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Determinants of Adolescent Resilience Levels in Surabaya City, East Java Province, Indonesia

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Abstract

Assessing adolescent resilience may provide valuable insights into adult resilience. This study aimed to analyze the relationship between determinants and adolescent resilience in Surabaya City. The participants of this cross-sectional study were 277 adolescents aged 12–19 years who were in senior high school. The outcome was the resilience levels. This study's findings indicated relationships between resilience levels and stress experience (p-value = 0.01), access to mental health information (p-value = 0.00), life satisfaction (p-value = 0.00), family harmony (p-value = 0.03), presence of adults to share (p-value = 0.04), feeling safe at home, school, and community (p-value = 0.00), perception of ideal body image (p-value = 0.03), and suicidal urges (p-value = 0.00). The multivariate analysis showed that a variable related to resilience was satisfaction with life (p-value = 0.04, 95% CI 1.07–24.22). Adolescents dissatisfied with their lives had a 5.09-fold greater risk of developing into established categories of resilience. Therefore, intervention efforts are necessary to increase adolescents' resilience levels.

Keywords: adolescent, level, resilience, stress, prevention

Introduction

Global data on mental health, according to the 2021 World Health Organization report, indicate that one in seven adolescents aged 10–19 years experience mental health issues, which mainly include depression and anxiety; suicide cases are the fourth leading cause in the 15–19 age group.[1] In younger adolescents (11–16 years old), the prevalence of mental health problems was the same among male and female adolescents. However, in older adolescents (17–19 years old), mental health issues are more common in female adolescents, with almost 1 in 4 female adolescents (23.9%) experiencing mental health issues, compared to 1 in 10 male adolescents (10.3%).[2] Self-harm and suicide attempts are six times more prevalent among adolescents aged 11–19 years[3] with mental health issues (32.8%) than among those without (5.1%).[4] Fifty percent of mental health issues occur by the age of 14 and 75% by the age of 24.2. Approximately 10% of those aged 5–16 years have a clinically diagnosable mental health issue, yet 70% of them have not received appropriate interventions at a fairly early age.[4,5]

The national prevalence of depression in Indonesia was 1.4% in 2023, with the young adult group aged 15–24 years occupying the highest prevalence of depression at 2%.[2] The 2022 Indonesian adolescent mental health survey found that 5.5% of adolescents aged 10–17 years had mental disorders.[2] Of these, 1% had depression, 3.7% had anxiety, 0.9% had post-traumatic stress disorder, and 0.5% had attention-deficit/hyperactivity disorder. Depression is a mental disorder prone to occur in adolescents. Data also show that 6.1% of the Indonesian population aged 15 years and older have mental disorders, including those in Surabaya City, with an 18.8% prevalence of those suffering from depression, anxiety, and other mental disorders.[2]

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Primary health care (PHC) is spread across 31 subdistricts in Surabaya City, each of which has a psychologist. These PHCs provide mental health care through outpatient care, with a visit rate of 33.22%, which is accessible to adolescents. Common mental health issues include drug-related, psychotic, and neurotic issues.[6] From the results of previous studies, junior and senior high school students in Surabaya City experienced emotional disorders at a rate of 60.17%, with symptoms of loneliness at 44.54%, anxiety at 40.75%, and suicidal attempts at 7.33%.[2,5,7]

Failure to address adolescent mental health issues will ultimately impact adulthood, negatively affecting physical and mental health and limiting the potential to live a good life in adulthood.[1] Adolescent health entails not only physical but also mental health. The adolescent health status in the global health indicators includes adolescent birth rates as an indicator of global fertility. Mental health is included among the 100 global health indicators.[8]

Adolescents are vulnerable to mental disorders, and their success or failure in addressing these issues depends on the risks and protective factors involved. The interaction between risks and protective factors affects resilience.[9] A person's resilience lies in adapting well to adversity, threats, tragedies, traumas, and even severe stressors.[10] Resilience in adolescents is similar to that in adults. Examining resilience during adolescence may provide valuable insights into adult resilience.

Highly resilient adolescents are less likely to have mental health issues.[11] Resilience levels consist of individual, group (family and peer group), and community levels. At the individual level, the focus is on assessing the extent to which individuals have the resources to manage adversity and emotional, social, and physiological recoveries after trauma. Individual resilience is influenced by family, peer group, and community characteristics. A resilience concept for problem-solving at the individual level is more appropriate for research because it has a greater likelihood of increasing resilience at that level.[12]

This study determined the extent of the resilience of adolescents in Surabaya City, thus preventing the emergence of mental health issues in adolescents on a widespread basis. This study is necessary to reduce cases of adolescent mental health problems in general in Indonesia, specifically in Surabaya City, by observing the determinants. In addition, this study provided basic evidence for developing appropriate interventions to improve the resilience of city adolescents. Therefore, this study aimed to analyze the determinants of adolescent resilience levels in Surabaya City.

