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Article

Loneliness among High School Students during the COVID-19 Pandemic and Its Long-term Mental Health Impact

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Abstract: Loneliness was one of the most prominent emotional experiences during social distancing due to the COVID-19 pandemic. This article aims to shed light on the experiences of loneliness and its relationship with mental health of adolescents in the Da Nang City during the COVID-19 pandemic. Data were collected online in early 2023 after 18 months Da Nang lifted its lockdown. The Strength and Difficulties Questionnaire, the Multidimensional Scale of Perceived Social Support and the Negative Experience Scale were used to investigate loneliness among adolescents and effects of protective social factors. A total of 1,262 grade 6 to 12 students responded to the surveys. Results indicated that (1) loneliness was a more prominent emotion experienced by these adolescents during the COVID-19 lockdown; (2) factors contributing to loneliness were related to illness, social distancing, and a lack of care and attention from parents; (3) loneliness reported mostly was short in duration and mild at level, while there was a significant proportion of prolonged loneliness; and (4) Support from family and friends, however, could reduce the risk of mental health problems for the youngsters.

Keywords: mental health; adolescents; COVID-19 pandemic; Coronavirus; Vietnam

1. Introduction

1.1. Impact of Loneliness

Loneliness is a public mental health issue. Increasing evidence shows that loneliness is linked to the onset of depression and other common mental health problems (Farhana Mann et al., 2022). Twenge J. M. and colleagues (2021) showed that school loneliness increased during the period from 2012 to 2018 in 36 out of 37 countries; the number of lonely adolescents in 2018 was nearly double that of 2012.. Not only does loneliness affect mental health, but it also poses more serious risks such as depression, anxiety, and even suicide (Holt-Lunstad et al., 2015).

Loneliness is defined as the distress that comes with the perceived discrepancy between desired and actual social relationships. Loneliness is not synonymous with objective isolation (i.e., living alone or having little social interaction); therefore, people who interact with others can feel lonely, and conversely, those who are alone may not feel lonely (Hawkley, 2022). Loneliness, therefore, is a subjective, negative sensation associated with a lack of social relationships. The absence, feeling of disconnection, or isolation are ways to define loneliness (Tiwari, 2013).

In contrast to the sadness or emptiness stemming from emotional loneliness, social-cognitive loneliness often results in feelings of exclusion, lack of meaning, and boredom (Weiss, 1973). According to De Jong Gierveld's (1998) approach, loneliness can be seen as a multidimensional phenomenon encompassing three distinct aspects. The first and most prominent element is the

“deprivation” component related to 1) feelings associated with the absence of intimate attachment; 2) feelings of emptiness or abandonment (De Jong Gierveld, 1998).

In the early stages of adolescence, when teenagers begin to psychologically separate from their parents and have yet to find their place in society, they can feel very lonely (Goossens, 2018).

In evaluating and measuring loneliness, Russell's (1980) approach is more comprehensive and specific, represented through ten components: 1) Self-labeled loneliness index; 2) Depression; 3) Self-esteem; 4) Introversion-extroversion; 5) Affiliation tendencies; 6) Anxiety; 7) Assertiveness; 8) Sensitivity to rejection; 9) Social desire; 10) Deception. Russell's perspective goes beyond emotional components and dependence on social relationships to show that loneliness also stems from specific personality traits of individuals. Loneliness relates to how individuals evaluate their overall social interactions and describes a state in which there is a deficit between the desired quality and quantity of social engagement and the actual experience.

Around late 2019 and early 2020, the COVID-19 pandemic first broke out in China and then spread to most countries worldwide. COVID-19 was considered a dangerous flu pandemic with global tension, leading to widespread social distancing in most countries (WHO, 2020). This situation resulted in a significant increase in loneliness (Asle Hoffart et al., 2021; Ernst et al., 2022). Studies during this period indicated that students were the most noticeably affected group (Entringer & Gosling, 2021; Rogers et al., 2021). Additionally, factors related to the increase in loneliness during this time included being female (Niedzwiedz et al., 2021), living alone (Bartrés-Faz et al., 2021), and being single (Stone, 2020). Furthermore, the COVID-19 pandemic caused severe global economic decline (Prince & Richard, 2021), leading to financial difficulties and negatively impacting both the mental and physical health of students (Galanza et al., 2023) or increasing emotional loneliness (Peter G van der Velden et al., 2021).

