Jurnal Ners

Volume 21 Issue 2, May 2026, p. 214-223
http://dx.doi.org/10.20473/jn.v21i2.73199

Original Article Open Access

Relationship between father involvement, adolescent stress, and smoking behavior in Indonesia: A cross-sectional study

Zata Ismah[1]* Fatma Indriani[2], Rizky Indah Syahfitri[3], Citra Cahyati Nst[4], Rahmatusyifa Rahmatusyifa[5], Ikrimah Nafilata[6,7], Zaharuddin Zaharuddin[1], and Cholila Shinta Jatisari[1]

[1] Faculty of Psychology, Universitas Islam Negeri Raden Fatah Palembang, Palembang, Indonesia

[2] Faculty of Public Health, Universitas Islam Negeri Sumatera Utara, Medan, Indonesia

[3] Faculty of Public Health, Universitas Andalas, Padang, Indonesia

[4] Faculty of Medicine, Denistry & Health Sciences, The University of Melbourne, Melbourne, Australia

[5] Faculty of Medicine, Public Health, and Nursing, Univeristas Gadja Mada, Yogyakarta, Indonesia

[6] Varians Statistik Kesehatan, Tanggerang, Indonesia

[7] Blood Bank Technology Study Program, STIKES Guna Bangsa Yogyakarta, Yogyakarta, Indonesia

*Correspondence: Zata Ismah. Address: Universitas Islam Negeri Raden Fatah Palembang, Palembang, Indonesia. E-mail: zataismah@radenfatah.ac.id

Responsible Editor: Rizki Fitryasari

Received: 23 May 2025○ Revised: 27 April 2026 ○ Accepted: 26 May 2026

ABSTRACT

Introduction: Adolescents experiencing fatherlessness often reported feelings of emotional deprivation and a lack of affection and quality time with their fathers compared to their peers. Some adolescents resorted to smoking as a coping mechanism. Therefore, this study aimed to examine the relationships between father involvement, adolescent stress, and smoking behavior, and the path model linking these variables.

Methods: This cross-sectional study was conducted among high school adolescents in Medan City, Indonesia. A total of 1,221 adolescents were selected using cluster random sampling. Data on father involvement, stress, and smoking behavior were collected using questionnaires. The data were analyzed using chi-square tests and path analysis.

Results: Adolescents in the fatherless group showed higher levels of severe stress compared to those with positive father involvement, particularly among females and early adolescents. Severe stress was also associated with higher smoking behavior both males and females, particularly among late adolescents. Lower father involvement was significantly associated with increased stress (β=-0.12, p<0.0001).) and smoking behavior (β=-0.11, p<0.0001). Stress was associated with smoking behavior and potentially mediated the association between father involvement and smoking behavior (R^2 = 0.02).

Conclusions: Father involvement was associated with adolescent psychological well-being, while stress was potentially associated with smoking behavior. These associations differed according to age and sex, with females and early adolescents experiencing low father involvement showing a higher risk of severe stress, whereas late adolescents with severe stress were more likely to engage in heavy smoking.

Keywords: adolescent, father involvement, fatherless, stress, smoking

Introduction

Parental divorce can reduce father involvement in children's lives and may affect children's emotional and social development. According to (Adristi, 2021) reported that amount 30.83 million early childhood children, around 2,170,702 children who are victims of parental divorce will prefer to live with their mothers because they are much closer than with their fathers. Juvenile delinquency remains a significant public health and social problem among Indonesian adolescents. National

data indicate that cases of juvenile delinquency increased from approximately 3,145 cases in 2018 to 6,325 cases in 2021, reflecting a more than two-fold rise within three years, and involving behaviors such as theft, promiscuity, and substance misuse (Putri *et al.*, 2024). In school-based surveys, 9% of adolescents reported smoking, and 47.5% were categorized as having moderate levels of delinquent behavior, including fighting and other risk behaviors (Maryuti and Sari, 2022). According to the 2023 Survey Kesehatan Indonesia, 4.6% of adolescents aged 10–18 years reported daily smokers in the past month, with higher prevalence among males, highlighting the relationship between juvenile delinquency and health-risk behaviors. Previous studies have also reported limited father involvement among Indonesian families, with Indonesia with Indonesia being described as one of the countries experiencing a high prevalence of father absence (Dais *et al.*, 2024). Unfortunately, there is still very little previous research that quantitatively examines the percentage of children who experience stress due to fatherless. This will greatly affect Indonesia in determining the direction of policy related to the problem of stress in its society, due to the lack of data and facts in the field. In fact, the impact fatherless alone will be different at each stage of the age of the child left behind, especially teenagers.

Adolescents with limited father involvement may experience feelings of emotional deprivation, sadness due to a lack of closeness with their fathers, and a desire for affection and quality time comparable to that experienced by their peers. Negative interactions with fathers may also contribute to emotional distress among adolescents. These feelings are negative emotions that if they occur continuously can cause stress (Hidayah, Ramli and Tassia, 2023). In adolescents, stress usually appears when thinking about the future (Nindhita and Pringgadani, 2023). Personality, mental health and self-defence from stress will be difficult to handle for adolescents who do not receive care from both parents (Salsabila, Junaidin and Hakim, 2020).

Limited father involvement was associated not only with adolescent stress but also with smoking behavior among adolescents (Wibiharto, Setiadi and Widyaningsih, 2021). In 2019, approximately 1 billion people worldwide were reported to be active smokers, consisting of 878 million men and 153 million women (World Health Organization, 2021). As many as 25 million of these smokers are adolescent (Tan and Dorotheo, 2021). In Indonesia, the prevalence of smokers among adolescent aged 13 to 18 years is 38.3%. This percentage is much higher than neighbouring countries such as Malaysia (20.6%), Thailand (17.2%), and Myanmar (17.2%). Based on the WHO (2015) report, in Indonesia, the prevalence of smoking among adolescent increased from 7.2% in 2013 to 9.1% in 2018. Based on data (Badan Pusat Statistik, 2022), in North Sumatra the prevalence of smokers among adolescent aged 15-24 years was 13.54% in 2022.