Method

This quantitative study used a cross-sectional design conducted from June to August 2023 in Surabaya City, East Java Province, Indonesia. Data were collected through an online questionnaire using Google Forms on June 1–15, 2023, among Surabaya adolescents. The dependent variable was resilience level, and the independent variables were stress experience, access to mental health information, life satisfaction, family harmony, presence of adults to share, feeling safe at home, school, and community, perception of ideal body image, and suicidal urges. The questionnaire consisted of 20 items categorized as "yes," "no," and "sometimes." This instrument was modified from the Adolescent and Young Adult Health Questionnaire (11–20 Years).[13]

The outcome measured in this study was the resilience level. The instrument used to assess resilience was the Nicholson–McBride Resilience Questionnaire (NMRQ). The questionnaire consisted of 12 items that assessed an individual's condition using a Likert scale of 1–5. Score 1 indicated strong disagreement, whereas score 5 indicated strong agreement. The total score can be classified into four categories: developing level with a score of 0–37; established level with a score of 38–43; strong level with a score of 44–48; and exceptional level with a score of 49–60.

The sample size was determined using the Lemeshow formula with $\alpha = 0.05$ and β-power 90%,[14] and the study population consisted of adolescents from Surabaya City. The minimum number of participants was 277 adolescents aged 12–19 years in senior and vocational high schools in Surabaya City. The samples were obtained using the random sampling technique: school data were obtained from the Surabaya City Education Office by observing area-based school information (the West, East, South, North, and Central Surabaya). Each of the five areas was represented by a randomly selected school. The respondents came from those five representative schools. A random selection was made from all the students at each selected school to select the respondents.

A Google Forms link outlining information on the research and consent form to be a respondent was delivered to the selected students via their teachers in charge of student affairs at each selected school. For minor participants aged 12–16 years, informed consent was required from their parents. The participants aged 17 years and older were allowed

to provide informed consent. The respondent response rate was 60%.

This study performed bivariate statistical analysis using a Chi-square test to examine the relationships between several factors: stress experience, access to mental health information, life satisfaction, family harmony, presence of adults to share, feeling safe at home, school, and community, perception of ideal body image, and suicidal urges. For the multivariate analysis, binary logistic regression was employed to classify resilience levels into two categories: "developing-established" (coding as 1) and "strong-exceptional" (coding as 0). The binary logistic regression model demonstrated a robust fit, as indicated by the non-significant Hosmer–Lemeshow test and overall percentage classification table. The significance level was set at $\alpha = 0.05$ for all statistical tests. The risk ratio (RR) was also calculated to assess the risk or condition associated with adolescent resilience levels with a 95% Confidence Interval (CI). All statistical analyses were performed using the free version of the STATA software.

Results

A total of 277 respondents comprised 70.8% female and 29.2% male adolescents. Regarding education levels, more than half of the respondents (81.9%) were in senior high school, while the remaining 18.1% were in junior high school. In terms of grades, most respondents were in grade 11 at 36.8%, followed by grade 12 at 22.7%, and grade 10 at 21.7% at the senior high school level. The remaining respondents were junior high school students in grade 7 (9.7%), grade 8 (8.7%), and grade 9 (0.4%). The area distribution covers East Surabaya at 29.6%, West Surabaya at 25.3%, South Surabaya at 24.2%, North Surabaya at 11.2%, and Central Surabaya at 9.7%.

A total of 26% of the adolescents suffered from several mental health issues, including stress, anxiety, eating disorders, body image concerns, depression, suicidal urges, and suicidal behavior. Additionally, 78% had experienced mild, moderate, or severe stress. A total of 63% of adolescents had access to mental health information. Information is obtained from websites, smartphone applications, PHCs, and other media, such as educational materials from college students and printed media, including posters, brochures, or leaflets. The highest resilience level was in the developing category, at 58.1%. These findings highlighted the need for further resilience development, as resilience remains relatively low. The demographic characteristics of adolescents in Surabaya are presented in Table 1.

