9 points), and excellent (90.0–100.0 points). Both the formula and the scales were adopted from the European Health Literacy Survey (HLS-EU-Q47) method⁽²⁶⁾. The IOC in the present study was 1, and Cronbach's alpha was 0.89.

Part 7: The psychological resilience was assessed using the Resilience Inventory (RI-9)⁽²⁷⁾. It comprises nine questions with five Likert scale responses, with scores ranging from 9 to 45 points and a grading system where the 0th and 25th percentiles are defined as low, the 25th and 75th percentiles as average, and scores above the 75th percentile as high. The IOC in the present study was 1, and Cronbach's alpha was 0.84.

The content validity was assessed by three experts who reviewed the questionnaires for accuracy, content validity, and clarity of language. The Index Objective Congruence (IOC) for the total questionnaires, with a value of 0.50 or higher, was considered acceptable. A pilot test was conducted among 30 participants with characteristics similar to those of the study population to measure internal consistency, and the results were reported as Cronbach's alpha and Kuder-Richardson (KR) ≥ 0.70 , indicating an acceptable level.

Statistical analysis

All analyses were performed using Stata/SE, version 17 (StataCorp LLC, College Station, TX, USA). Descriptive statistics including frequencies, percentages, means, standard deviations, and minimum values, were used to describe participant characteristics and levels of psychological resilience. Binary logistic regression with backward LR analysis was used to identify factors associated with low psychological resilience levels. Variables with a p-value less than 0.20 in the univariable analysis were considered for entry into the multivariable analysis. In addition, independent variables were tested for multicollinearity using the Spearman rank correlation ($r_s < 0.70$). If multicollinearity were found, one variable would be removed. Crude odds ratios (cOR) and adjusted odds ratios (aOR) were used to determine significant associations between independent variables. Statistical significance was set at a p-value < 0.05 .

Results

A total of 396 participants were recruited for the study. Of these, 63.9% were female, with an average age of 14.16 years (SD = 0.98). Regarding ethnicity, 40.9% identified as Akha, and 23.0% identified as Hmong. Thirty participants (7.6%) smoked, and 16.7% reported drinking alcohol. The majority (81.3%) had experienced negative life events. Additionally, 6.3% had low perceived peer support, 9.8% had low perceived emotional family support, and 75.2% had inadequate-to-problematic mental health literacy, as displayed in Table 1.

The psychological resilience of the junior hill tribe high school students in Chiang Rai Province was found to be low (26.8%), average (26.8%), and high (46.4%), respectively, as displayed in Table 2.

In the univariable logistic regression demonstrated, eight variables were found to be associated with low psychological resilience: sex, age, tribe, smoking, stress, negative life event, perceived emotional family support, and mental health literacy, as shown in Table 3.

In multivariable logistic regression analysis only five factors remained significantly associated with low psychological resilience: sex, smoking, negative life events, perceived emotional family support, and mental health literacy. Female students were 2.35 times (95% CI: 1.38–3.99) more likely than male students to have low psychological resilience. Those who smoked were 2.43 times (95%CI: 1.08–5.47) more likely to have low psychological resilience than non-smokers and ex-smokers. Those who had experience of negative life events were 2.92 times (95%CI: 1.41–6.04) more likely to have low psychological resilience than those who never had one. Those with low perceived emotional family support were 2.68 times (95% CI: 1.13–6.38) more likely to have low psychological resilience, and those with moderate perceived emotional family support were 1.90 times (95% CI: 1.03–3.49) more likely to have low psychological resilience than those with high perceived emotional family support. Furthermore, those who had inadequate-to-problematic mental health literacy were 2.05 times (95%CI: 1.11–3.80) more likely to have low psychological resilience than a sufficient to excellent level, as displayed in Table 4.

