Jurnal
Berita Ilmu Keperawatan

Jurnal Berita Ilmu Keperawatan
Vol. 17 (1), 2024
p-ISSN: 1979-2697
e-ISSN: 2721-1797

Associated Factors of Loneliness Among Adolescents in Indonesia during the Pandemic Covid-19

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Abstract: *The coronavirus disease (COVID-19) outbreak in 2020 affected people's lives, particularly adolescents. Loneliness was one of the problems adolescents faced during the outbreak of Covid-19. Loneliness could affect adolescents' health, both mental and physical health. On the other hand, there were a lot of factors that related to loneliness among adolescents. Thus, this research aimed to explore the factors associated with loneliness in adolescents amid the COVID-19 epidemic in Indonesia. Methodology This study was a cross-sectional study. The respondents in this study were 590 adolescents. This study used some questionnaires that were distributed online via social media. The demographic characteristics, The UCLA Loneliness Scale version 3, and the Connor Davidson Resilience Scale (CD-RISC)-25 were included in the questionnaire. The study employed hierarchical linear regression to examine the components contributing to adolescent loneliness. Results: this current study found that the age group of 16-19 YO (β = .117); female adolescents (β = .095); confidence in one's gut feelings, ability to tolerate bad emotions, and the enhancing effects of stress (β = .130); and spiritual influence (β = .094) were associated with increasing loneliness in adolescents. For the positive acceptance of change, a secure relationship (β = -.289); and control (β = -.273) were associated with a lower likelihood of having loneliness. Conclusion: The study's findings suggested that the 16–19-year-old age group, female adolescents, trusting one's gut, allowing negative emotions to persist, amplifying the impacts of stress, and spiritual influence was associated with higher rates of loneliness among teenagers. Positively accepting change, having a stable relationship, and having control were linked to a decreased risk of loneliness. The recent findings should help create programs to reduce loneliness, especially in light of the elements identified as linked.*

Keywords: Adolescents, Cross-sectional, Loneliness, Pandemic of Covid-19, Resilience

INTRODUCTION

A coronavirus-related pneumonia outbreak in Wuhan, Hubei province, in December 2019 has quickly expanded throughout China (Peng et al., 2020). This epidemic spread so quickly throughout the world. The Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) was the cause of the COVID-19 outbreak, often referred to as Coronavirus Disease 2019. The pandemic caused by SARS-CoV-2 was deemed a Public Health Emergency of International Concern by the World Health Organization on January 30, 2020. According to BKKBN, 2011, the population in Indonesia in 2010 had a total population of 237.6 million, of which 26.67% were teenagers (Shabrina & Nursasi, 2018). An estimated 42,061.2 million persons, or 16.5% of Indonesia's total population, are between the ages of 15 and 24, according to data from the 2015 Inter-Census Population Survey. (Andriani, Febria, & Oktavia, 2021).

Numerous initiatives have been taken to stop COVID-19 from spreading, including social distancing, staying at home, closing schools and online learning, limiting various types of extracurricular activities, making adolescents experience social isolation from friends and family for a long period (Houghton et al., 2022). This situation can make individuals lose togetherness with friends, causing boredom and loss of enthusiasm and joy. In addition, several studies have confirmed that

teenage despair and anxiety have increased as a result of the COVID-19 epidemic, along with mental health and anxiety disorders (Cost et al., 2022; Garcia de Avila et al., 2020). Existing research shows that disasters or disease outbreaks that occur can pose a significant risk of mental illness in adolescents, especially loneliness and social isolation (Cénat et al., 2021).

Loneliness is a set of negative emotional states that individuals feel when they feel the difference, or unfavorable conditions between the desired thing and the reality that is happening (Cacioppo et al., 2006). Feelings of loneliness are feelings experienced by a person because genuine social interactions in life differ from one's desires (Domènech-Abella et al., 2017). Loneliness is seen as a severe problem for adolescents. Prior research has indicated that during the COVID-19 pandemic, adolescents experienced a higher prevalence of loneliness than adults did (Barreto et al., 2021; Wang et al., 2020). According to Labrague, De los Santos, and Falguera (2021), the COVID-19 epidemic enhanced the incidence of loneliness symptoms among students in the Central Philippines. Approximately 56.7% of students are experiencing moderate loneliness, and 23.6% of other students are experiencing severe loneliness. This study also found that the protective factors for loneliness were social support, resilience, and coping behaviors.