According to Table 2, based on the bivariate analysis, a significant relationship (p-value ≤0.05) was found between resilience level and the determinants, including stress experiences, life satisfaction, family harmony, presence of adults to share, feeling safe at home, school, and community, perception of ideal body image, suicidal urges, and access to mental health information. Statistical analyses showed that the adolescent resilience level had a significant relationship (p-value <0.05) with stress experience, access to mental health information, life satisfaction, family harmony, the presence of adults to share, feeling safe at home, school, and community, perceptions of an ideal body image, and suicidal urges. Several of these determinants also indicated risk factors for adolescent resilience. Adolescents experiencing stress had a 1.16 times greater risk of developing established resilience levels; therefore, the success of interventions aimed at improving resilience may rely on strategies to prevent stressors or detect symptoms of stress.

Adolescents with no access to mental health information were 14% less likely to develop established resilience levels; hence, easier access to information among adolescents may lead to stronger to exceptional resilience levels. Adolescents who were sometimes satisfied and dissatisfied with their lives had a 1.2 to 1.3 times (95% CI) greater risk of developing established resilience levels. Adolescents who did not have the presence of an adult to share with had a 1.1 times greater risk of developing established resilience levels; therefore, the presence of an adult to confide in is needed to improve their resilience. Adolescents who did not feel safe at home, school, and the community had a 1.2-fold greater risk of developing established resilience levels. Therefore, fostering a sense of safety at home, school, and in the community is necessary to promote better resilience.

Adolescents with suicidal urges had a 1.2 times greater risk of developing established resilience levels. However, based on the 95% CI, adolescents' perception of their body image was not significantly related to developing an established level of resilience; thus, in this case, the perception of an ideal body image was not a risk factor for developing an established level of resilience. These findings suggested that adolescents' perception of an ideal body image was not a determinant of the success of their resilience efforts.

Table 1. Demographic Characteristics of Respondents (N = 277)

Characteristic	n	%
Sex		
Male	81	29.2
Female	196	70.8
Education Level		
Junior High School	50	18.1
Senior High School	227	81.9
Grade		
7	27	9.7
8	24	8.7
9	1	0.4
10	60	21.7
11	102	36.8
12	62	22.7
Age		
12–15 years	53	19.1
16–19 years	224	80.9
Area		
East Surabaya	82	29.6
West Surabaya	70	25.3
North Surabaya	31	11.2
Center Surabaya	27	9.7
South Surabaya	67	24.2
Experiences of mental health difficulties		
Yes	73	26.4
No	99	35.7
Do not know	105	37.9
Experiencing stress		
Yes	216	78
No	61	22
Accessing mental health information		
Yes	167	60.3
No	110	39.7
Source of information		
Primary Health Care	17	10.2
Website	73	43.7
Smartphone applications	60	35.9
Printed media	3	1.8
Others	14	8.4
Resilience level		
Developing	161	58.1
Established	75	27.1
Strong	34	12.3
Exceptional	7	2.5

The bivariate analysis (Table 2) revealed eight significant variables. However, after multivariate analysis was conducted to control for the influences of other variables, the relationship observed in the bivariate analysis was likely influenced by other variables outside the variables studied or confounding variables. The binary logistic regression analysis indicated a robust fit for the model, as evidenced by a non-significant Hosmer–Lemeshow test (p-value = 0.958). Furthermore, the model demonstrated substantial predictive accuracy, with 84.8% of cases correctly classified, as reflected in the overall percentage of the classification table. From the results of the multivariate analysis, only one variable had a statistically significant relationship with the level of resilience: the "life satisfaction" variable, with a significance value of p-value = 0.04 and an adjusted RR of 5.09 (95% CI 1.07–24.22). Therefore, adolescents who were dissatisfied with their lives had a 5.09-fold greater risk of developing an established resilience level.

Table 2. Relationship between Determinant Factors and Resilience Levels Among Adolescents in Surabaya City (N = 277)

