

PAPER

Loneliness among Students Before and After the COVID-19 Pandemic in Da Nang, Vietnam

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ABSTRACT

Loneliness stood out as a significant emotional experience during the COVID-19 pandemic, especially in times of enforced social distancing. This study examines the phenomenon of loneliness and its effects on adolescent mental health in Da Nang City throughout the pandemic. Data collection took place online in early 2023, approximately 18 months after lockdown restrictions in Da Nang were lifted. A total of 1,262 students from grades 6 to 12 participated in the study. Key findings include: (1) loneliness was a dominant emotional response among adolescents during lockdown compared to post-pandemic; (2) major contributors to loneliness included illness, social isolation, and insufficient parental attention and care; (3) although many adolescents reported brief and mild feelings of loneliness, a notable percentage experienced persistent and intense loneliness; and (4) support from family and peers was vital in mitigating the mental health challenges associated with loneliness. These insights highlight the critical role of social connections in addressing the enduring psychological impacts of loneliness.

KEYWORDS

mental health, adolescents, COVID-19 pandemic, Coronavirus, Vietnam

1 INTRODUCTION

1.1 The prolonged impact of COVID-19

The outbreak of the pandemic in 2019 and 2020 significantly exacerbated loneliness, especially among students. Studies have shown that factors such as being female, living alone, or being single contributed to increased loneliness during this period [1], [2]. Moreover, the economic downturn caused by the pandemic further impacted students' physical and mental health, leading to increased emotional loneliness [3]. However, the impact of social distancing was not entirely negative; some studies suggest that loneliness decreased during this time, possibly due to reduced face-to-face interactions, which helped alleviate symptoms of anxiety

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and depression [4]. Despite these findings, there is still a lack of research addressing the long-term effects of loneliness on adolescents' mental health, particularly in the context of the pandemic.

Furthermore, while social support is recognized as a critical buffer against loneliness, some studies have specifically examined the role of emotional, social, and practical support from family on adolescents' mental health during the pandemic. Additionally, cultural differences in how adolescents experience and cope with loneliness remain largely unexplored, despite their potential influence on mental health outcomes. Finally, although coping strategies have been shown to mitigate loneliness, research on the most effective approaches for adolescents, particularly those facing prolonged loneliness or the psychological aftermath of the pandemic, remains limited.

1.2 COVID-19's impact on Da Nang, Vietnam

Da Nang underwent several pivotal phases in managing the COVID-19 pandemic, each reflecting its proactive approach to safeguarding public health:

1. **Initial Phase (January-March 2020):** The first COVID-19 case in Da Nang was detected in January 2020. The city quickly enforced preventive measures, including border controls and health education campaigns, to curb potential outbreaks [5].
2. **Second Wave (July-August 2020):** A surge in cases during July led to stringent containment measures, such as localized lockdowns, suspension of non-essential activities, and extensive contact tracing. These efforts highlighted the city's commitment to controlling community spread [6].
3. **Vaccination Phase (2021):** Da Nang initiated its vaccination campaign, significantly improving public safety and enabling the gradual reopening of economic and social activities [6].

1.3 Loneliness and adolescent mental health

Loneliness is a significant public mental health issue, increasingly linked to the onset of depression, anxiety, and even suicide [7]. A study by Twenge et al. [8] indicated that loneliness among students significantly increased from 2012 to 2018 in 36 out of 37 countries, with the number of lonely adolescents in 2018 nearly double that of 2012. This increase in loneliness is attributed to the perceived gap between desired and actual social relationships—meaning that even individuals who engage in social interactions may still feel lonely, while those living alone may not [9], [10]. This emotional state differs from objective isolation, as loneliness stems from the quality and depth of social connections rather than their mere presence. Further categorizing loneliness, De Jong Gierveld [11] identified the “deprivation” component, referring to feelings of emptiness, abandonment, or a lack of intimate connection. Adolescence, a stage marked by psychological detachment from parents and the formation of social roles, is often characterized by an increase in loneliness [12]. Russell expanded the concept of loneliness by framing it as a multifaceted experience, showing that it is also related to personality traits such as introversion, anxiety, and sensitivity to rejection—all of which influence how individuals perceive social interactions and their overall sense of connection [13].