Table 1 Personal information of the participants (n=396)

Characteristics	Frequency	Percent
Sex		
Male	143	36.1
Female	253	63.9
Age (years)		
≤13	109	27.6
14	136	34.3
≥15	151	38.1
(Mean=14.16, SD=0.98, Min=12, Max=16)		
Tribe		
Akha	162	40.9
Hmong	91	23.0
Lahu	58	14.7
Yao	50	12.6
Lisu	18	4.5
Karen	17	4.3
Smoking		
Current smoker	30	7.6
Non-smoker or ex-smoker	366	92.4
Alcohol drinking		
Current drinker	66	16.7
Non-drinker or ex-drinker	330	83.3
Stress		
Mild	226	57.1
Moderate	113	28.5
High	32	8.1
Severe	25	6.3
Negative life events		
Yes	322	81.3
No	74	18.7

Table 1 Personal information of the participants (n=396) (Cont.)

Characteristics	Frequency	Percent
Perceived peer support		
Low	25	6.3
Moderate	203	51.3
High	168	42.4
Perceived emotional family support		
Low	39	9.8
Moderate	251	63.4
High	106	26.8
Mental health literacy		
Inadequate	193	48.7
Problematic	105	26.5
Sufficient	70	17.7
Excellent	28	7.1

Table 2 Psychological resilience levels among junior hill tribe high school students(n=396)

Psychological resilience	Frequency	Percent
Low	106	26.8
Average	106	26.8
High	184	46.4

Table 3 Factors associated with psychological resilience in univariable analysis

Factors	Psychological resilience		Univariable analysis		
	Low n (%) (n =106)	Average– High n (%) (n =290)	cOR	95% CI	p-value
Sex					
Female	81(32.0)	172(68.0)	2.22	1.34–3.69	0.002*
Male	25(17.5)	118(82.5)	1.00		
Age (years)					
≤13	36(33.0)	73(67.0)	1.91	1.09–3.35	0.024*
14	39(28.7)	97(71.3)	1.56	0.91–2.68	0.110
≥15	31(20.5)	120(79.5)	1.00		
Tribe					
Akha	36(22.2)	126(77.8)	1.00		
Hmong	19(20.9)	72(79.1)	0.92	0.49–1.73	0.804
Lahu	24(41.4)	34(58.6)	2.47	1.30–4.69	0.006*
Yao	16(32.0)	34(68.0)	1.65	0.82–3.32	0.162
Lisu	5(27.8)	13(72.2)	1.35	0.66–5.52	0.232
Karen	6(35.3)	11(64.7)	1.91	0.66–5.52	0.595
Smoking					
Current smoker	13(43.3)	17(56.7)	2.25	1.05–4.80	0.037*
Non-smoker or ex-smoker	93(25.4)	273(74.6)	1.00		
Alcohol drinking					
Current drinker	17(25.8)	49(74.2)	0.94	0.51–1.72	0.839
Non-drinker or ex-drinker	89(27.0)	241(73.0)	1.00		
Stress					
Moderate/High/Severe	56(32.9)	114(67.1)	1.73	1.10–2.71	0.017*
Mild	50(22.1)	176(77.9)	1.00		

Table 3 Factors associated with psychological resilience in univariable analysis (Cont.)

Factors	Psychological resilience		Univariable analysis		
	Low n (%) (n =106)	Average– High n (%) (n =290)	cOR	95% CI	p-value
Negative life events					
Yes	96(29.8)	226(70.2)	2.72	1.34–5.52	0.006*
No	10(13.5)	64(86.5)	1.00		
Perceived peer support					
Low	9(36.0)	16(64.0)	1.54	0.63–3.73	0.341
Moderate	52(25.6)	151(74.4)	0.94	0.59–1.50	0.799
High	45(26.8)	123(73.2)	1.00		
Perceived emotional family support					
Low	15(38.5)	24(61.5)	3.27	1.43–7.49	0.005*
Moderate	74(29.5)	177(70.5)	2.19	1.22–3.93	0.009*
High	17(16.0)	89(84.0)	1.00		
Mental health literacy					
Inadequate/ Problematic	90(30.2)	208(69.8)	2.22	1.23–4.00	0.008*
Sufficient/ Excellent	16(16.3)	82(83.7)	1.00		