Previous studies have suggested that adolescents may engage in smoking behavior as a coping mechanism for emotional distress and mood instability, particularly among those experiencing family conflict or non-harmonious family relationships (Hidayah, Ramli and Tassia, 2023). These conditions may contribute to psychological distress and increase the risk of negative behaviors among adolescents. In this context, limited father involvement has also been associated with various negative psychological and behavioral outcomes in children (Fitroh, 2014). Psychological distress experienced by adolescents may then lead them to seek coping mechanisms to reduce emotional discomfort. One behavior that is often chosen is smoking, as cigarettes containing nicotine are perceived as provide temporary feelings of calmness and relaxation, particularly adolescents experiencing stress or depressive symptoms (Zakiyah *et al.*, 2023).

Persistent stress during adolescence has consistently been identified as a key correlate of maladaptive coping behaviors, including substance use, such as smoking. Across both the stress–coping framework and attachment-based perspectives, adolescent smoking can be understood as a behavioral response emerging from difficulties in emotional regulation during psychological distress. Previous studies suggest that limited familial support, particularly reduced father involvement, may constrain adolescents' access to the emotional resources needed for adaptive stress management, thereby heightening their vulnerability to psychological stress (Wang *et al.*, 2021; Tian *et al.*, 2022). In this context, stress may represent an important psychological pathway through which lower father involvement is associated with increased smoking. However, despite growing evidence linking paternal involvement, adolescent stress, and health-risk behaviors, these relationships have often been examined separately, leaving a limited understanding of how they coexist within an integrated model during adolescence.

Furthermore, smoking among adolescents is associated with low self-esteem, rebelliousness, stress, and/or anxiety (Glassman *et al.*, 1990). Other research shows a higher prevalence of stress among active smokers. Adolescents who experience depression start smoking to control or relieve their mood symptoms. The relationship can also be two-way; stress or bad events trigger the habit of smoking, which develops into depression, which causes neurochemical changes in the brain that affect smoking behavior (Murzen, 2024). Based on the problems above, the Study aims to examine the relationships between father involvement, adolescent stress, and smoking behavior. Specifically, it seeks to: 1) assess the relationship between father involvement and stress levels, 2) examine the relationship between stress

levels and smoking behavior 3) test a path model to evaluate both direct and indirect relationships among father involvement, adolescent stress, and smoking behavior.

Materials and Methods

Study Design

This study employed a quantitative method with a cross-sectional design. A cross-sectional approach was used to examine the relationships between father involvement, adolescent stress, and smoking behavior.

Setting

This study was conducted in Medan City which consists of 21 sub-districts. The selection of sub-districts was carried out using C-Survey software which was adapted from the WHO method in surveying the incidence of health problems in a region. Then from the 21 data, it was run in the software to be selected by cluster sampling to select randomly Cluster Random Sampling. The results showed that 13 sub-districts were selected, namely Medan City, Medan Labuhan, Medan Johor, Medan Sunggal, Medan Deli, Medan Tembung, East Medan, Medan Amplas, West Medan, Medan Tuntungan, Medan Selayang, Medan Belawan, and Medan Polonia.

Population dan Sample

The population in this study was 81,038 adolescent who were still in high school in Medan City. While the number of samples in this study was 1,221 adolescents. The sample is part of the population, namely adolescent with high school level. The inclusion criteria in this study were: (1) Adolescents with a living father were included to ensure that respondents were able to evaluate paternal involvement and father role, both physically and emotionally, and to prevent missing or entirely empty responses on the father involvement instrument; (2) Adolescents who had lived in Medan for at least 5 years were included to ensure sufficient exposure to the local social and environmental context and to minimize potential bias related to residential mobility, as stress and smoking behavior are highly influenced by external environmental and peer-related factors during adolescence. There were 2 stages of sampling, namely the first cluster random sampling to select the cluster level in this case the sub-district. The second stage is to use the technique accidental sampling to select samples. This technique is by means of any teenager who coincidentally meets the inclusion criteria and meets the researcher in each selected sub-district can be used as a sample. This technique is used considering the unavailability of sampling frame by name by address in the city of Medan, so that random sampling techniques are not possible.

Variables

This study consisted of three main variables, namely father involvement, stress and smoking habits. Then the demographic variables that were also analyzed were gender (male and female) and the age group of adolescents, namely early adolescents 12-17 years and late adolescents 18-22 years. Father Involvement is defined as a father both physically and psychologically in the daily life of the child. Stress is defined as a psychological condition in which adolescents experience difficulty in coping with daily life demands, resulting in emotional and physiological responses such as distress, fatigue, low mood, and restlessness. Smoking behavior is defined as the pattern of cigarette use among adolescents, including both the frequency of smoking and the presence of withdrawal-related symptoms, such as distress, fatigue, decreased mood, and restlessness when not smoking.

Instrument

The data used comes from primary data through self-completion of questionnaires. Father involvement was measured using the Fatherhood Scale-64 (FS-64), a questionnaire developed by G.L. Dick (2004). The FS-64 was translated and linguistically adapted into Indonesian prior to data collection. The adapted instrument was then pilot-tested among 100 adolescents with characteristics similar to the study respondents to assess clarity and reliability. The instrument demonstrated excellent internal consistency, with a Cronbach's alpha value of 0.96. The instrument consists of 64 items across nine subscales. The questionnaire consisted of positively and negatively worded items with five response options: never, rarely, sometimes, often, and always. Positive items were scored from 5 to 1, whereas negative items were scored from 1 to 5. Based on the scoring guidelines of the FS-64, the total father involvement score was 320 and was categorized as follows: fatherless (<128); moderate (128-256); positive role (>256).

The Perceived Stress Scale-10 (PSS-10) was used to measure stress levels among the adolescents. The instrument consisted of 10 items rated on a five-point Likert scale ranging from never to always. Both positively and negatively worded items were included in the scale. Positive items were scored from 4 to 0, and negative items were scored from 0 to 4. The total stress score was 40 and categorized as severe stress (>26), moderate stress (15–25), or normal stress (0–14). In this study, the PSS-10 demonstrated good reliability, with a Cronbach's alpha value of 0.84.