Loneliness is one of the many problems that are easily found in adolescents but do not get serious attention. The impact of loneliness could not be taken lightly. Improperly managed loneliness increases the risk of mental illness and lowers the quality of sleep. (Kokou-Kpolou, Megalakaki, Laimou, & Kousouri, 2020). Previous research has revealed that adolescents have greater problems, such as higher levels of loneliness, vulnerability to depression, anxiety, and suicidal ideation (Goossens, Klimstra, Luyckx, Vanhalst, & Teppers, 2014). Further, other studies reported a relationship between loneliness to various physical problems, including hypertension, stroke (Valtorta, Kanaan, Gilbody, Ronzi, & Hanratty, 2016), headache, insomnia, and fatigue (Majumdar, Biswas, & Sahu, 2020).

Loneliness can affect all aspects of life, so knowledge about the factors contributing to loneliness is required. Existing research has confirmed various factors related to loneliness, including age (Luhmann & Hawkley, 2016), gender (Nicolaisen, Thorsen, & Development, 2014), and race/ethnicity (Wu, Penning, & Society, 2015). While many studies have confirmed the relationship between loneliness, they are still limited in examining the factors of loneliness.

Resilience is how individuals have positive psychological mechanisms to adapt and survive (Thomas & Revell, 2016). Resilience focuses on the individual's ability from the initial focus on the problem to how the individual empowers his strength to deal with problems in difficult times to achieve personal growth, such as disaster situations and disease outbreaks (Fu Keung Wong & Song, 2008). Resilience in adolescents can be interpreted as how adolescents can see various life difficulties experienced previously as a life lesson to get back up (Zulu, 2019). Resilience is considered important to overcome various problems due to home confinement (Holmes et al., 2020). In actuality, COVID-19 presents severe hazards to adolescents that require them to find the resources to deal with complex problems (Marchini et al., 2021). According to a previous Indian study, during the COVID-19 pandemic, over 45% of respondents felt extremely alone and unresilien (Lahiri, Jha, Acharya, Dey, & Chakraborty, 2021). Growing research indicates that adolescents with higher resilience levels experienced less loneliness. (Falguera et al., 2021). Studies looking at aspects related to loneliness in teenagers during the COVID-19 pandemic have not been extensively researched, even though many have reported findings on resilience to help adolescents reduce stress, anxiety, and depression throughout the pandemic. Thus, this study aimed to investigate the variables linked to loneliness in Indonesian teenage populations during the COVID-19 pandemic.

MATERIAL AND METHODS

This cross-sectional study design was conducted among adolescents in Indonesia. A link to a Google Form published on social networking sites was used to conduct the poll on Facebook and WhatsApp, which social media sites are the easiest to use in Indonesia. Data collection in this study was carried out from August to December 2021.

The G Power program version 3.1 was utilized to calculate the sample size for the study. As a guide recruitment participant, we conducted a power analysis in this study at 90%. Finally, the researcher calculated the sample size using 90% power at the 5% significance level with an effect size of 0.15 and the design effect of non-probability sampling, yielding a sample was 459. The researcher expected a response rate of 22%, further calculating the total sample size as 459 + (28%x 459), which equals 590 participants. The number of samples in the study was 590 adolescents. Sampling in this study used convenience sampling, where the researcher selected a sample among the adolescent population by what the researcher wanted. The inclusion criteria in the selection of the research sample were (1) willing to be respondents; (2) adolescents aged 10-19 years; (3) having the ability to read and write; and (4) compos mentis awareness. Respondents with mental illnesses and those who were less cooperative were the exclusion criteria in this study.