Category	Resilience Level						Crude RR (95% CI)	p-value	Adj RR (95% CI)	p-value
	Developing-Established		Strong- Exceptional		Total					
	n	%	n	%	n	%				
Stress experience										
Yes	190	87.9	26	12.0	216	100.0	1.16 (1.00–1.36)	0.01*	0.92 (0.36–2.30)	0.84
No	46	75.4	15	24.6	61	100.0	ref			
Accessing mental health information										
Yes	146	87.4	21	12.6	167	100.0	ref			
No	90	81.8	20	18.2	110	100.0	0.86 (0.77–0.97)	0.00*	0.75 (0.35–1.60)	0.45
Life satisfaction										
Yes	24	68.5	11	31.4	35	100.0	ref			
No	58	95.1	3	4.9	61	100.0	1.38 (1.10–1.75)	0.00*	5.09 (1.07–24.22)	0.04*
Sometimes	154	85.1	27	14.9	181	100.0	1.24 (0.98–1.57)	0.01*	1.71 (0.64–4.59)	0.29
Family harmony										
Yes	111	80.4	27	19.6	138	100.0	ref			
No	17	89.5	2	10.5	19	100.0	1.11 (0.93–1.32)	0.34	0.87 (0.07–9.83)	0.91
Sometimes	108	90.0	12	10.0	120	100.0	1.12 (1.01–1.24)	0.03*	1.50 (0.59–3.76)	0.40
Presence of adults to share										
Yes	90	79.6	23	20.4	113	100.0	ref			
No	94	89.5	11	10.5	105	100.0	1.12 (1.00–1.26)	0.04*	1.25 (0.50–3.14)	0.63
Sometimes	52	88.1	7	11.9	59	100.0	1.11 (0.97–1.26)	0.16	1.70 (0.65–4.44)	0.28
Feeling safe at home, school, and community										
Yes	78	75.0	26	25.0	104	100.0	ref			
No	15	93.8	1	6.2	16	100.0	1.25 (1.05–1.48)	0.33	1.82 (0.17–18.97)	0.62
Sometimes	143	91.1	14	8.9	157	100.0	1.21 (1.08–1.37)	0.00*	2.17 (0.90–5.22)	0.08
Perception of ideal body image (weight and height)										
Yes	61	80.3	15	19.7	76	100.0	ref			
No	151	89.9	17	10.1	168	100.0	1.12 (0.99–1.26)	0.03*	1.60 (0.70–3.60)	0.27
Sometimes	24	72.7	9	27.3	33	100.0	0.90 (0.71–1.15)	0.38	0.55 (0.19–1.55)	0.26
Suicidal urges										
Yes	80	94.1	5	5.9	85	100.0	1.20 (1.08–1.34)	0.00*	1.79 (0.55–5.76)	0.33
No	97	78.2	27	21.8	124	100.0	ref			
Sometimes	59	86.8	9	13.2	21	100.0	1.11 (0.97–1.27)	0.15	0.81 (0.30–2.11)	0.66

Notes: Crude RR = crude risk ratio, Adj RR = adjusted risk ratio, *= significant value (<0.05)

Discussion

The demographic characteristics of adolescents in this study were predominantly female, aged 16–19 years. Older age and lower economic status have a greater impact on emotional pressure among female adolescents, who have lower perceptions of mental health. However, female adolescents exhibited higher prosocial behavior scores, acting as a buffer against mental health issues.[15] Sex is a strong and significant explanatory factor in the perception of self-health in adolescents. Females demonstrated a significantly higher perception of self-health.[16]

However, the results of several studies on resilience indicated that stress records are a determining factor in the success of resilience-increasing efforts.[17-20] There is an interaction between resilience, stress, and well-being. Resilience and low stress levels can predict better well-being.[17] Stress felt is a high-risk factor for resilience (p-value <0.001).[18] Resilience serves as a strong indicator of adolescents' vulnerability to stress or depression. Improving resilience against psychological pressure in adolescents is essential for improving their well-being.[19] There is a positive relationship between daily stress, anxiety, and resilience.[20]

In the context of COVID-19, clear and accessible information has played a crucial role in developing adolescents' resilience to face the pandemic. The raising of awareness has led to improved prevention and protection.[21] One of the determinants in improving resilience is information access that comprehensively promotes resilience.[22] Another important factor influencing the resilience level based on the results was life satisfaction. In terms of contentment with current life, the analysis results revealed that being content with the life one faces is a related factor in the success of efforts to increase resilience, with a significance level of 0.0029. A low degree of life contentment is predicted to lead to prominent symptoms of depression and anxiety.[23] Furthermore, the findings of a study across 81 cities in Turkiye, using SEM analysis, indicated a relationship between resilience, contentment, and hope. Resilience was found to directly and indirectly affect individual subjective contentment.[24] A high level of resilience affects life satisfaction (p-value = <0.001). This indicates that when individuals possess high resilience, they are satisfied with their current lives.[25]

A good support system can improve adolescent resilience and life satisfaction.[26] In addition, family function significantly predicts satisfaction with life.[27] The effective ways to increase life satisfaction, which affects the adolescent resilience level, are establishing life goals, having positive emotions, and receiving social support from family, friends, and the school environment.[28] Adolescents with life goals and positive emotions feel satisfied with their lives.[29] The contributing factors to life satisfaction in adolescents are social support from family, friends, and the school environment.[30]