Adolescent smoking behavior was measured using the Glover–Nilsson Smoking Behavioral Questionnaire (GN-SBQ). The instrument consisted of 11 items using a Likert scale with response options ranging from never to always and not at all to very important. The item scores ranged from 0 to 4, with a total possible score of 44. Based on the scoring guidelines, smoking behavior was

categorized as no smoking (0), light smoking (1–22), and heavy smoking (>23). The GN-SBQ demonstrated excellent reliability in this study, with a Cronbach's α value of 0.94.

Data Collection Techniques

Data collection involved recruiting high school adolescents who met the inclusion criteria and provided informed consent. Enumerators assisted when needed, reviewed completed questionnaires for completeness, and provided souvenirs as tokens of appreciation. Data were collected by trained public health students using the Kobo Toolbox application, which recorded respondent location for field verification purposes (KoBoToolbox, 2014).

Data analysis

Data analysis consisted of a univariate analysis to describe the distribution of respondent characteristics. Bivariate analysis using the chi-square test was conducted to examine: (1) the stratification of demographic characteristics in relation to stress levels and father involvement, and (2) the stratification of demographic characteristics in relation to smoking behavior and stress levels. Prior to the multivariate analysis, statistical assumptions, including normality, linearity, and multicollinearity, were assessed and met. Path analysis using linear regression was subsequently applied to examine the hypothesized associations among father involvement, smoking behavior, and stress. Although the data were cross-sectional, path analysis was employed to test theoretically grounded directional associations derived from the existing literature rather than to infer causality. Mplus software was used because of its robustness in estimating complex models and handling multiple dependent variables simultaneously (Barbeau *et al.*, 2019).

Table 1. Characteristics of Respondent

Variable	Category	f (%)	95% CI
Gender	Male	541 (44.3)	41.4–46.9
	Female	680 (55.7)	53.1–58.6
Age	Early adolescent	1163 (95.2)	94.1–96.4
	Late adolescent	58 (4.8)	3.6–5.9
	X	432 (35.4)	32.6-38.1
Grade	XI	432 (35.4)	32.7–37.9
	XII	357 (29.2)	26.8–31.9
Living Arrangement	Living with both parents	996 (81.6)	79.4–83.7
	Mother only	118 (9.7)	7.9–11.3
	Father only	34 (2.8)	1.9–3.8
	Neither parent	73 (6.0)	4.8–7.4

Ethical Statement

This study has obtained ethical approval from the Faculty of Public Health, Airlangga University. The ethical approval number is No. 46/EA/KEPK/2025. Ethical considerations included obtaining informed consent from all participants and parental consent for adolescents under 18 years of age. Participant confidentiality and anonymity were maintained throughout the study, and respondents were informed that participation was voluntary and that they could withdraw from the study at any time without consequences

Results

This study included 1,221 adolescents. The characteristics of the respondents are presented in Table 1, covering gender, age, grade level, and living arrangement. As shown in table 1, the majority of respondents are female, fall into the early adolescent age group, are evenly distributed across all grades, and most still live with their parents.

Table 2 shows that the aggregate level, moderate stress was the most prevalent stress level among adolescents, and moderate Father Involvement was the most commonly reported Father Involvement role. In the

Table 2. The Relationship Between Father Involvement and Stress Levels

Characteristics	Father Involvement	Stress Levels			Total	Sig	Prevalence Ratio
		Heavy	Moderate	Normal			
	Fatherless	12 (12.2)	72 (73.5)	14 (14.3)	98	<0.001*	4.95
All respondents	Moderate	37 (3.9)	777 (80.9)	147 (15.3)	961		1.55
f (%)	Positive	4 (2.5)	109 (67.3)	49 (30.2)	162		Reference
	Total	53 (4.3)	958 (78.5)	210 (17.2)	1221		
Male	Fatherless	1 (2.3)	32 (72.7)	11 (25.0)	44	0.325	Undefined
f (%)	Moderate	5 (1.1)	359 (81.2)	78 (17.6)	442		Undefined
	Positive	1 (1.8)	39 (70.9)	15 (27.3)	55		Reference
	Total	7 (1.3)	430 (79.5)	104 (19.2)	541		
Female	Fatherless	11 (20.4)	40 (74.1)	3 (5.6)	54	<0.001*	7.26
f (%)	Moderate	32 (6.2)	418 (80.5)	69 (13.3)	519		2.19
	Positive	3 (2.8)	70 (65.4)	34 (31.8)	107		Reference
	Total	46 (6.8)	528 (77.6)	106 (15.6)	680		
Early adolescent	Fatherless	11 (12.6)	64 (73.6)	12 (13.8)	87	<0.001*	4.99
f (%)	Moderate	35 (3.8)	744 (81.0)	139 (15.1)	918		1.50
	Positive	4 (2.5)	106 (67.1)	48 (30.4)	158		Reference
	Total	50 (4.3)	914 (78.6)	199 (17.1)	1163		
Late adolescent	Fatherless	1 (10.0)	7 (70.0)	2 (20.0)	10	0.939	Undefined
f (%)	Moderate	2 (4.7)	33 (76.7)	8 (18.6)	43		Undefined
	Positive	1 (25.0)	3 (75.0)	1 (25.0)	5		Reference
	Total	4 (6.9)	43 (74.1)	11 (19.0)	58		

Notes: *p < 0.05 indicates statistical significance at the alpha 5% level. **The prevalence ratio (PR) compares the prevalence of heavy stress among adolescents with fatherless group to those with positive Father Involvement (reference group).