Ethical approval was obtained from the Sekolah Tinggi Ilmu Kesehatan Indonesia Maju with reference no. 2304/Sket/Ka-Dept/RE/STIKIM/X/2021. This research adhered to all applicable ethical guidelines. The procedure of collecting data started once the ethics committee gave its approval. After being told about the study, each participant signed a consent form and gave their informed consent. Authors removed and did not include data from the analysis if a participant did not complete the questionnaire. In addition, if adolescents experience stress or anxiety while taking part in the study, they could drop out at any moment.

Measures

Demographic characteristics

The authors created their demographic data questionnaire. The characteristics included age (10-15 years and 16-19 years), sexes (male and female), region (Java islands and other islands), living together with (family, alone, and others), and learning method in school (online, offline, and hybrid).

Resilience

The Indonesian version of the Connor Davidson Resilience Scale (CD-RISC)-25, which consists of 25 questions, was used to measure resilience. The author obtained permission directly from the creator of the questionnaire via email for use in this research. The Connor-Davidson Resilience Scale 25 (CD-RISC 25) instrument's validity outcomes in Indonesian were I-CVI 0.75 to 1 and S-CVI/Ave 0.96. Convergent validity obtained a value of $r = 0.539$; $p < 0.001$. The Cronbach's Alpha value for internal consistency reliability is 0.917. Test-retest reliability shows an intraclass correlation of 0.732; most statements have an r value > 0.3. The response in each question consists of 5 responses, such as: (0) not true at all, (1) rarely true, (2) sometimes true, (3) often true, and (4)) true most of the time. The CD-RISC-25 is divided into five sub-scales. Factor 1 encompasses personal competence, high standards, and tenacity; Factor 2 pertains to trusting one's instincts, tolerating negative emotions, and enhancing the effects of stress; Factor 3 pertains to positive change acceptance and stable relationships; Factor 4 pertains to control; and Factor 5 pertains to spiritual influence (Connor & Davidson, 2003). The total score ranges from 0 to 100; higher scores indicate greater resilience.

Participants were categorized as having high resilience if the scores were higher than the mean of the total scores (Connor & Davidson, 2003). In this current study, the mean Resilience score was 92.15. Thus, we categorized the participants as having high resilience if they had a score > 92 and low resilience if they had a score ≤ 92. The questionnaire used in this study had good validity and reliability. With an internal consistency of 0.8–0.9, the CD-RISC-25 Indonesian version is valid and reliable (Devi, Purborini, & Chang, 2021; Listyandini & Akmal, 2015; Permata & Listiyandini, 2015). The Cronbach's alpha value for this version was 0.91.

Loneliness

The UCLA Loneliness Scale, version 3, was the second survey utilized in this investigation. There are 20 question items in this measurement tool; 11 are favorable (lonely) things, and 9 are negative (non-lonely). Every question was graded from 1 to 4 on the Likert scale. There are two subscales on the UCLA Loneliness Scale Version 3: negative and positive subscales. Higher scores indicate a greater degree of loneliness. The UCLA Loneliness Scale version 3 has a total score range of 20 to 80. The degree of

loneliness increases with the score (Russell, 1996). In the current study, individuals were classified as feeling lonely (loneliness) if their score was greater than 34 and as not feeling lonely (no loneliness) if their score was less than 34. The UCLA Loneliness Scale, version 3, has an internal consistency of 0.89–0.94, making it valid and reliable (Arimoto & Tadaka, 2019; Kwiatkowska, Rogoza, & Kwiatkowska, 2018; Russell, 1996). This version's Cronbach's alpha value was 0.88.

Statistical analyses

Data analysis was performed using IBM SPSS Statistics for Windows version 22.0. Continuous and categorical variables were presented as means ± SDs and as numbers with corresponding percentages. The differences in resilience by loneliness and demographic variables were examined using the independent t-test and the Chi-square test. Chi-square analysis was conducted because it is suitable for examining relationships or independence among categorical variables. The Pearson correlation gauges the degree to which two variables have a linear relationship. The Pearson correlation test investigated the relationships between demographic traits, resilience, and loneliness. Hierarchical linear regression was used to investigate the elements contributing to teenage loneliness. $P < 0.05$ was used to denote statistical significance.