Loneliness, social distancing, and internet use are closely correlated with mental health issues, including stress, anxiety, and depression (Anam Jamil et al., 2022). However, when comparing the periods before and after social distancing, loneliness tended to decrease. The reduction in loneliness is associated with a decrease in symptoms of depression and anxiety. Health-related concerns, maladaptive coping strategies, and negative beliefs are potential intervention targets to alleviate loneliness (Asle Hoffart et al., 2021).

1.2. Purpose of Study

This article aims to shed light on the experiences of loneliness and its relationship with the mental health of adolescents in Da Nang City during the COVID-19 pandemic. Surveys were conducted in early 2023 after 18 months Da Nang lifted its lockdown. The situation of Covid-19 in Da Nang went through several notable phases from the beginning of the pandemic to its conclusion:

- 1.1.1 **Initial Phase (January - March 2020):** Da Nang recorded its first Covid-19 case in January 2020. The city immediately implemented preventive measures such as border control, public health awareness campaigns, and recommendations for residents to practice personal hygiene.
- 1.1.2 **Outbreak Phase (July - August 2020):** After a period of good control, Da Nang unexpectedly experienced a second outbreak in July. The number of infections rose rapidly, leading to the lockdown of certain areas, the suspension of non-essential services, and requests for residents to stay at home. The health sector implemented contact tracing and widespread testing.
- 1.1.3 **Control Phase (September - December 2020):** Thanks to decisive measures, the number of infections began to decline. The city gradually eased lockdown measures and restored economic activities while maintaining social distancing and mask-wearing regulations.
- 1.1.4 **Vaccination Phase (2021):** Da Nang launched a Covid-19 vaccination campaign for its residents. With vaccination efforts, the city was able to better control the pandemic and began to reopen for tourism and economic activities.

- 1.1.5 **New Normal Phase (Late 2021 - 2023):** Da Nang entered a "new normal" phase with flexible pandemic prevention measures. Although there were occasional isolated cases, the city managed the situation well and gradually restored its economy.

Through these efforts, Da Nang has created a safe environment for residents and visitors while developing long-term plans to respond to future pandemics. For adolescents in schools, loneliness and stress increase academic burnout. Studies show that loneliness is associated, both concurrently and prospectively, with mental health problems in adolescents and adolescents, and with neurodevelopmental conditions such as autism spectrum disorder.

2. Methodology

2.1. Data Collection

Data were collected online using a questionnaire on the Google Forms platform over the course of one month, from January 2023 to February 2023. This period was when students had returned to a new normal, going back to school after more than 18 months following the lifting of the lockdown in Da Nang due to the Covid-19 pandemic. The link to the online questionnaire was sent to teachers at schools to invite students from grades 6 to 12 at 21 secondary and high schools in Da Nang, Viet Nam, to participate voluntarily.

2.2. Participants

A total of 1,262 students responded to the questionnaire. The average age of the participants is 15.25 (SD=1.85), with the youngest being 12 years old and the oldest being 19 years old. Males account for 45.3%, and secondary school students comprise 49.3%.

2.3. Measurements

In addition to socioeconomic characteristics, the questionnaire includes the following contents:

- 2.3.1 Emotional experiences are explored through two aspects: (1) Questions about more prominent emotions were compared in two phases (during the lockdown of Da Nang due to Covid-19 (T1) and the current new normal phase (T2), approximately 18 months after T1), including six negative emotions: loneliness, fear, anxiety, sadness, discomfort, and irritation/anger. (2) A deeper exploration of negative emotional experiences: Four negative emotions (fear, loneliness, anxiety, and sadness) were asked to recount one situation that made the child feel the most lonely during the lockdown in Da Nang due to Covid-19. Children were asked to identify in that situation what made them feel lonely, the intensity, and the duration of those feelings. The intensity of the emotions was rated on a scale from 0 to 10, where 0 indicates no emotion and 10 indicates very strong emotion according to the students' subjective assessment. The duration of the emotions was evaluated based on two levels: under 1 hour and over 1 hour; 1-3 hours; all day; and over 1 day. After data calculations, they were grouped into two levels: approximately 1 hour or less and over 1 hour. For those children who did not feel lonely, the next question posed was: what made them not feel lonely during the pandemic.
- 2.3.2 Strengths and Difficulties Questionnaire (SDQ). Designed for adolescents aged 11 to 17, the Vietnamese version of SDQ downloaded from the website sdqinfo.org is used to assess the mental health of adolescents. The questionnaire consists of 25 items, and in this study, we used 20 items to calculate the total difficulty score to evaluate mental health issues after reversing the scores for the negatively phrased items. The higher the score, the greater the risk of the child experiencing mental health problems. The assessment threshold shared by the author and commonly used in international research is also applied in this study.
- 2.3.3 Multidimensional Scale of Perceived Social Support (MSPSS) : The two subscales regarding social support from family and friends of the MSPSS were used, with each subscale containing 4 items rated on a scale from 1 (Very Disagree) to 7 (Very Agree). The total score

for each subscale was calculated; the higher the score, the greater the perceived level of social support from family and friends (Zimet et al., 1990).