1.4 Research objectives

This research employs a cultural lens to investigate the emotional experiences of adolescents, with a focus on loneliness and its impact on their mental health in Da Nang City, Vietnam, during and after the COVID-19 pandemic. The study also highlights the significance of social support systems in alleviating the adverse mental health effects of loneliness among adolescents during this challenging period.

Data collection took place in early 2023, approximately 18 months after the city lifted its lockdown restrictions. To guide the inquiry, the study addressed key research questions aimed at understanding the nature and implications of adolescent loneliness in this unique cultural and temporal context.

1. What is the long-term impact of loneliness during the COVID-19 pandemic on adolescents' mental health, and what are its lasting effects?
2. What role does family support play in mitigating the negative impact of loneliness on adolescents' mental health during the COVID-19 pandemic?
3. What cultural factors emerged when considering adolescents' experiences of loneliness and mental health during the COVID-19 pandemic?
4. What coping strategies have been most effective in helping adolescents overcome prolonged loneliness, and what intervention measures are necessary to support their mental health post-pandemic?

Answers to these research questions will help fill gaps in current studies by shedding light on the long-term impact of loneliness on adolescents' mental health, the role of social support, and the cultural factors in loneliness experiences during the pandemic. Specifically, the study will clarify the impact of loneliness on mental health, the role of family, and the cultural factors supporting adolescents. The research findings will provide a scientific basis for developing effective psychological interventions and strategies to support adolescents in the current context.

2 METHODOLOGY

2.1 Data collection

The data collection process utilized an online questionnaire distributed via the Google Forms platform from January to February 2023. This timeline coincided with students adapting to their "new normal" as they resumed school routines over 18 months after the lifting of COVID-19 lockdown restrictions in Da Nang. The survey link was shared with teachers across 21 middle and high schools in Da Nang, Vietnam, encouraging voluntary participation from students in grades 6 through 12.

2.2 Participants

A total of 1,262 students participated in the survey. The average age of the respondents was 15.25 years ($SD = 1.85$), with ages ranging from 12 to 19 years. Male students made up 45.3% of the sample, while 49.3% of the participants were middle school students.

2.3 Measurement

In addition to socio-economic characteristics, the questionnaire covered the following topics:

2.4 Negative emotions

Exploring prominent negative emotional experiences during and after the COVID-19 pandemic. The survey tool used in this study included a short questionnaire designed to assess participants' emotions in two different contexts: during the COVID-19 pandemic and the current context (18 months after Da Nang lifted the lockdown, in January 2023). Participants were asked to indicate which context (pandemic or current) best reflected their emotional state by selecting the corresponding number. Each word represented a specific emotion, and participants were only allowed to select one column per emotion based on the context they felt was most accurate. There were five levels to choose from for each emotion: (1) Never, (2) Rarely, (3) Sometimes, (4) Quite Often, and (5) Always. The emotions listed were prominent and commonly experienced during the COVID-19 pandemic, which had a significant impact on adolescents' mental health: "Sad," "Lonely," "Fearful," "Anxious," "Irritable," and "Angry" in both contexts.

2.5 Duration and intensity of negative emotions

To further explore negative emotional experiences, students were asked to recall a situation during the period of Da Nang's COVID-19 lockdown that made them feel the most fearful, lonely, anxious, or sad. Qualitative data were processed using Luo's (2023) content analysis method [14].

Students were asked to identify factors influencing their emotional responses for each scenario, as well as to assess the intensity and duration of these emotions. The emotional intensity was rated on a scale from 0 to 10, where 0 signified no emotion and 10 represented an extremely strong emotional reaction, based on the students' own judgment.