RESULTS

Characteristics of study participants

Table 1 presents the demographic characteristics of the adolescents. The mean age of adolescents was 16.15 YO (SD ± 1.98), and the majority (n= 391) was aged between 16-19 YO (66.3%). Approximately 414 respondents were female adolescents (70.2%), and 320 lived on Java Island (54.2%). The majority of adolescents (n=520) were living together with their families (91.5%). Regarding the learning method in school, 395 were using the hybrid method (66.9%). The majority of the adolescents (n=376, 63.7%)) had high resilience, and 319 (54.1%) were not feeling loneliness.

Comparison of demographic characteristics and resilience by loneliness

Table 2 compares the adolescents based on loneliness. In the bivariate analysis, there were differences in demographic characteristics and resilience between adolescents who felt loneliness and who did not feel loneliness. Adolescents in the 16-19 age group experienced more loneliness than adolescents in the 10-15 age group. For sex, female adolescents experienced loneliness more compared to male adolescents. Adolescents who had higher resilience experienced loneliness less compared to adolescents who had lower resilience.

Table 1. Participant characteristics (*n*=590).

Variables	Mean/SD	Frequency (n)	Percent (%)
Age	16.15 (1.98)		
10-15 YO		199	33.7
16-19 YO		391	66.3
Sex			
Male		176	29.8
Female		414	70.2
Region			
Java Island		320	54.2
Other Islands		270	45.8
Living together with			
Family		540	91.5
Alone		35	5.9
Others		15	2.5
Learning method in school			
Online		127	21.5
Offline		68	11.5
Hybrid		395	66.9
Total score of loneliness	46.29 (9.80)		
Loneliness			
No loneliness		319	54.1
Loneliness		217	45.9
Sub-scales of loneliness			
Negative	27.39 (6.68)		
Positive	18.90 (4.75)		
Total score of resilience	92.10 (13.65)		
Resilience			
Low		214	36.3
High		376	63.7
Sub-scales of resilience			
The notion of personal competence, high standards, and tenacity	22.53 (5.24)		
Trust in one's instincts, tolerance of negative affect, and strengthening effects of stress	16.91 (4.33)		
The positive acceptance of change and secure relationship	13.25 (3.20)		
Control	7.72 (2.49)		
Spiritual influence	6.69 (1.25)		

Table 2. Comparison of demographic characteristics and Resilience by loneliness

Variable	Loneliness		*t*/X²
	No loneliness	Loneliness	
	Frequency (%)/Mean (SD)	Frequency (%)/Mean (SD)	
Age			
10-15 YO	120 (20.3%)	79 (13.4%)	**4.699***
16-19 YO	199 (33.7%)	192 (32.5%)	
Sex			
Male	112 (19.0%)	64 (10.8%)	**9.247****
Female	207 (35.1%)	207 (35.1%)	
Region			
Java Island	176 (29.8%)	144 (24.4%)	0.245
Other Islands	143 (24.2%)	127 (21.5%)	
Living together with			
Family	289 (49.0%)	251 (42.5%)	1.158
Alone	22 (3.7%)	13 (2.2%)	
Others	8 (1.4%)	7 (1.2%)	
Learning method in school			
Online	72 (12.2%)	55 (9.3%)	0.454
Offline	36 (6.1%)	32 (5.4%)	
Hybrid	211 (35.8%)	184 (31.2%)	
Resilience			
Low	78 (13.2%)	136 (23.1%)	**41.975*****
High	241 (40.8%)	135 (22.9%)	
Sub-scales of resilience			
The notion of personal competence, high standards, and tenacity	23.81 (± 4.50)	21.03 (± 5.65)	**6.636*****
Trust in one's instincts, tolerance of negative affect, and strengthening effects of stress	17.66 (± 4.28)	16.03 (± 4.22)	**4.646*****
The positive acceptance of change and secure relationship	14.13 (± 2.89)	12.22 (± 3.24)	**7.555*****
Control	8.42 (± 2.13)	6.89 (± 2.64)	**7.759*****
Spiritual influence	6.73 (± 1.18)	6.63 (± 1.32)	0.995

Correlation between resilience and loneliness

Table 3 presents Pearson's correlation analysis findings between loneliness and resilience. Loneliness and resilience revealed a strongly negative connection ($r = -0.359$, $p<0.01$). The sub-scales of resilience, which include the ideas of personal competence, high standards, and tenacity; trust in intuition, tolerance to negative affect, and strengthening effects of stress; positive acceptance of change and secure

relationships; control; and spiritual influence, also showed a negative relationship with loneliness (r = -0.325, p<0.01; r = -0.219, p<0.01; r = -0.368, p<0.01; r = -0.391, p<0.01; r = -0.085, p<0.05), respectively.