*Significant at p-value <0.05; cOR, Crude Odds Ratio; CI, Confidence Interval

Table 4 Factors associated with psychological resilience in multivariable analysis

Factors	Univariable analysis			Multivariable analysis		
	cOR	95% CI	p-value	aOR	95% CI	p-value
Sex						
Female	2.22	1.34–3.69	0.002*	2.35	1.38–3.99	0.002*
Male	1.00			1.00		
Smoking						
Current smoker	2.25	1.05–4.80	0.037*	2.43	1.08–5.47	0.032*
Non-smoker or ex-smoker	1.00			1.00		
Negative life events						
Yes	2.72	1.34–5.52	0.006*	2.92	1.41–6.04	0.004*
No	1.00			1.00		
Perceived emotional family support						
Low	3.27	1.43–7.49	0.005*	2.68	1.13–6.38	0.026*
Moderate	2.19	1.22–3.93	0.009*	1.90	1.03–3.49	0.039*
High	1.00			1.00		
Mental health literacy						
Inadequate/ Problematic	2.22	1.23–4.00	0.008*	2.05	1.11–3.80	0.02*
Sufficient/ Excellent	1.00			1.00		

*Significant at p-value <0.05; cOR, Crude Odds Ratio; aOR, Adjusted Odds Ratio; CI, Confidence Interval

Discussion

The results from this study indicated that a low level of psychological resilience accounted for 26.8%. Several factors were associated with a low level of psychological resilience, including sex, smoking, negative life events, perceived emotional family support, and mental health literacy.

In the present study, a low level of psychological resilience accounts for 26.8%. This finding aligns with a previous systematic review and meta-analysis, which indicated that the global prevalence of low resilience among students was 36.0%⁽²⁸⁾. Another study conducted in Nepal⁽²⁹⁾ showed that 17.5% of Nepalese adolescents exhibit low resilience. Similar to previous findings from Bangkok, Thailand⁽³⁰⁾, it was revealed that 47% of students had a low level of resilience. A study conducted in Phayao province⁽¹⁹⁾ reported that 63.9% of university students had a low level

of resilience. Conversely, a study conducted by Dallas et al.⁽³¹⁾ among students from Eastern Thailand, and Namarak et al.⁽³²⁾ from Nakhon Pathom province, demonstrated low resilience at 10.70% and 0.44%, respectively. The possible explanation for the low level of resilience can be due to various factors such as different in social, cultural, and economic context. In addition, limited access to fundamental resources, for example, education, public health, and social services also resulting in lower development on adaptive skills^(9,10). Moreover, social stigma and cultural marginalization might bring about low self-esteem and minimize these students as a member of school society. Besides having psychological reasons, facing with poor economics also displays the deficiency in resources to support the students' psychological development^(6,11).

Being female acted as one of the significant factors in those having low psychological resilience among the junior high school students. Our finding aligns with the report by Xiao et al.⁽³³⁾, which states that males are more likely to exhibit higher resilience than female participants from Huabei, China. A study by Inoura et al.⁽³⁰⁾ also reported that females had lower scores on resilience than males among Thai students of international programs in Bangkok, Thailand. Previous study points out that females possess greater fear and difficulties than male to address the stressors. Comparing to females, males have a different cognitive style in terms of coping mechanism and emotional regulation, which might, consequently, impact their resilience level⁽³³⁾. Males rely often on task-oriented strategies and problem-solving approaches when facing the life challenges while females usually rely on emotional expressions and social support systems⁽³⁴⁾. Moreover, female gender often reflects the pressures and societal expectations and women are more likely than men to internalize traditional gender roles, a pattern linked to greater fear of evaluation and high levels of decision-related regret, which in turn affect to the level of resilience⁽³⁵⁾.

Smoking is identified as a significant contributor to low psychological resilience among junior hill tribe high school students. This was supported by previous studies in Sweden⁽³⁶⁾, Peru⁽¹³⁾, and Australia⁽³⁷⁾. The reason might be that resilience is a fundamental aspect of an individual's ability to cope positively with stressful situations^(38,39). Individuals with low psychological resilience may respond to adversity by engaging in behaviors such as smoking, which is considered a maladaptive coping strategy^(13,36).