The duration of emotions was categorized into four intervals: less than 1 hour, 1–3 hours, one full day, and more than one day. Upon data analysis, emotions were further grouped into two categories: lasting up to 1 hour or less and lasting more than 1 hour.

For participants who did not report experiencing negative emotions, the following question was included: "What factors prevented you from feeling lonely, sad, or similar emotions during the pandemic?"

2.6 Strengths and difficulties questionnaire

The Strengths and Difficulties Questionnaire (SDQ), designed for adolescents aged 11 to 17, was used to assess the mental health of the participants. The Vietnamese version of the SDQ was downloaded from the website sdqinfo.org. In this study, a shortened 20-item version of the SDQ was used, allowing for quicker screening while still maintaining the main components. This version saves time while ensuring the accuracy of the results. Higher scores indicate a greater risk of mental health problems. The threshold commonly used in international studies was applied in this research [15]. The SDQ

is widely used in Vietnam and has proven to be valuable and reliable for assessing adolescents; therefore, no significant adjustments were made to the tool [16], [17].

2.7 Multidimensional scale of perceived social support

In this study, two subscales from the Multidimensional Scale of Perceived Social Support (MSPSS) were employed to evaluate social support received from family and friends. Each subscale contained four items, with responses ranging from 1 (Strongly Disagree) to 7 (Strongly Agree). The final score for each subscale was calculated, with higher scores indicating greater perceived support from either family or friends. While no official Vietnamese adaptation of the MSPSS exists, it has been widely utilized in international research and proven to be both valuable and reliable across various cultural groups, including adolescents [18]. To enhance its cultural relevance, local experts reviewed the scale, and initial testing was conducted to ensure it accurately reflected the perceptions of Vietnamese adolescents regarding social support.

2.8 Data analysis

Descriptive statistics and multivariate regression analysis were applied to describe the variables and assess the impact of past negative emotions on the current mental health of students. A significance level of 0.05 was used.

3 RESULTS

3.1 Negative emotions during and after the COVID-19 pandemic

Based on the question: “Based on your experience during the COVID-19 pandemic (staying at home, unable to go outside, and online learning) and the current context (able to go out, attend school, and meet friends), which of the following emotions best reflect your feelings in each period?” The results revealed a significant change in negative emotions between the two phases. Specifically, during the pandemic phase (July 2021), emotions such as loneliness (79.3%), anxiety (77.0%), and fear (84.1%) were notably high, reflecting the strong impact of social distancing measures and the instability during that time. After the pandemic was controlled (January 2023), the levels of these negative emotions significantly decreased. For example, loneliness dropped to 23.0%, anxiety decreased to 20.7%, and fear was reduced to only 15.9%. This indicates psychological recovery as social activities and interactions were restored. However, the persistence of loneliness (23.0%) remained, highlighting a mental health challenge that requires continued attention (refer to Table 1).

Table 1. Negative and positive emotions in first and second episodes (n = 1.262)

Emotions	During the Pandemic (July 2020)	Post-Pandemic (Jan. 2023)
Sadness	86.1	13.9
Scared	84.1	15.9
Lonely	79.3	23.0
Worry	77.0	20.7
Uncomfortable	74.7	25.3
Annoyed	67.8	32.2

Paired Samples t-test also indicated a significant change in the negative emotions of students during and after the COVID-19 pandemic. During the pandemic, the average level of negative emotions was 3.26, showing a marked increase in negative emotions during this period. After 18 months, this level decreased to 0.74, with a mean difference of 2.53 ($t = 39.667$, $p = 0.000$). This sharp decrease reflects a clear improvement in students' negative emotions after the pandemic.

