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The impact of family function as a moderating variable on the association between adverse childhood experiences (ACEs) and behavioral problems in male adolescents aged 10–17 Years in Indonesia

Abstract

Objectives: Adverse childhood experiences (ACEs) are strongly linked to behavioral issues in adolescents, yet the protective role of family dynamics remains unclear. This study aims to examine the relationship betwen ACEs and adolescent behavioral problems while exploring the moderating role of family functioning.

Methods: The case-control study analyzed secondary data from the Indonesia National Mental Health Survey (I-NAMHS) on 198 male adolescents (10–17 years). Conditional logistic regression and moderation analysis were used to assess the impact of ACEs on behavioral problems and the moderating role of family function.

Results: Compared with adolescents with no ACE exposure, adolescents with 1–2 ACEs had a higher risk of behavioral problems (OR=5.96, 95 % CI [2.29, 15.15], p<0.001), increasing further with ≥3 ACEs (OR=8.65, 95 % CI [3.21, 23.3], p<0.001). Positive family function reduced these risks (adjusted OR=4.94 for 1–2 ACEs; OR=6.95 for ≥3 ACEs). Family communication had the strongest protective effect (OR=0.33–0.41, p<0.05), but mediation analysis showed family function was not a strong mediator (OR=2.73, p>0.05).

Conclusions: Family function is a predictive factor in adolescent behavioral outcomes, serving as a protective buffer against the negative effects of ACEs. However, it does not fully mediate this relationship. Future research should explore additional mediators, such as peer support and coping strategies, to develop more targeted interventions.

Keywords: adverse childhood experiences; adolescent; family function; problem behavior; Indonesia

Introduction

Behavioral problems during adolescence are a growing concern. These problems encompass persistent disruptive, aggressive, or antisocial behaviors that interfere with an adolescent's social, academic, and family functioning [1–4]. Adolescence is a critical developmental stage characterized by significant physiological, psychological, and social transitions, which can heighten vulnerability to emotional and behavioral disturbances [5]. The global prevalence of behavioral issues among adolescents was estimated at 5.3 % in 2021, with a higher occurrence in males (7.2 %) compared to females (3.37 %) [6]. Similarly, data from the Indonesia National Mental Health Survey (I-NAMHS) indicate a national prevalence of 2.4 % among adolescents aged 10 to 17, with a higher prevalence in males (3.5 %) than females (1.2 %) [7].

The development of behavioral problems in adolescence is influenced by a complex interplay of individual, familial, and environmental factors [1, 2]. Among these, adverse childhood experiences (ACEs) have been identified as a significant risk factor, encompassing exposure to abuse, neglect, and household dysfunction, all of which contribute to an increased likelihood of developing behavioral disorders [3, 8]. Adolescents who experience ACEs are at a substantially higher risk of mental health issues, including post-traumatic stress disorder (PTSD), anxiety, depression, suicidal behavior, and externalizing problems such as antisocial behavior, interpersonal violence, delinquency, and impulsivity [9–11]. A large-scale study involving over 64,000 adolescents engaging in rule-breaking behaviors found that those exposed to four or more ACEs were four times more likely to develop behavioral problems compared to those

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with fewer or no ACEs [10]. These findings underscore the profound and long-term impact of ACEs on adolescent psychological and behavioral health.

Nevertheless, some adolescents can overcome the negative impacts of ACEs and avoid engaging in risky behaviors. A well-functioning family is a key element that can serve as a protective factor in this context [12]. The family is considered the primary environment where adolescents learn, grow, and form their identity [13]. Good family function includes aspects such as emotional support, open communication, parental involvement, and the formation of positive norms and values [12, 14, 15].

Consistent emotional support from family members can serve as a robust pillar for the emotional well-being of adolescents. When adolescents perceive support and acceptance within the family setting, they are likely to enhance their resilience against stress and trauma linked to ACEs [16]. Moreover, transparent communication among family members can help adolescents express and understand their emotions, thereby reducing the likelihood of behavioral issues arising from unhealthy emotional expression [17].

Although global studies have explored the association between ACEs, family functioning, and adolescent behavioral problems, evidence from Indonesia remains scarce. The I-NAMHS provides the first nationally representative dataset on adolescent mental health in Indonesia [18]. This dataset is essential for understanding the prevalence and determinants of behavioral problems within the Indonesian context, given the cultural and socio-economic differences that may influence adolescent mental health outcomes. This study aims to examine the relationship between ACEs and adolescent behavioral problems while exploring the moderating role of family functioning in this association. Specifically, it aims to evaluate how various dimensions of family functioning – such as communication, affective involvement, cohesion, and control – impact the effects of ACEs on adolescent behavioral outcomes.