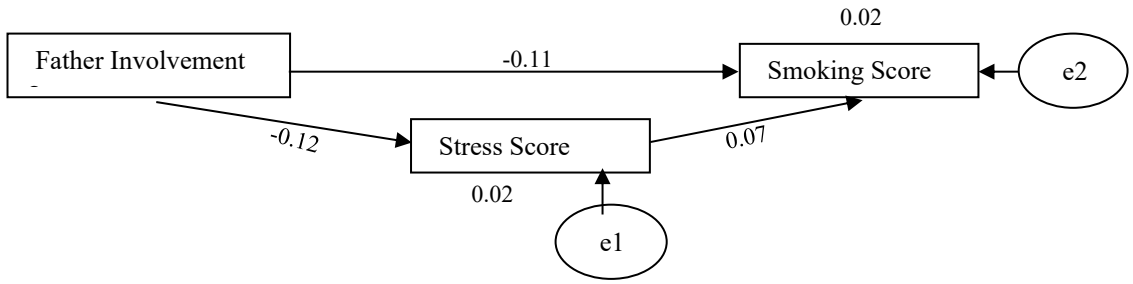

Diagram 1. Observed Associations Among Father Involvement, Stress, and Adolescent Smoking

total respondent, fatherless adolescents were significantly more likely to experience severe stress compared with those who reported positive Father Involvement.

Among male adolescents, stress levels did not differ significantly according to the father's involvement. In contrast, fatherless female adolescents emerged as the most vulnerable group, exhibiting a substantially higher likelihood of severe stress than those who experienced positive Father Involvement. Female adolescents with moderate Father Involvement also demonstrated an elevated risk of severe stress, although to a lesser extent.

When stratified by age group, a significant association between the Father Involvement role and stress level was observed among early teenagers. Early adolescents who were fatherless showed a markedly higher likelihood of experiencing heavy stress than those with positive Father Involvement, whereas moderate Father Involvement was also associated with an increased risk. Conversely, among late teenagers, no significant differences in stress levels were found across the Father Involvement roles.

Table 3 presents the association between smoking habits and stress levels among adolescents, stratified by demographic characteristics. Overall, adolescents experiencing heavy stress were more likely to engage in heavy smoking than those reporting normal stress, while moderate stress was also associated with an increased tendency toward heavy smoking. This pattern was observed in both male and female adolescents. When stratified by age group, the association was not evident among early adolescents but was apparent among late teenagers, suggesting that higher stress levels are linked to heavier smoking in older adolescents.

Diagram 1 shows the associations between father involvement and stress, father involvement and smoking behavior, and the association between father involvement and smoking behavior after accounting for stress levels. These findings should be interpreted as

Table 3. The Relationship Between Stress Levels and Smoking Behavior

Characteristics	Stress Level	Smoking Behavior			Total	Sig	Prevalence Ratio**
		Heavy	Light	None			
All Respondents	Heavy	4(7.5%)	12(22.6%)	37(69.8%)	53(100%)		15.84
f (%)	Moderate	15(1.6%)	220(23.0%)	723(75.5%)	958(100%)	0.002*	3.28
	Normal	1(0.5%)	36(17.1%)	173(82.4%)	210(100%)		Reference
	Total	20(1.6%)	268(22.0%)	933(76.4%)	1221(100%)		
Male	Heavy	3(18.8%)	2(12.5%)	11(68.7%)	16(100%)		19.50
f (%)	Moderate	12(2.8%)	164(38.1%)	254(59.1%)	430(100%)	<0.001*	2.90
	Normal	1(1.0%)	29(27.9%)	74(71.1%)	104(100%)		Reference
	Total	16(3.0%)	195(36.0%)	330(61.0%)	541(100%)		
Female	Heavy	1(14.3%)	1(14.3%)	5(71.4%)	7(100%)		15.14
f (%)	Moderate	2(0.4%)	56(10.6%)	469(89.0%)	528(100%)	0.032*	0.40
	Normal	1(0.9%)	7(6.6%)	98(92.5%)	106(100%)		Reference
	Total	4(0.6%)	64(9.4%)	612(90.0%)	680(100%)		
Early adolescent	Heavy	0(0.0%)	1(33.3%)	2(66.7%)	3(100%)	0.963	Undefined
f (%)	Moderate	1(2.3%)	12(27.9%)	30(69.8%)	43(100%)		Undefined
	Normal	0(0.0%)	4(36.4%)	7(63.6%)	11(100%)		Reference
	Total	1(1.8%)	17(29.8%)	39(68.4%)	57(100%)		
Late adolescent	Heavy	4(8.0%)	11(22.0%)	35(70.0%)	50(100%)	0.001*	18.97
f (%)	Moderate	14(1.5%)	208(22.8%)	692(75.7%)	914(100%)		1.63
	Normal	1(0.5%)	32(16.1%)	166(83.4%)	199(100%)		Reference
	Total	19(1.6%)	251(21.6%)	893(76.8%)	1163(100%)		

Notes: *p < 0.05 indicates statistical significance Alpha 5%. **The prevalence ratio (PR) compares the prevalence of Heavy Smoking on Heavy Stress with Normal (reference group).

Table 4. Estimated Path Coefficients for the Associations Between Father Involvement, Stress, and Adolescent Smoking Behavior

Independent Variable (X)	β (Y)	β Intervening (Z)	β Influence (Y+Z)	Sig.	R^2	α	Model Code
Father Involvement	Stress (-0.12)	-	-0.12	<0.0001*	1.5%	21.304	I
	Smoking (-0.11)	-	-0.11	<0.0001*	1.5%	4.401	II
	Smoking (-0.11)	Stress (0.07)	-0.04	0.009*	2.0%	3.494	III

Notes :(*) = Significant Alpha 5%

statistical associations rather than causal relationships due to the cross-sectional nature of the study.

The estimated path coefficients are presented in Table 4. Father involvement was found to have a significant negative association with adolescent's stress (β = -0.12; p < 0.0001), indicating that lower levels of father involvement are associated with higher stress levels among adolescents with a prediction value of 1.5%. Similarly, father involvement showed a significant but weak negative association with smoking behavior (β = -0.11; p < 0.0001). The more negative the father's role, the more the adolescent's smoking behavior increases with a prediction value of 1.5%. When stress was included as an intervening variable, the direct association between father involvement and smoking behavior decreased (β = -0.04; p = 0.009), indicating a partial mediation effect. The models explain a small proportion of the variance (R^2 2.0%).