Another factor related to the level of resilience is the harmonious family, in which family harmony is a determinant of the success of resilience-increasing efforts, with a significance level of 0.015. Adolescents whose families have high resilience also exhibit a higher resilience level.[31] A harmonious family is a function of the family as a place to grow.[32] The family function significantly predicts resilience, with each family member's contribution and the quality of the family unit affecting resilience levels. A resilient family demonstrates a strong focus on family harmony, communication, finances, and family-focused events.[27]

In addition, an influential factor in the level of resilience is the presence of adults with whom to share the issues, which was revealed to be a determinant factor in the success of resilience-increasing efforts. Communication with empathy (p-value <0.005) is an alternative to boost resilience.[33] The closeness of adolescents with adults significantly impacts resilience levels. Adolescents who maintain a high level of closeness with their parents, compared to those with a low level, have a higher resilience level.[34] Sharing inherent trauma is a form of treatment to ensure physical safety at the individual level.[35]

Another influential factor in the resilience assessment was feeling safe at home, school, and community. The results indicated that the feeling of safety was the most prominent determinant of adolescent resilience, with a significance of 0.003. Social support from family, peers, and the community enables us to increase the individual resilience level.[25] Enhancing individual capacity generally creates community resilience and vice versa; a resilient community contributes to the development of resilient individuals who are capable of facing crises. This is also in line with the social capital approach.[36]

Undeniably, apart from the aforementioned, the perception of an ideal body image is also related to resilience. Perception of the body causes the emergence of symptoms of depression and anxiety disorders.[37] Findings suggested that illness perception, body image, and personality were determinants of resilience. Last, suicidal urges are also a factor that determines the level of adolescent resilience. Suicidal behaviors notably occurred in groups with lower resilience levels (p-value <0.001). The resilience level showed a significant protective effect on longitudinal life planning (OR 0.25, p-value

= 0.003).[18] Psychological resilience is a potential factor in suicidal attempts.[38] Individuals who lose resilience face high risks of committing suicide.[39]

In Surabaya City, several programs managed by the health and non-health sectors can indirectly improve adolescent resilience, although they have not specifically targeted mental health. The first program is the Anti-Juvenile Delinquency Cadre program, led by the Surabaya City Youth and Sports Office, which aims to reduce the number of juvenile delinquency cases in the city. Second, the adolescent integrated health care program and health ambassadors, led by the Surabaya City Health Office, aim to empower adolescents in the health sector by creating peer educators.[40]

The adolescent resilience levels assessed in this study will enable further studies to determine appropriate interventions based on resilience levels. The limitation of this study was that the determinants and resilience levels were measured in the same period, making it difficult to assess causal relationships. In addition, the level of resilience observed was at the individual level, excluding family resilience, although family and community factors are related to the level of resilience. The programs implemented are still partial and not comprehensive; therefore, a more comprehensive program is needed with integration and contribution from relevant sectors or the expansion of programs to various youth groups.

Conclusion

Life satisfaction has the strongest relationship with resilience. The higher the life satisfaction of adolescents, the higher their level of resilience. Adolescent life satisfaction can be achieved in several ways, including having life goals, positive emotions, and social support from family, friends, and school. Therefore, efforts to improve adolescents' individual abilities to set life goals for the future, manage emotions to foster positive emotions, and increase social support are needed. To develop mental health programs for adolescents, relevant stakeholders should consider adolescents' personal skills, such as emotional regulation and life goal planning, as well as the influence of parents, families, and social environments (schools and communities), as these factors are significantly related to the condition of adolescent resilience to mental health issues. Other researchers interested in studying adolescent health should focus on the influence of family on resilience.

Abbreviations

PHC: primary health care; RR: risk ratio; CI: confidence interval.

Ethics Approval and Consent to Participate

Ethical approval was obtained from the Faculty of Dentistry, Airlangga University, with approval number 1189/HRECC.FODM/X/2023. Informed consent requires parents' consent as guardians because teenagers are not yet old enough.

Competing Interest

The authors declare that they have no competing interests.

Availability of Data and Materials

The primary author can provide all data and materials from this study.

Authors' Contribution

RDR designed the research. FST and DS provided advice and reviewed the manuscript. RDR, MDI, and AR wrote and proofread the manuscript and did the data analysis. The authors read and approved the final manuscript.

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