Materials and methods

Study design

This study employed a case-control design with a 1:1 matching approach, drawing on secondary data from the 2021 Indonesia National Adolescent Mental Health Survey (I-NAMHS). The I-NAMHS, conducted in collaboration with Universitas Gadjah Mada (UGM), the University of Queensland (UQ), and the Johns Hopkins Bloomberg School of Public Health (JHSPH), aimed to estimate the prevalence of mental disorders among Indonesian adolescents and identified associated risk and protective factors. The survey included 5,760 participating households, providing comprehensive national-level data on adolescent mental health.

Study participants

From the I-NAMHS dataset, a total of 5,664 adolescents with complete data were included. Among them, 2,803 were male adolescents aged 10–17 years. Of these, 98 adolescents were classified as having behavioral problems based on assessments using the Diagnostic Interview Schedule for Children, Version 5 Conduct Disorder (DISC-5 CD). The control group, also derived from the I-NAMHS dataset, consisted of 98 male adolescents without behavioral problems. These controls were selected through age- and socioeconomic status-matching with the behavioral problem group, resulting in a final sample of 196 participants for analysis.

Measures

Study characteristics

Study characteristics included key demographic and socio-economic factors relevant to adolescent behavioral health. These variables were assessed to ensure comparability between the case and control groups. Age was categorized into early (10–13 years) and late adolescence (14–17 years). Education level was classified as primary, junior high school, and senior high school. The area of residence was categorized as urban or rural. Additionally, Indonesia was divided into three regions: Sumatra, Java-Bali, and Kalimantan-Sulawesi-Papua. This classification was applied to reflect broad geographical and socioeconomic distinctions.

Behavioral problem

Behavioral problems in male adolescents were assessed using the DISC-5 CD module, a standardized diagnostic tool developed by Columbia University with support from the United States National Institute of Mental Health (NIMH) [19]. This instrument evaluates 12-month prevalence through 41 self-reported items, identifying persistent violations of social norms, including aggression, theft, and legal infractions. Diagnosis requires meeting at least 50 % of the criteria within the past 6 and 12 months, such as physical violence, weapon use, arson, and chronic rule-breaking. DISC-5 was chosen for its validity across diverse socioeconomic settings and alignment with DSM-5 diagnostic criteria [20, 21].

Family function

Family functioning was assessed using a six-item questionnaire developed by the Global Early Adolescent Study (GEAS) and implemented in the I-NAMHS study [18]. This instrument evaluates four key domains: communication, affective expression, attachment, and control. Each item was rated using different response scales, ranging from 5 to 7 response options, depending on the question type. Higher scores indicate better family functioning. Responses were categorized as either positive (functional family) or negative (dysfunctional family). Principal Component Analysis (PCA) was used to classify family functioning into these categories. The original I-NAMHS study reported a Cronbach's alpha of 0.73, indicating acceptable reliability [18].

Adverse childhood experiences (ACEs)

ACEs were assessed using the ACEs questionnaire developed by the World Health Organization (WHO) [22]. This questionnaire was used to measure childhood exposure to various forms of abuse, neglect, domestic violence, and other serious household dysfunctions. Each item had four response options: Yes, No, Don't know, and Prefer not to answer. Each "Yes" response to the 13 items was scored as 1, and the total ACEs score was categorized into three levels: 0 (no ACEs), 1–2 (low exposure), and ≥3 (high exposure). This questionnaire demonstrated good internal consistency ($\theta = 0.86$, $\alpha=0.64$) and adequate internal validity ($r=0.28$–0.70, $p<0.001$) [23].

Statistical analyses

All statistical analyses were conducted using STATA software version 17. Descriptive analyses were performed to summarize the demographic characteristics of the study population. A homogeneity test was conducted to compare the characteristics of the case and control groups using Chi-square tests for categorical variables, including age group, education level, area of residence, and region.

Bivariate analyses were conducted to examine the associations between each independent variable and behavioral problems. Subsequently, a multivariate analysis was performed using a conditional (fixed-effects) logistic regression model to assess the simultaneous interaction between multiple variables and behavioral problems. To further elucidate the role of family function, it was decomposed into four subdomains – communication, affective involvement, cohesion, and control – to assess their contributions to behavioral problems. The logistic regression model estimated the associations between ACEs, family function, and behavioral problems, presenting odds ratios (OR) with 95 % confidence intervals (CI).

Additionally, a moderation analysis was conducted utilizing a mediation effect model (*medeff and clogit*) to examine whether family function moderates the relationship between ACEs and behavioral problems. The following command was used: *medeff (logit behavioral_problem var) (logit conduct var), treat(var) mediate(var)*.