Discussions

The Relationship Between Father Involvement and Stress Levels

Adolescence represents a developmental stage characterized by substantial emotional, psychological, an social changes. During this period, adolescents commonly experience identity exploration, academic pressure, and uncertainly regarding future roles, which may increase vulnerability to psychological stress (Nindhita and Pringgadani, 2023; Nuraenah *et al.*, 2023). These developmental characteristics provide important context for understanding the associations observed between father involvement, stress, and smoking behavior in this study.

These findings suggest that lower father involvement may be associated with greater emotional vulnerability among adolescents. Fathers often serve as sources of emotional support, guidance, and behavioral supervision within the family context. Reduced paternal engagement may therefore limit adolescents coping resources when facing academic, interpersonal, and emotional stressors. This interpretation is consistent with attachment-based perspectives, which emphasize that supportive parent-child relationships contribute to emotional regulation and adaptive stress management during adolescence (Peng *et al.*, 2024).

Furthermore, previous research has shown that adolescents experiencing fatherlessness often face disharmonious family dynamics, such as parental conflict or divorce, which also contribute to additional stress (Mahmud, Samson and Mohammed, 2020; Wardhani and Salma, 2022). In this study, adolescents reporting limited father involvement may experience reduced emotional connectedness and perceived family support, which could contribute to difficulties in coping with stressful life situations. Previous studies have also reported that limited paternal engagement is associated with poorer emotional well-being and higher psychological distress among adolescents (Hidayah, Ramli and Tassia, 2023; Rahayu and Saroinsong, 2023).

Gender differences observed in this study may reflect variations in emotional processing and stress responsiveness during adolescence. Female adolescents reporting moderate father involvement demonstrated higher levels of severe stress compared with those reporting more positive father involvement. Previous literature has similarly shown that adolescent girls tend to report higher psychological distress than boys, particularly in relation to interpersonal and family related stressors (Roy, Kamath and Kamath, 2015; Pardamean and Lazuardi, 2019; Gupta *et al.*, 2023).

Biological and psychosocial factors may contribute to differences in stress experiences between male and female adolescents. Girls' menstrual cycles cause an increase in testosterone and cortisol production, which contributes to stress in adolescent girls. Furthermore, girls tend to rely more on their emotions when facing problems than boys, who rely more on their minds and are expected to be stronger and better prepared to face challenges (Lesmana and Hidayati, 2019).

The stronger association observed among early adolescents may indicate that father involvement is particularly relevant during the earlier stages of emotional development. Previous longitudinal studies have reported that early paternal engagement is associated with higher depressive symptoms and emotional distress in adolescence (Culpin *et al.*, 2015, 2022). From an attachment perspective, supportive parental relationships during early developmental stages may contribute to healthier emotional regulation and coping capacities.

The Relationship Between Stress Levels and Smoking Behavior

Adolescents who do not receive adequate emotional support from their fathers tend to have lower coping capacities, making them more susceptible to experiencing severe stress when facing the pressures of their daily lives (Wang *et al.*, 2021). This condition is exacerbated during adolescence, which is characterized by emotional instability and increased social and academic demands (Nuraenah *et al.*, 2023). This can influence adolescents' negative behavior, as evidenced in this study. The observed association between stress and smoking behavior reflects the use of smoking as a maladaptive coping strategy among adolescents experiencing emotional distress. Within the stress coping framework, adolescents with limited coping resources may engage in avoidant behaviors, including smoking, to regulate negative emotions or reduce psychological tension (Wang *et al.*, 2021).

Adolescents who experience fatherlessness make various coping efforts to face changes and stressful

conditions or situations in their lives (Stephenson and DeLongis, 2020; Mulianingsih and Dewi, 2022). This coping strategy is also adopted because loneliness results in problems such as negative behavior, stress symptoms, depression symptoms, and hangers, and even suicide (Cristy and Soetikno, 2023). Each individual has different coping strategies; some have positive coping, while others have negative coping. Stress emerged as an important psychological mechanism linking fatherlessness and smoking behavior. Adolescents experiencing high levels of stress may resort to maladaptive coping strategies such as smoking to alleviate negative emotions and psychological tension. According to the stress–coping model, individuals under chronic stress are more likely to adopt avoidant coping behaviors when adaptive coping resources are limited (Wang *et al.*, 2021).

According to previous research, it was found that male and female adolescents have different emotional responses to the problems they are experiencing (Umadiyan and Kalifia, 2024). Male adolescents tend to express their emotions by seeking practical solutions, one of which is by smoking. While female adolescents will seek social support and find a more controlled way. Several previous studies have reported that adolescents who experience fatherless will smoke as an outlet, feel more relieved and calm if smoking, because cigarettes have a calming effect (Indriana, 2023; Rachmawati and Rahmasari, 2024). Likewise with the research of (Mayah, 2021; Zakiyah *et al.*, 2023), which found that individuals use smoking as an effort to relieve stress or by smoking their problems can be solved. However, these relationships should be interpreted cautiously because smoking behavior is also influenced by broader social and environmental factors. Studied (Mirnawati *et al.*, 2018) explained social environment, both friends and family who support adolescents, makes them more easily influenced by what they see and adolescents will imitate the actions of others to find their identity.

The stronger association between stress and smoking behavior among older adolescents may reflect increasing academic, occupational, and social pressures during the transition toward adulthood (Defie and Probosari, 2018; Sayekti, Nurahman and Rakhmawati, 2023). At this stage, smoking may also be socially perceived as a symbol of maturity and independence, potentially reinforcing smoking behavior among adolescents experiencing stress. Social norms related to masculinity and maturity may also contribute to smoking behavior among male adolescents. Previous studies have suggested that smoking is sometimes socially interpreted as a marker of independence or adulthood among boys, which may strengthen the relationship between stress and smoking behavior in this group (Mirnawati *et al.*, 2018).