Negative life events are crucial factors. Our finding coincides with the report in Portugal⁽⁴⁰⁾, which revealed that life events, including neglect, separation/loss, and friend satisfaction, were associated with resilience capacity among higher education students. Another study conducted in the Southern province of Thailand also demonstrates that those students who had adverse

childhood experiences are more likely to have low resilience⁽⁴¹⁾. This is because the negative life events such as being bullied, domestic violence, and having serious illness can be labeled as traumatic events that harm adolescents' emotion which cause the emotional pain to them^(6,42,43). However, negative life events are also depending on how individuals give the meaning to the event whether it is positive or negative as well as how much they have strategies to adapt to the event that occurred. In addition, family support may also play a role in buffering negative life events⁽⁴⁴⁾.

Another factor identified as a vital contributor to low psychological resilience among junior hill tribe high school students was those with low perceived emotional family support. Our finding aligns with several studies in Portugal⁽⁴⁵⁾, Iran⁽⁴⁶⁾, and Guo et al.⁽⁷⁾ reported that family support was related to psychological resilience. The findings of this study conform to the results of an investigation among adolescents from Eastern Thailand⁽³¹⁾. The lack of family support might cause the students to feel less confident and lonely which the key indicator to stress and maladaptive to life challenges⁽³¹⁾.

The present study found that mental health literacy was associated with low psychological resilience. Our finding aligns with the report by Zhang X et al.⁽⁴⁸⁾ from China, which found that mental health literacy was associated with psychological resilience among junior high school students in Inner Mongolia. One study from Thailand⁽³²⁾ also confirmed that mental health literacy was a positive correlated with resilience among students at Nakhon Pathom Rajabhat University. The possible reason might be due to mental health literacy helps students understand and aware of their own psychological well-being which encourage them to positively strategize their skills when encountering with problems for example, asking for help, positive mindset, and emotional management, which resulting in bouncing back from stress^(49,50).

This finding underscores the potential value of integrating culturally sensitive mental health literacy programs into school health curricula for hill tribe students, alongside parent-focused psychoeducation.

Several limitations should be acknowledged. First, the cross-sectional design limits causal inference, and the direction of associations cannot be determined. Second, data were self-reported and may be subject to recall and social desirability bias, particularly for sensitive behaviors such as smoking. Third, the findings may have limited generalizability, as the study was conducted among junior hill tribe high school students in Chiang Rai Province. In addition, residual confounding from unmeasured factors—such as coping strategies, personality traits, self-esteem,

and school-related influences—may have affected the results. Future longitudinal studies are recommended to clarify causal relationships, while advanced analytical approaches (e.g., SEM) and intervention studies are needed to better understand and promote psychological resilience among adolescents in vulnerable populations.

Conclusion

In conclusion, a considerable portion of junior hill tribe high school students exhibited low levels of psychological resilience. The findings suggest that public health strategies should prioritize strengthening psychological resilience, particularly among students who are female, smoke, have experienced negative life events, or have low levels of family support and mental health literacy. School and family-based interventions, as well as programs to enhance mental health literacy, may be beneficial in supporting resilience among adolescents in vulnerable populations.

Ethical Approval Statement

This study was approved by the Ethical Review Committee for Human Research of the Chiang Rai Provincial Public Health Office, Thailand (CRPPHO 193/2566). The research was conducted in accordance with the principles outlined in the Declaration of Helsinki. All participants were informed of the study's objectives, and written informed consent was obtained from each participant prior to participation in the study.

Author Contributions

TR, TK, FY, and PW designed the study and formulated the research instrument. TR, TK and FY carried out the pilot test, reliability test, and data collection. TR conducted the formal data analysis, and interpretation of results by all authors. TR, TK, and PW are writing a manuscript. All authors read and approved the manuscript before submission for publication.

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Conflicts of Interest

The authors have no conflicts of interest to declare.

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