3.2 Loneliness as a prominent emotion during and after the pandemic

Loneliness was the most prominent emotion experienced by nearly 80% of adolescents during the pandemic, reflecting deep isolation due to social distancing measures and changes in daily routines. Although emotions such as sadness and fear significantly decreased after the pandemic, loneliness continued to be a concerning challenge. Specifically, 23.0% of adolescents reported feeling lonelier after the pandemic compared to the lockdown period. This suggests that loneliness was not only a temporary consequence of the pandemic but a prolonged mental challenge, even after the social situation improved. This finding is consistent with previous research [19], which also highlighted the increase in loneliness during the pandemic and its lasting impact on adolescents' mental health. Therefore, loneliness became the focal point of this research, aiming to explore its causes and effects on adolescents' mental health.

3.3 Duration and intensity of loneliness

Regarding the duration of loneliness, the majority of adolescents (64.9%) reported experiencing loneliness for a short period, under one day. Specifically, 46.5% reported feeling lonely for less than 30 minutes, while 18.4% felt loneliness for 30 minutes to one hour. However, a significant proportion of adolescents (35%) reported that their loneliness lasted from several hours to more than a day.

In terms of intensity, the average loneliness score was 4.34 ($SD = 3.02$), suggesting that although loneliness was a common emotion, it was not always felt as extremely intense. However, it is noteworthy that 14.7% of adolescents rated their loneliness as 8 or higher, indicating that for a small group of adolescents, loneliness could be a deep and painful feeling.

These findings indicate that while loneliness is a common experience among adolescents, the duration and intensity of this emotion vary significantly. Notably, the prolonged and intense loneliness in a small group of adolescents suggests that this is an issue that requires serious attention, as it could have long-term effects on their mental health. In conclusion, loneliness is the main negative emotion adolescents experienced during the COVID-19 pandemic and remains a major concern even after the pandemic. The study results emphasize the need to focus on loneliness as a primary emotional challenge for adolescents, as its impact can extend beyond the pandemic context. Addressing loneliness in the adolescent community is crucial for supporting their mental health both during and after the pandemic and should be prioritized in future intervention strategies and research.

3.4 Reasons for students feeling lonely

Through retrospective situations shared by students ($N = 640$), the study employed content analysis (Luo, 2023) to identify the factors influencing or leading to students'

feelings of loneliness. The data from the students' stories were divided into meaningful units. Phrases/keywords describing the factors contributing to students' feelings of loneliness were recorded. Hundreds of keywords and phrases were manually filtered, categorized, and developed into initial codes (subcodes) and grouped into larger categories (parent codes) to highlight the main themes, ensuring consistency.

The results from the coding list reflect the main factors affecting adolescents' feelings of loneliness during the COVID-19 pandemic. The key themes identified include isolation in their living area due to lockdown measures, lack of recreational activities, and being confined at home for too long. Being prohibited from going out, not being able to attend school in person, and declining academic performance were also significant factors contributing to the feeling of loneliness. The lack of direct communication, the complex pandemic situation, and information about the progression of the pandemic further increased feelings of isolation and social disconnection. New codes, such as scenes of death, feelings of helplessness, and being isolated at home, highlighted the powerful impact of the pandemic on adolescents' mental health. Feelings of loneliness were also linked to factors such as family members being infected with the virus, personal infection with COVID-19, and being hospitalized alone. All of these factors were grouped under the focused code "Loneliness and Social Disconnection," emphasizing the profound impact of the pandemic on adolescents' feelings of loneliness.

The codes and main themes were summarized into meaningful groups, and the percentage distribution was calculated, reflecting the diversity of factors affecting students' feelings of loneliness during the COVID-19 pandemic. Overall, the content analysis results reflect various reasons for feelings of loneliness, with the inability to meet friends and lack of family support being the most prominent factors. Specifically, 16.2% of students reported that their loneliness stemmed from not being able to meet friends, while 47.6% of students felt a lack of family support, the highest percentage among all listed reasons.

These results suggest that, in the context of the pandemic, loneliness was not simply a result of being confined at home for an extended period but was closely linked to the lack of social relationships and the absence of family support. This underscores the importance of social and familial factors in students' mental health during the pandemic (refer to Table 2).