The Associations Between Father Involvement, Stress, and Adolescent Smoking Behavior

The path analysis findings suggest that lower father involvement was associated with higher stress levels among adolescents, although the magnitude of the association was relatively small. This indicates the importance of the role of the father so that it should not be lost in the child's life, either by presenting direct father involvement or by presenting another figure who can play the role of the father. The role of a good father will help children avoid social problems that arise in their lives (Nurhayani, 2019). If the father is no longer there, then the guardian for the child should take on the role of the father in parenting. Impact fatherless such can be avoided if other caregivers such as guardians (grandfathers, brothers, uncles) succeed in taking on the role of father and have a good relationship with the children (Hidayah, Kumalasari and Kurniawan, 2020).

Lower father involvement was also associated with higher smoking behavior scores. This smoking behavior worsens if the adolescent is experiencing stress. Stress may function as an important psychological mechanism associated with adolescent smoking behavior. These findings highlight the potential importance of supportive family relationships in relation to stress and smoking behaviors. Family based interventions focusing on communication, emotional support, and coping skills may therefore be relevant for adolescent health promotion. Several previous studies have reported that supportive parental relationships enhance adolescents' emotional regulation and perceived coping efficacy, which buffer the impact of stress on maladaptive behaviors (Loades *et al.*, 2020; Luthar, Ebbert and Kumar, 2021). In the absence of adequate paternal support, adolescents may experience heightened emotional distress, such as persistent anxiety and emotional dysregulation, and increase their reliance on avoidant coping strategies, such as smoking. A promising example of an intervention is the Strengthening Families Program (SFP), which has been implemented globally, including in the USA, Canada, Australia, the UK, Germany, Sweden, Greece, Spain, the Netherlands, Poland, Thailand, Brazil, and South Africa (Pinheiro-Carozzo *et al.*, 2021). It reduces adolescent substance use by improving family communication, parental engagement, and youth coping skills (Kumpfer *et al.*, 2021).

Adaptations of SFP and similar family based interventions have demonstrated improvements in emotional resilience and reductions in risk behaviors among adolescents by fostering adaptive coping strategies and supportive family environments (Schleider *et al.*, 2020). From an emotional perspective, enhancing father–child engagement and teaching stress management skills can reduce negative affect and increase adolescents' self-regulation, thereby lowering susceptibility to smoking as a stress-relief strategy. These

mechanisms suggest that integrated programs addressing both family emotional support and adolescent coping skills can mitigate stress and its emotional consequences, ultimately contributing to reductions in adolescent smoking behavior. However, in children who fatherless and already a habit of smoking, then the role of a mother is very necessary. Children who do not have a father figure feel emotional emptiness, and uncontrolled emotions, which encourages them to seek escape and outlets. Therefore, mothers need to build open and heart-to-heart communication with their children so that children feel appreciated and have friends to complain to. Lack of supervision and routine also triggers children's habits, so mothers need to create daily routines and interesting activities so that children spend more time together doing more positive things. And seek professional support such as psychological counselling and family therapy to help overcome mental conflicts between children and mothers (Kuadio, 2021).

This study has several limitations that should be considered when interpreting the results. First, the cross-sectional design limits the ability to establish temporal relationship or causal inferences among variables, so the measure of association used is limited to prevalence rates. Because of the cross-sectional design, the interaction observed between Father Involvement, stress, and smoking should be interpreted as an association rather than a moderating or causal effect. Second, the use of accidental sampling during respondent selection may have introduced selection bias. This sampling approach could have influenced the observed distribution of stress levels and smoking behaviors and may limit the generalizability of the findings to adolescent populations beyond the urban setting or to groups not reached during data collection. Third, all key variables were assessed using self-reported instruments, rendering the results vulnerable to information bias, including recall bias and social desirability bias. Adolescents may underreport or overreport their stress levels and smoking behaviors, particularly among females and younger adolescents. As shown in Table 2, the proportion of heavy smokers in these subgroups was relatively small, which may have affected the precision of the estimated associations. In addition, several subgroup analyses involved relatively small numbers of respondents, resulting in unstable risk estimates and an increased likelihood of random error. For example, in the subgroup of female adolescents, the estimated risk of heavy smoking among those reporting no stress exceeded that of those with mild stress, a pattern that is likely attributable to small cell sizes rather than a true underlying association.

Finally, although path analysis was employed to examine theoretically informed associations among variables, the relatively low coefficients of determination (R^2) indicate that paternal involvement and stress account for only a limited proportion of the variance in adolescent smoking behavior. This suggests that other unmeasured factors, such as peer influence, social norms, school environment, and exposure to cigarette advertising may play a more substantial role in shaping smoking behavior among adolescents.

Conclusion

Adolescents with fatherless conditions, particularly females and those in early adolescence, represent the most vulnerable group to experiencing severe stress. Meanwhile, among adolescents reporting severe stress, both males and females, as well as those in late adolescence, showed a higher prevalence of heavy smoking behavior. Furthermore, the observed of relationships among the three variables suggest an association that father involvement, adolescent stress, and smoking behavior. Lower levels of father involvement were associated with increased stress levels were associated with a greater prevalence of adolescent smoking behavior. However, the proportion of variance explained by this model was relatively small, suggesting that smoking behavior is influenced by multiple factors beyond father involvement and stress.

Acknowledgments

We thank Yayasan Lentera Kesehatan Jiwa for providing funding for this research, which allowed the research to be carried out until completion. We thank all students in Medan City and the enumerators who contributed directly to the research so that the research. We would like to thank the Health Statistics Variance and Mental Health Care Community Caucus for organizing the bootcamp and providing mentoring to improve the writing of our manuscript.

Declaration Of Generative Artificial Intelligence (AI) Use

Generative AI was used only as a supportive writing assistant to identify potential omissions and improve language quality during manuscript preparation. The authors independently reviewed, verified, and approved all content. AI was not involved in the study design, data collection, data analysis, interpretation of results, or manuscript conclusions.