2.4. Data Analysis

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

3. Results

3.1. Negative Emotions

In response to the question: 'Based on what you have experienced during the context of the Covid-19 pandemic (being indoors, unable to go outside, studying online), and the current context (being able to go outside, attending school, meeting friends), which of the following emotions are more accurate for each time period?' the answers are presented in Table 1.

Table 1. Negative emotions in two stages T1 and T2.

Emotions	T1: During Lockdown	T2: Post Pandemic
Bored	86.1	13.9
Scared	84.1	15.9
Lonely	79.3	20.7
Worry	77.0	23.0
Uncomfortable	74.7	25.3
Annoyed	67.8	32.2

The survey of six types of negative emotions revealed a trend where adolescents experienced heightened negative emotions during the pandemic. The rate of feelings of boredom was reported at the highest level among the study sample (86.1%), and although it had the lowest rate within this group, feelings of annoyance still accounted for nearly 70% of responses. During the pandemic, more than three-quarters of the adolescents experienced negative emotions that they felt were more characteristic of that time compared to the present, including: boredom (86.1%), fear (84.1%), loneliness (79.3%), and anxiety (77%). It is evident that during the pandemic, loneliness was the most prominent emotion experienced by nearly 80% of the sample, while over 20% of the remaining adolescents felt lonelier now compared to during the pandemic.

3.3. Reasons for Loneliness Given by Respondents

Feelings of loneliness due to social distancing and the escalation of the pandemic, which forced adolescents to stay home for an extended period, respondents commented:

- "When the city was under lockdown, I couldn't socialize with friends" (Code 36).
- "When I stayed home for many consecutive months and couldn't go outside" (Code 38).
- "When I was locked down and couldn't go to school" (Code 34).
- "I felt loneliest when I heard about the social distancing" (Code 21).
- "When the whole city was in lockdown, I was just at home with my grandparents and my aunt, or sometimes I stayed home alone because my mother is a police officer and had to go to

work. I wasn't really lonely; it was just the first time I had to live in worry without my mom by my side for so many days" (Code 20).

- "I felt lonely when I had to stay home while other friends went to school" (Code 2).
- "I felt the loneliest when I had Covid because I was in my room alone for a long time" (Code 60).
- "I felt lonely when I had to move to another place because someone in my family had Covid-19, and the house conditions weren't suitable for quarantine" (Code 16).
- Being in my room too much made me isolated from everyone, so I felt the loneliest" Code 1)

3.4. *Reasons of helplessness given by respondents*

Feelings of helplessness and pain when unable to help loved ones during the pandemic or witnessing suffering and loss caused by the disease, respondents commented:

- "When others are suffering and in pain, but I can't do anything" (Code 65).
- "It's sad to see and hear so many deaths and losses due to Covid-19 affecting people" (Code 12).
- "The situations that make me cry are when young adolescents lose their parents during the Covid-19 pandemic; it's incredibly heartbreaking to go from having parents and a family to becoming orphans after the pandemic" (Code 34).
- "What makes me saddest about the pandemic is that it's a huge loss for both citizens domestically and internationally" (Code 51).
- "The sacrifices of frontline workers are what makes me saddest; seeing on the internet and news about so many people losing their lives to Covid-19" (Code 56).

3.5. *Reasons for Positive Family Attention Given by Respondents*

Feelings of a lack of positive attention from family are one of the factors that make adolescents feel lonely, respondents commented:

- "There's no one beside me; I'm with family, but it's uncomfortable" (Code 46).
- "When there are arguments with family" (Code 53).
- When I see my parents pampering my younger sister, always paying more attention to her, laughing and talking while they seem happy without me around; they're ready to hit or insult me if needed" (Code 5).

The moments before going to sleep at night are when adolescents feel the loneliest.

Duration and Intensity of Feelings of Loneliness

Regarding duration, data indicates that, overall, the majority of adolescents experience feelings of loneliness for less than 1 day (64.9%). Specifically, those who feel lonely for less than 30 minutes comprise 46.5% of the respondents, while 18.4% experience it for a little longer, from 30 minutes to about 1 hour. For some others, feelings of loneliness extend longer, affecting about 35% of adolescents. Specifically, about a few hours account for 13.6%, an entire day for 12.4%, and more than 9% of adolescents experience this emotion for longer than 1 day.