Table 2. Reasons for loneliness (N = 640)

Reasons for Loneliness	Percentage
Staying at home too long during social distancing	8.5
Receiving information about the pandemic escalation	8.2
Being isolated due to COVID-19 infection	8.1
Not being able to meet friends	16.2
Lack of family support	47.6

3.5 Loneliness and mental health

The results of the SDQ, conducted 18 months after the lockdown, indicate more than one-third of the sample showed signs of mental health issues, with 14.7% categorized as borderline and 26.1% at risk of developing further mental health challenges. A multivariate regression model was used to assess the impact of both

the duration and intensity of loneliness during the pandemic on the risk of mental health challenges post-pandemic. The model's results were statistically significant ($p < 0.001$), with an R^2 of 0.87, indicating that 87% of the variance in mental health outcomes could be explained by the duration ($\beta = 0.22$, $p < .001$) and intensity of loneliness ($\beta = 0.14$, $p < .001$). This demonstrates a strong link between prolonged and intense loneliness and long-term mental health risks, highlighting the crucial role of loneliness in adolescents' mental health post-pandemic.

3.6 Social support from family and friends

Incorporating social support from family and friends into the multivariate regression model enhanced the ability to predict mental health outcomes (refer to Table 3). The model revealed statistical significance (adjusted $R^2 = 0.185$, $F = 72.431$, $p < 0.001$), indicating that social support explained 18.5% of the variance in mental health scores. However, even after adjusting for social support, the duration and intensity of loneliness continued to exert a significant effect on mental health. This emphasizes that loneliness remains a crucial factor impacting adolescents' well-being, regardless of the presence of family or social support. The results also highlight the protective role of social support: while prolonged and intense loneliness increases the risk of mental health issues, support from family and friends can mitigate this risk. The regression analysis further showed that family support had the greatest influence, followed by the intensity of emotional experiences linked to loneliness.

Table 3. Differences in loneliness between T1 and T2

Independent Variable	Test Statistic	t-Test	p-Value
Duration of Loneliness	0.180	6.537	0.000
Intensity of Loneliness	0.156	5.646	0.000
Social Support (Friends)	-0.129	-3.999	0.000
Social Support (Family)	-0.222	-6.871	0.000
Adjusted R^2	0.185	$F = 72.431$	$p < 0.001$

These findings illustrate that while feelings of loneliness during the pandemic can increase the risk of developing mental health challenges, the presence of family and friend support can significantly reduce this risk. Adolescents who reported higher levels of social support during the pandemic were less likely to experience adverse mental health outcomes related to prolonged loneliness. Family support emerged as the most important factor, emphasizing the significance of close family relationships in protecting against the long-term psychological effects of isolation.

3.7 Reported mediating factors

A qualitative analysis of responses from adolescents who did not experience loneliness during the pandemic revealed that support from family and friends were crucial in preventing or alleviating feelings of isolation. The following responses highlight this trend:

"I never felt lonely because when I had COVID-19, my friends always visited, texted, and my family called to check on me." (Student 69)

“I didn’t feel lonely because I always had my family with me.” (Student 84)

“I didn’t feel lonely because I still had my family and friends at home, and we could text each other.” (Student 87)

“I never really felt lonely because when I heard I had COVID, my friends sent well-wishes, and even though my parents had COVID and couldn’t take care of me, my aunts still visited.” (Student 60)

These qualitative responses reinforce the quantitative findings: adolescents with strong support networks are more resilient to the mental challenges posed by the pandemic. This finding aligns with Beutel et al. (2017), suggesting that positive, supportive relationships are essential to reduce feelings of loneliness and protect mental health. In contrast, adolescents who experienced tense family relationships were more likely to report feelings of loneliness, indicating that negative family dynamics can exacerbate isolation and emotional distress [20].