Funding source

This research was funded by Yayasan Lentera Kesehatan Jiwa.

Availability of data and materials

The datasets generated during the research and analyzed during the current study are available from the authors upon reasonable request.

Authors' contributions

All authors contributed equally to the study in terms of substantial contributions to the conception or design of the work, analysis or interpretation of data for the work, drafting of the article, and final approval of the version to be published.

Declaration of Interest

There is no potential conflict of interest.

References

Adristi, S. P. (2021) "The role of parents in children from broken home backgrounds," *Lifelong Education Journal*, 1(2), p. 134.

Badan Pusat Statistik (2022) *Percentage of population aged 15 years and over who smoked in the past month by province and age group, 2021*.

Barbeau, K. *et al.* (2019) "Path analysis in Mplus: A tutorial using a conceptual model of psychological and behavioral antecedents of bulimic symptoms in young adults," *The Quantitative Methods for Psychology*, 15(1), pp. 38–53. doi: 10.20982/tqmp.15.1.p038.

Cristy, C. and Soetikno, N. (2023) "Resilience and loneliness in only child adolescents experiencing fatherlessness due to divorce," *Jurnal Pendidikan Tambusai*, 7(3), pp. 31322–31331.

Culpin, I. *et al.* (2015) "Early childhood father absence and depressive symptoms in adolescent girls from a UK cohort: The mediating role of early m menarche," *Journal of Abnormal Child Psychology*, 43(5), pp. 921–931. doi: 10.1007/s10802-014-9960-z.

Culpin, I. *et al.* (2022) "Father absence and trajectories of offspring mental health across adolescence and young adulthood: Findings from a UK-birth cohort," *Journal of Affective Disorders*, 314(June), pp. 150–159. doi: 10.1016/j.jad.2022.07.016.

Dais, E. G. *et al.* (2024) "The effective peer educators and counselors in adolescent efforts to quit smoking," *Jurnal Keperawatan*, 15(2), pp. 151–164. doi: 10.22219/jk.v15i02.33013.

Defie, R. and Probosari, E. (2018) "The relationship between stress levels, smoking behavior, and energy intake in college students," *Diponegoro Medical Journal (Jurnal Kedokteran Diponegoro)*, 7(2), pp. 507–526.

Dick, G. L. (2004) "The fatherhood scale," *Research on Social Work Practice*, 14(2), pp. 80–92. doi: 10.1177/1049731503257863.

Fitroh, S. F. (2014) "The impact of fatherlessness on children's academic achievement," *Jurnal PG-PAUD Trunojoyo*, 1(2), pp. 83–91.

Glassman, A. H. *et al.* (1990) "Smoking, smoking cessation, and major depression," *Jama*, 264(12), pp. 1546–1549.

Gupta, S. *et al.* (2023) "Social support and self-care behavior study," *Journal of Education and Health Promotion*, 12(January), pp. 1–6. doi: 10.4103/jehp.jehp.

Hidayah, M. N., Kumalasari, G. and Kurniawan, D. (2020) "Mood swing experiences in adolescent smokers aged 15-18 years," *JKM (Jurnal Kesehatan Masyarakat) Cendekia Utama*, 8(1), p. 84. doi: 10.31596/jkm.v8i1.569.

Hidayah, N., Ramli, A. and Tassia, F. (2023) "Fatherless effects on individual development; An analysis of psychological point of view And islamic perspective," *Innovative: Journal Of Social Science Research*, 3(2), pp. 754–766.

Indriana, E. (2023) *The impact of fatherlessness on late adolescence in gunan village*. Universitas Islam Negeri Raden Mas Said Surakarta Guna.

KoBoToolbox (2014) "KoBoToolbox." Harvard Humanitarian Initiative.

Kuadio, A. (2021) *Supportive parenting for fatherless children*.

Kumpfer, K. L. *et al.* (2021) "Strengthening families program: Evidence for family-based interventions with adolescents," *Journal of Child \& Adolescent Substance Abuse*, 30(5), pp. 244–256. doi: doi:10.1037/0003-066X.58.6-7.457.

Lesmana, A. and Hidayati, N. L. (2019) *Comparison of stress levels in male and female adolescents*. Universitas Muhammadiyah Yogyakarta.

Loades, M. E. *et al.* (2020) "The impact of social isolation and loneliness on the mental health of children and adolescents," *Journal of the American Academy of Child \& Adolescent Psychiatry*, 59(11), pp. 1218–1239. doi: https://doi.org/10.1016/j.jaac.2020.05.009.

Luthar, S. S., Ebbert, A. M. and Kumar, N. L. (2021) "Risk and resilience during adolescence," *Annual Review of Clinical Psychology*, 17, pp. 261–286. doi: https://doi.org/10.1111/j.1467-8624.1991.tb01555.x.

Mahmud, B., Samson, J. and Mohammed, P. A. . (2020) "Relationship between broken home and emotional adjustment of secondary school student in Kaduna State Metropolis, Nigeria," *The Educational Psychologist*, 13(1), pp. 504–513.

Maryuti, I. A. and Sari, N. P. W. P. (2022) "Predictors of juvenile delinquency: Smoking, dramatizing, and fighting," *JNJ: Jambura Nursing Journal*, 4(1), pp. 22–31.

Mayah, I. C. (2021) "The relationship between stress and smoking habits in The Indonesian Climbing Community, Yogyakarta Regional Coordinator," *Jurnal Keperawatan Terpadu (Integrated Nursing Journal)*, 2(2), p. 156. doi: 10.32807/jkt.v2i2.83.

Mirnawati *et al.* (2018) "Smoking behavior in adolescents aged 13-14 years," *Higeia Journal of Public Health Research and Development*, 2(3), pp. 396–405.

Mulianingsih, R. and Dewi, K. D. (2022) "Stress coping strategies in college students bullying newspapers at University X," *Character: Jurnal Penelitian Psikologi*, 9(5), pp. 25–38.

Murzen, R. F. (2024) *Nicotine addiction*, *MedScape*.