In terms of intensity of this emotion, the average score is 4.34 (SD=3.02), indicating that although loneliness is common, it is not perceived as very intense by the adolescents. However, it is noteworthy that 14.7% of adolescents rated the intensity of their loneliness at 8 points or higher, indicating that it is quite strong.

3.6. *Loneliness and Mental Health*

Based on the threshold scores from the SDQ scale measured 18 months after social distancing, data shows that the percentage of adolescents at risk of experiencing psychological difficulties accounts for more than one-third of the total sample, comprising 14.7% in the borderline group and 26.1% at risk of developing mental health issues.

Table 2. Length and Intensity of loneliness for mental health problems.

Independent variable		Beta	t-test	p
Lonely	Length	.215	7.381	<.001
	Strength	.137	4.704	<.001
R ² adjusted = .087 F= 60.018 p<.001				

A multivariate regression model was constructed to examine the impact of the duration and intensity of loneliness during the pandemic on mental health issues after the pandemic. The results indicated that the model was statistically significant ($p < .001$), with a coefficient of determination $R^2=0.87$, indicating that the independent variables in the model—namely, the duration and intensity of feelings of loneliness—explain 87% of the variance in mental health outcomes.

3.7. Support of Family and Friends

A multivariate regression model was constructed to predict mental health outcomes based on the duration and intensity of loneliness, along with social support from family and friends. Table 3 shows that the model is statistically significant with an adjusted $R^2=0.185$, $F(4,1257)=72.431$, $p < 0.001$. The model explains 18.5% of the variance in mental health scores. Thus, when controlled for social support from family and friends, the duration and intensity of loneliness still have a statistically significant long-term impact on mental health after the pandemic.

Results indicate that the longer and more intense the feelings of loneliness, the higher the risk of developing mental health issues. However, the more support received from friends and family, the lower the risk of mental health problems. The Beta coefficients indicate that family support has the strongest impact, followed by the intensity of the emotional experience on mental health issues.

Table 3. Differences of loneliness between T1 and T2.

Independent variable		Beta	t-test	p
Loneliness	Duration	.180	6.537	.000
	Intensity	.156	5.646	.000
	SS Friends	-.129	-3.999	.000
	SSFamil y	-.222	-6.871	.000
	Adj R-square = .185		F= 72.431	p<.001

It can be understood that although the feelings of loneliness experienced by adolescents during the pandemic may increase the risk of developing mental health issues later in life for adolescents, support from friends, especially family, can reduce this risk and provide emotional support for adolescents.

Findings from qualitative data analysis also show similar results. Among the 159 adolescents who reported that they “did not feel lonely” during the Covid-19 pandemic, when asked, “What

helped you not feel lonely during the pandemic?" the main reasons shared by many students were related to support from family and friends.

3.8. Mediating Factors as Reported by Respondents

When students were asked "What helps them feel not so lonely during the pandemic, they commented:

- "I never felt lonely because when I got Covid-19, there were always friends sending messages and checking on me, and family members also called to ask about my health" (Code 69).
- "I didn't feel lonely because my family was always there for me" (Code 84).
- "I didn't feel lonely because at home, I still had family and friends, and we could message each other" (Code 87).
- "I didn't feel lonely because I always had my family by my side" (Code 109).
- "I never really felt lonely because when I heard that I had Covid, all my friends checked on me and sent me good wishes, and my aunts always asked about me, even though my parents had Covid and couldn't take care of me" (Code 60).

In addition to the impacts from the pandemic, such as being infected, social distancing, or isolation, as well as changes in learning formats, the positive attention from family and friends can also be a factor that helps students not to fall into or easily overcome the difficulties or feelings of loneliness during the pandemic. Conversely, when family relationships are not favorable, they can also be a cause for students to feel lonely. This is consistent with the findings of Beutel et al. (2017), which suggests that close relationships serve as a protective factor against loneliness.

4. Discussion

4.1. Likelihood of Loneliness

The likelihood of experiencing loneliness, as well as other negative emotions such as sadness and fear, was higher during the pandemic among Vietnamese adolescents. This finding is consistent with studies conducted on students in Brazil (Gadagnoto et al., 2022), Italy (Zaccagni et al., 2024), as well as adolescents in several European countries (Forte et al., 2021).