The results of this study indicate that feelings of loneliness experienced during the pandemic have had lasting impacts on adolescents’ mental health. However, support from family and friends plays a crucial protective role in minimizing the risk of developing mental health issues. Adolescents who received strong emotional support from family and friends were better able to cope with feelings of loneliness and exhibited greater resilience in the face of emotional challenges posed by the pandemic. This underscores the importance of fostering positive social relationships, especially during crises. Emotional support from close relationships not only alleviates loneliness but also serves as a vital foundation for adolescents to cope with future psychological challenges. These insights provide valuable directions for future research, particularly in exploring the factors contributing to family and friend support and understanding the mechanisms through which this support may mitigate the impact of loneliness. Moreover, appropriate psychological interventions to address loneliness and its consequences, especially in the pandemic context, need further exploration.

4 DISCUSSION

4.1 The ability to experience loneliness

The results from this study on Vietnamese adolescents align with similar findings from Brazil, Italy, and other European countries, where heightened loneliness and negative emotions were prevalent during the pandemic [9], [21]. These shared experiences suggest that the psychological impact of COVID-19 on adolescents was a global issue, not limited by cultural or national boundaries. Studies across various regions highlight the importance of addressing adolescent mental health through cross-cultural policies and initiatives to mitigate the long-term effects of the pandemic on youth well-being [22], [23].

4.2 Feelings of loneliness

The most intense feelings of loneliness in adolescents were caused by various circumstances related to the pandemic, including isolation due to lockdown orders, experiences of being alone after contracting COVID-19, and the inability to meet friends in person due to the shift to online learning. These experiences of physical isolation and disrupted social interactions played a key role in shaping adolescents’ emotional states, reinforcing the importance of direct connections in maintaining mental health. These findings underscore how the disruption of daily social

structures due to the pandemic led to an unprecedented rise in loneliness, a critical issue that warrants further investigation in the post-pandemic context.

4.3 Supportive role of family and friends

Qualitative data further highlight the significant role of social support in alleviating loneliness. Among the 159 adolescents who did not experience loneliness during the pandemic, most attributed this to the help and companionship they received from family and friends. This finding reinforces previous research on protective factors, showing that strong networks of family and friends are crucial for reducing feelings of isolation. Adolescents who maintained these relationships reported lower levels of loneliness, underscoring the importance of fostering a supportive social environment, especially during challenging times.

4.4 Prolonged loneliness and its impact

The results from this study suggest that loneliness extends beyond being a temporary emotional experience, with lasting effects on adolescents' mental health. Multivariate analysis reveals that both the duration and intensity of loneliness during the pandemic can predict future mental health challenges. In particular, longer periods of loneliness—especially those lasting more than a day—are associated with greater mental health issues. The intensity of loneliness also contributes to these challenges, though its impact is less significant compared to the duration. These findings emphasize the importance of early identification and intervention for adolescents experiencing prolonged loneliness, as the psychological effects could persist well beyond the pandemic.

4.5 Need for early intervention for at-risk adolescents

Given the long-term impact of loneliness on mental health, our study suggests the importance of implementing early intervention programs for vulnerable groups, particularly adolescents. Screening for loneliness and social support should be conducted regularly throughout adolescents' educational journeys, starting in the first year of university and continuing at key intervals. Additionally, creating peer support systems—whether in academic settings, dormitories, or student organizations—should be prioritized. Universities should invest in student activity spaces and offer funding to support social interaction. Strengthening teacher-student relationships outside the classroom is equally important, as these connections provide additional support. In alignment with the World Health Organization's (WHO) health promotion guidelines, universities should adopt Risk and Emergency Health Management strategies as outlined in the Okanagan Charter, ensuring they address students' mental health needs and contribute to the development of resilient academic communities [21], [23].