Table 3. Correlation between resilience and loneliness

	Loneliness	**Sub-scales of loneliness**		**Resilience**	**Sub-scales of resilience**				
		No loneliness	**loneliness**		**Factor 1**	**Factor 2**	**Factor 3**	**Factor 4**	**Factor 5**
Loneliness	1	.902**	.794**	-.359**	-.325**	-.219**	-.368**	-.391**	-.085*
Sub-scales of loneliness									
Negative	.902**	1	.453**	-.249**	-.254**	-.117**	-.236**	-.302**	-.038
Positive	.794**	.453**	1	-.392**	-.313	-.286**	-.426**	-.382**	-.122**
Resilience	-.359**	-.249**	-.392**	1	.912**	.841**	.822**	.788**	.506**
Sub-scales of resilience									
The notion of personal competence, high standards, and tenacity	-.325**	-.254**	-.313**	.912**	1	.652**	.668**	.673**	.452**
Trust in one's instincts, tolerance of negative affect, and strengthening effects of stress	-.219**	-.117**	-.286**	.841**	.652**	1	.594**	.588**	.293**
The positive acceptance of change and secure relationship	-.368**	.236**	.426**	.822**	.668**	.594**	1	.575**	.411**
Control	-.391**	-.302**	-.382**	.788**	.673**	.588**	.575**	1	.283**
Spiritual influence	-.085*	-.038	-.122**	.506**	.452**	.293**	.411**	.283**	1

Table 4. Hierarchical multiple linear regression on loneliness by demographic characteristics and resilience

Variables	Loneliness				Negative				Positive			
	Step 1		Step 2		Step 1		Step 2		Step 1		Step 2	
	β Coef.	*p* value	β Coef.	*p* value	β Coef.	*p* value	β Coef.	*p* value	β Coef.	*p* value	β Coef.	*p* value
Age												
10-15 YO	As reference				As reference				As reference			
16-19 YO	.073	.075	.117	**.002**	.090	**.028**	.120	**.002**	.024	.558	.072	.054
Sex												
Male	As reference				As reference				As reference			
Female	.137	**.001**	.095	**.012**	.160	**< .001**	.127	**.001**	.056	.175	.017	.654
Resilience												
Low	As reference				As reference				As reference			
High			.031	.606			.035	.581			.015	.799
Sub-scales of resilience												
The notion of personal competence, high standards, and tenacity			-.105	.090			-.177	**.006**			.032	.604
Trust in one's instincts, tolerance of negative affect, and strengthening effects of stress			.130	**.018**			.185	**.001**			.009	.867
The positive acceptance of change and secure relationship			-.289	**< .001**			-.163	**.004**			-.367	**< .001**
Control			-.273	**< .001**			-.239	**< .001**			-.228	**< .001**
Spiritual influence			.094	**.027**			.090	**.041**			.066	.118
R2	.026		.226		.037		.158		.004		.221	
R2 Change			.200				.121				.217	
p	**< .001**		**< .001**		**< .001**		**< .001**		.305		**< .001**	

Factors associated with loneliness in adolescents

The findings of the hierarchical multiple linear regression of loneliness are displayed in Table 4. The age range of 16-19 years old (β =.117), female teenagers (β =.095), faith in one's intuition, tolerance for negative emotions, and the strengthening effects of stress (β =.130), as well as spiritual influence (β =.094), were factors that were substantially connected with the rising loneliness. On the other hand, a decreased probability of loneliness was linked to positive acceptance of change, secure relationships (β = -.289), and control (β = -.273).