4.2. Feelings of Loneliness

The state of loneliness that adolescents felt most intensely was triggered by various situations, including loneliness due to isolation, being alone because of contracting the COVID-19 virus, and when the city implemented a lockdown. The impact of the pandemic led schools to switch to online learning, and students lacked opportunities to meet their friends in person, which were also reasons shared by them, contributing to their feelings of loneliness.

4.3. Protective Support from Family and Friends

Findings from qualitative data analysis also show similar results. Among the 159 adolescents who reported that they "did not feel lonely" during the Covid-19 pandemic, when asked, "What helped you not feel lonely during the pandemic?" the main reasons shared by many students were related to support from family and friends.

4.4. Long Term Effect of Prolonged Loneliness

It is evident that loneliness is an emotion that can have a statistically significant long-term impact on adolescents's mental health. With a Beta coefficient greater than 0, it can be understood that loneliness during the pandemic may increase subsequent mental health difficulties in adolescents. The longer the duration of the emotional experience, lasting 1 day or more, and the greater the intensity of loneliness experienced earlier, the higher the scores on mental health issues reported later. Furthermore, with a higher Beta coefficient, the duration of loneliness has a stronger effect on mental health than its intensity.

4.5. Early Intervention to the Vulnerable Groups

The survey results call for early intervention for the vulnerable groups. Screening surveys on loneliness and social support can be conducted for university students when they enter into the system in the first year and then at regular intervals say at the beginning of each academic year. Peer support system among students of the same discipline, dormitory or other kind of academic associations should be developed and encouraged. Student activity facilities and subsidies should be provided by the colleges. Teacher and student relationships outside classroom should be encouraged. The WHO has launched a campaign of health promoting universities and declared the Okanagan Charter, Universities are encouraged to adopt Health Emergency and Risk Management practices advocated by the WHO.

5. Conclusion

The aim of this study was to explore the experience of loneliness during the Covid-19 pandemic and its long-term relationship with mental health in adolescents. The results indicated that, first, loneliness was a more prominent emotion experienced by adolescents during the pandemic compared to the present. Second, the factors contributing to loneliness were related to illness, social distancing, and a lack of care and attention from parents. Third, overall, while the experience of loneliness among adolescents was common and generally occurred over a short duration and at a mild level, there was still a significant proportion of adolescents experiencing loneliness for longer than one day and at a strong level. Fourth, the longer and stronger the experience of loneliness during the pandemic, the higher the risk of developing mental health issues post-pandemic. Fifth, although loneliness played a significant role, support from family and friends could reduce the risk of mental health problems for adolescents.

Emotional loneliness and stress increase academic burnout. To reduce burnout, emotional loneliness and stress should be alleviated through various psychosocial interventions, such as group therapy. Addressing psychological issues and improving the psychological resilience of medical students can also be beneficial (Cem Malakcioglu, 2024). Children and adolescents often feel lonely, and during periods of social isolation, such as during COVID-19, children and adolescents report higher levels (or increased rates) of loneliness. Studies show that loneliness is associated, both concurrently and prospectively, with mental health problems in children and adolescents, and with neurodevelopmental conditions⁴ such as autism spectrum disorder. Therefore, loneliness is a potential risk factor that mental health providers should be aware of. Maintaining social communication, both directly and indirectly, especially through the internet, can be crucial in reducing loneliness. Interventions to address loneliness should be further developed and tested to help children and adolescents with pre-existing mental health problems who experience loneliness, by preventing the worsening of their mental health difficulties, especially anxiety and depression (Hards E, Loades ME et al., 2022).

The Covid-19 pandemic was a significant event for adolescents, leading to negative emotions, of which loneliness is just one example. In turn, loneliness can have long-lasting negative consequences for the mental health of adolescents. However, emotional support from family and friends afterward plays a positive role. To protect adolescents's mental health when they fall into a state of loneliness due to crises, this result suggests that it is necessary to help adolescents quickly escape feelings of loneliness and to provide assistance from family, especially parents and relatives. These are protective factors for adolescents against risks arising from crisis contexts such as pandemics, natural disasters, or the losses and traumas they may face in their lives. Because, although the pandemic has gradually subsided, humanity may continue to face future illnesses or crises, which could happen, and adolescents's lives are not always peaceful. These new findings are crucial for building mental health intervention strategies for adolescents before, during, and after experiencing crises that are culturally appropriate. It is necessary to consider and enhance the roles of family and friends in supporting the mental health of students, particularly those at the borderline and at risk, as a means of emotional support and protection for the mental health of adolescents.

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