5 CONCLUSION

This study aimed to explore the experience of loneliness among adolescents during the COVID-19 pandemic and its long-term impact on mental health from

a cultural perspective. The findings reveal several key points: First, loneliness was a dominant emotion among adolescents during the pandemic, in contrast to the present time. Second, factors such as illness, social isolation, and insufficient parental attention contributed to feelings of loneliness. Third, while loneliness in adolescents tends to be short-term and mild, a notable number of adolescents experienced prolonged and severe loneliness. Fourth, the duration and intensity of loneliness during the pandemic were found to correlate with an increased risk of later mental health challenges. Finally, while loneliness is a significant factor, the support from family and friends—particularly in the context of specific cultural and social relationships—plays a protective role in mitigating the risk of mental health challenges in adolescents.

Loneliness and emotional distress can also contribute to academic burnout. To address this, psychosocial interventions such as group therapy should be considered, especially when tailored to the cultural context of the group involved. Enhancing resilience and addressing psychological challenges, particularly among medical students, could also be beneficial [24]. Loneliness is common among children and adolescents, particularly during periods of social isolation, such as during the pandemic. Research shows a considerable increase in loneliness during this period, which may be influenced by cultural and social factors. Loneliness not only has immediate effects but can also contribute to long-term mental health issues, including neurodevelopmental disorders like autism spectrum disorders. Thus, loneliness is a critical risk factor that mental health professionals should monitor. Maintaining social connections, both in person and virtually, can help reduce feelings of loneliness. Further development and evaluation of interventions are necessary to support children and adolescents with pre-existing mental health conditions, particularly to prevent the exacerbation of anxiety and depression.

The COVID-19 pandemic has served as a turning point for adolescents, bringing about significant negative emotions, with loneliness standing out as a major example. However, the effects of loneliness can have long-lasting consequences for adolescents' mental health. Emotional support from family and friends, particularly in cultures where family and community values are paramount, plays a crucial role in maintaining psychological stability. To protect adolescents' mental health during crises, it is vital to help them overcome feelings of loneliness quickly and ensure continuous support from family members, particularly parents and close relatives. Such protective factors are essential in preventing risks associated with crises, such as pandemics, natural disasters, or personal losses. This support is especially critical in cultural contexts where family and community values provide the foundation for psychological well-being. Even though the pandemic has subsided, future global health crises may still occur. Therefore, these findings are key in developing culturally appropriate mental health intervention strategies that can support adolescents before, during, and after crises. Special emphasis should be placed on strengthening the role of family and friends in supporting adolescents' mental health, particularly those at higher risk, as a means of psychological protection across diverse cultural and social contexts.

6 ACKNOWLEDGMENTS

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6.1 Conflicts of interest

On behalf of all authors, the corresponding author declares that there is no conflict of interest.

6.2 Contributions

Lam Le and Mai Huong Phan were responsible for the research design, data collection and data compilation. They also secured funding for the project from Vietnam. Johnston Wong contributed to the structuring, organizing, and formatting of the paper. All authors were involved in the analysis and discussion of the results.

6.3 Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work, the author(s) used ChatGPT to revise the English expression. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the publication.

6.4 Ethical considerations

Since the University of Da Nang, Vietnam, has not yet established a Research Ethics Committee, the following measures were implemented to ensure ethical standards in the research process. The research proposal was approved by the Research Proposal Review Council of the University of Da Nang and the Ministry of Education and Training (MOET), Vietnam. Before conducting the study, voluntary consent was obtained from relevant parties, including school administrators, teachers, parents, and students. The online survey was distributed to teachers and school psychology staff, who then forwarded it to students. All personal data from students was kept confidential through measures such as encryption and anonymization, with access limited to the research team. The survey questions were designed to be non-invasive and considerate of students' comfort, allowing them to respond at their own pace, with guidance or support available from teachers and mental health staff as needed. Students who participated in the survey were provided with a mental healthcare guidebook and invited to join a free mental health first aid program. The research findings were reported honestly, without any alteration or manipulation, ensuring objectivity and respecting students' dignity. These measures not only ensured compliance with ethical guidelines but also helped build trust with all stakeholders, enhancing the quality and credibility of the research.

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