Nindhita, V. and Pringgadani, E. A. (2023) "The phenomenon of fatherlessness from the perspective of adolescent wellbeing (A phenomenological study)," *Cakrawala Jurnal Humaniora*, 23(2), pp. 46–51. doi: https://doi.org/10.31294/jc.v23i2.16983.

Nuraenah *et al.* (2023) "Mental health education (psychosocial problems) for adolescents," *Jurnal Kreativitas Pengabdian Kepada Masyarakat*, 13(1), pp. 104–116. doi: https://doi.org/10.33024/jkpm.v6i10.12155.

Nurhayani, N. (2019) "Fathering styles of muslim families perceived from personality types in North Sumatera," *Islam Realitas: Journal of Islamic & Social Studies*, 5(1), pp. 52–69.

Pardamean, E. and Lazuardi, M. J. (2019) "The relationship between gender and psychological stress in grade XI science students at SMA X Tangerang," *Nursing Current Jurnal Keperawatan*, 7(1), p. 68.

Peng, C. *et al.* (2024) "Effect of father-child attachment on adolescents' anxiety symptoms: Empirical evidence from a chinese sample," *Psychology Research and Behavior Management*, 17, pp. 2971–2985. doi: 10.2147/PRBM.S467290.

Pinheiro-Carozzo, N. P. *et al.* (2021) "Beyond effectiveness of the strengthening families program (10-14): A scoping RE-AIM-Based review," *Psicologia: Reflexao e Critica*, 34(1), pp. 1–16. doi: 10.1186/s41155-021-00182-z.

Putri, N. S. E. *et al.* (2024) "The relationship between emotional intelligence and juvenile delinquency in students at SMKN 3 Tanjungpinang," *Jurnal Ilmiah Cerebral Medika*, 6(2), pp. 1–12.

Rachmawati, T. S. and Rahmasari, D. (2024) "Coping strategies of late adolescents who experience fatherlessness in their lives," 11(01), pp. 632–643.

Rahayu, N. P. and Saroinsong, W. P. (2023) "The relationship of fatherlessness to the subjective well-being of early childhood in the industrial area of East Java," *PAUD Teratai*, 12(1), p. 23027363.

Roy, K., Kamath, V. and Kamath, A. (2015) "Determinants of adolescent stress: A narrative review," *European Journal of Psychology and Educational Studies*, 2(2), p. 48. doi: 10.4103/2395-2555.170719.

Salsabila, S., Junaidin and Hakim, L. (2020) "The influence of father's role on students' self-esteem," *Jurnal Psimawa*, 3(1), pp. 24–30. doi: https://doi.org/10.36761/jp.v3i1.609.

Sayekti, F., Nurahman, A. H. . and Rakhmawati, N. (2023) *Description of smoking behavior among adolescents in the Pagar Nusa Educational Organization, Bejen Region, Karanganyar Regency*, *Universitas Kusuma Husada Surakarta*.

Schleider, J. L. *et al.* (2020) "Future directions in single-session youth mental health interventions," *Journal of clinical child and adolescent psychology : the official journal for the Society of Clinical Child and Adolescent Psychology, American Psychological Association, Division 53*,

49(2), pp. 264–278. doi: 10.1080/15374416.2019.1683852.

Stephenson, E. and DeLongis, A. (2020) "Coping strategies," *The Wiley encyclopedia of health psychology*, pp. 55–60. doi: https://doi.org/10.1002/9781119057840.ch50.

Tan, Y. L. and Dorotheo, U. (2021) *The tobacco control atlas ASEAN Region, Fifth Edition*. 5th ed, *Southeast Asia Tobacco Control Alliance*. 5th ed. Bangkok.

Tian, F. *et al.* (2022) "Association of stress-related disorders with subsequent risk of all-cause and cause-specific mortality: A population-based and sibling-controlled cohort study," *The Lancet Regional Health - Europe*, 18. doi: 10.1016/j.lanepe.2022.100402.

Umadiyan, S. and Kalifia, A. D. (2024) "Differences in emotional responses between adolescent girls and boys to factors causing depression," *Gudang Jurnal Multidisiplin Ilmu*, 2(1), pp. 293–296. doi: https://doi.org/10.59435/gjmi.v2i1.245.

Wang, M.-T. *et al.* (2021) "The roles of stress, coping, and parental support in adolescent psychological well-being," *Journal of Affective Disorders*, 294, pp. 245–253. doi: 10.1016/j.jad.2021.06.082.

Wardhani, Y. D. K. and Salma (2022) "Perceptions of fathers involvement in online game addiction in adolescent boys," *Jurnal EMPATI*, 11, pp. 217–222. doi: https://doi.org/10.14710/empati.0.36461.

WHO (2015) *Global Youth Tobacco Survey (GYTS): Indonesia report 2014*, *Who-Searo*.

Wibiharto, B. M. Y., Setiadi, R. and Widyaningsih, Y. (2021) "Relationship pattern of fatherless impacts to internet addiction, the tendency to suicide and learning difficulties for students at SMAN ABC Jakarta," *Society*, 9(1), pp. 264–276. doi: 10.33019/society.v9i1.275.

World Health Organization (2021) "Electronic Nicotine Delivery Systems (ENDS) are addictive and not harmless," *Health Promotion*.

Zakiyah, Z. *et al.* (2023) "Stress level and smoking behavior," *Jurnal Ilmiah Kesehatan Sandi Husada*, 12(2), pp. 467–473. doi: 10.35816/jiskh.v12i2.1118.

How to cite this article: Ismah, Z., Indriani, F., Syahfitri, R. I., Nst, C. C., Rahmatusyifa, R., Nafilata, I., Zaharuddin, Z., and Jatisari, C. S. (2026) 'Relationship between Father Involvement, Adolescent Stress, and Smoking Behavior in Indonesia: A Cross-Sectional Study', *Jurnal Ners*, 21(2), pp. 214-223. doi: http://dx.doi.org/10.20473/jn.v21i2.73199