DISCUSSION

This current study is the first to determine the self-reported correlation of loneliness among adolescents in Indonesia amid the COVID-19 outbreak. In the present investigation, social activity limitations are crucial in light of the COVID-19 pandemic, at least when identifying loneliness-related characteristics. To this end, a hierarchical linear regression model was employed. Loneliness is a condition that cannot be separated from every aspect of life. Loneliness is a form of emotional problem that can be experienced by everyone, with different levels of lightweight between individuals (de Jong-Gierveld, 2021). Previous research in the general population has shown that life stressors can affect loneliness (Hensley et al., 2012).

Our results are significant for some reasons. First, loneliness is a prevalent condition in teenagers. It is estimated that loneliness occurs around 6 to 11 weeks after the lockdown during the COVID-19 pandemic (Magis-Weinberg, Gys, Berger, Domoff, & Dahl, 2021). Second, our study confirms a noteworthy connection between resilience and loneliness in adolescents. Adolescents who have resilience are associated with a lower likelihood of experiencing loneliness. Finally, our research also proves the importance of sociodemographic correlation with loneliness, namely age and gender. Overall, our study demonstrates the importance of sociodemographics in identifying loneliness levels.

According to our research, adolescent girls are more prone than boys to feel lonely. and those adolescents aged 16-19 years have a higher prevalence than adolescents aged 10-15 years. Conversely, previous research stated that men reported more loneliness than women (Barreto et al., 2021). The meanings of loneliness between women and men at a younger age are relatively the same, but experience different experiences and meanings in adolescence (Ebesutani et al., 2012). Loneliness in female adolescents is caused by low self-esteem and low social skills, while loneliness in male adolescents is caused by anxiety due to excessive sensitivity (Panayiotou, Panteli, Theodorou, & Health, 2016). Other studies also reveal that adolescent girls generally get higher social support than boys. (Bokhorst, Sumter, & Westenberg, 2010). Studies have demonstrated that loneliness is associated with lower hormones that defend the body, which can negatively impact blood pressure, heart rate, and immune system function (Solmi et al., 2020).

Furthermore, loneliness in adolescents may increase the likelihood that they would start harmful behaviors as a coping mechanism, such as smoking, binge drinking, overeating, or restricting their diet. These behaviors are risk factors that are strongly linked to mental health issues (Bolzetta et al., 2019). Before the covid 19 pandemic, adolescents in Indonesia spent a lot of time interacting with teachers and friends at school with learning and extracurricular activities, and they also had a lot of space to interact with many people with many facilities for social and recreational activities such as playgrounds and shopping places. The number of those stimuli becomes an obstacle to the loneliness felt by adolescents. Meanwhile, as an effort to stop the COVID-19 virus, it has influenced closing schools and limiting the social contacts of other teenagers outside the immediate nuclear family. This condition may cause a decrease in social contact and a high rate of loneliness in adolescents during the Covid-19 pandemic (Cooper et al., 2021). In a 2021 study, Leodoro et al. highlighted the value of having adequate emotional support from friends and family during trying times. They can provide people with tools to get over feelings of loneliness brought on by social isolation and lockdowns (Falguera et al., 2021). Therefore, adolescents during the pandemic may be more susceptible to loneliness, and the risk factors for

loneliness during the COVID-19 pandemic may differ from adolescents before the COVID-19 pandemic.

The fact that respondents' adolescent characteristics are accurately represented in Indonesia makes this study strong. Self-reported questionnaires were used in this study, which constituted a restriction. Certain behaviors were either over- or under-reported.

CONCLUSIONS

In this cross-sectional research, we discovered that the frequency of loneliness among adolescents in Indonesia was 45.9%. During the Covid-19 pandemic, 63.7% of teenagers showed resilience. Teenagers between the ages of 16 and 19; female adolescents; confidence in one's gut feelings; tolerance for bad emotions and the intensifying effects of stress; and spiritual influence were all linked to an increase in adolescent loneliness. A reduced risk of loneliness was linked to positive acceptance of change, stable relationships, and control. The present findings, particularly the identification of contributing variables, should help create loneliness-prevention programs.

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