Results

Table 1 shows that the majority of respondents were in late adolescents (58.6 %), lived in urban areas (68.4 %), and were from Java-Bali (61.6 %). Most were in junior high school (44.9 %), followed by senior high school (33.5 %) and primary school (21.6 %).

Table 2 summarizes the homogeneity test between the case and control groups. There were no significant differences in education level (p=0.97), age group distribution (p=1.00), or regional representation (p=0.43), indicating that the groups were well-matched. The majority of adolescents experiencing behavioral problems were late adolescents (58.6 %), had completed junior high school (45.7 %), and were from the Java-Bali region (49.5 %).

The bivariate analysis (Unadjusted) in Table 3 revealed a dose-response relationship between ACEs and behavioral problems in male adolescents. Among adolescents with behavioral problems, the odds of having experienced 1–2

Table 1: Study characteristics (n=198).

Variable	Total n, %
Age	
Early adolescent (10–13 years)	82 (41.4)
Late adolescent (14–17 years)	116 (58.6)
Education level	
Primary schools	40 (21.6)
Junior high school	83 (44.9)
Senior high school	62 (33.5)
Area	
Urban	135 (68.4)
Rural	63 (31.6)
Region	
Sumatra	36 (18.3)
Java-Bali	122 (61.6)
Kalimantan-Sulawesi-Papua	40 (20.1)

Table 2: Homogeneity test of case and control groups (n=198).

Variable	Case (n=99)	Control (n=99)	Total (n=198)	p-Value
Age				1.00
Early adolescent (10–13 years)	41 (41.4)	41 (41.4)	82 (41.4)	
Late adolescent (14–17 years)	58 (58.6)	58 (58.6)	116 (58.6)	
Education level				0.97
Primary schools	20 (21.3)	20 (22)	40 (21.6)	
Junior high school	43 (45.7)	40 (44)	83 (44.9)	
Senior high school	31 (33)	31 (34)	62 (33.5)	
Area				0.76
Urban	70 (70.7)	68 (68.7)	138 (69.7)	
Rural	29 (29.3)	31 (31.3)	60 (30.3)	
Region				0.43
Sumatra	13 (13.1)	10 (10.1)	23 (11.6)	
Java-Bali	49 (49.5)	58 (58.6)	107 (54.0)	
Kalimantan-Sulawesi-Papua	37 (37.4)	31 (31.3)	68 (34.3)	

Resource: I-NAMHS. p<0,05, p<0,01, p<0,001.

Table 3: Unadjusted (bivariable) and adjusted (multivariate) odds ratio of risk and protective factors for behavioral problems in male adolescents aged 10–17 Years in Indonesia (n=198).

Variable	Unadjusted OR [CI:95 %]	Adjusted OR [CI:95 %]
ACEs experience		
No experience	1[1, 1]	1[1, 1]
1–2	5.96[c][2.29, 15.5]	4.94[b][1.89, 12.9]
3 or more	8.65[c][3.21, 23.3]	6.95[c][2.46, 19.7]
Family function		
Dysfunctional	1[1, 1]	1[1, 1]
Functioning	0.26[c][0.13, 0.55]	0.41[a][0.18, 0.93]
Pseudo R^2	0.234	0.27
aic	109.1	106.2
df_m	2	3
N	198	198

Resource: I-NAMHS. [a]p<0.05, [b]p<0.01, [c]p<0.001. OR, odd ratio; CI, confidence interval; ACEs, adverse childhood experiences; AIC, Akaike's information criterion (−2zln(likelihood) +2zk); df_m, Degree of model freedom.

ACEs were 5.96 times higher compared to those in the control group (OR=5.96, 95 % CI [2.29, 15.15], p<0.001). The odds further increased among those with three or more ACEs (OR=8.65, 95 % CI [3.21, 23.3], p<0.001).

The multivariate analysis (adjusted) in Table 3 examined the impact of family function on the relationship between ACEs and behavioral problems. The results indicate that positive family function reduces the negative effects of ACEs on behavioral problems. After adjusting for family function, the risk of behavioral problems among adolescents with 1–2 ACEs decreased from OR=5.96 to OR=4.94, remaining statistically significant. A similar pattern was observed for adolescents with three or more ACEs; before considering family function, the odds ratio was OR=8.65, which decreased to OR=6.95 after adjustment (p<0.001). These findings highlight the crucial role of family function as a protective factor, mitigating the impact of ACEs on behavioral problems in male adolescents.

The multivariate analysis in Table 4 further investigates the role of family function components as potential protective factors in the relationship between ACEs and behavioral problems. Among the family function components, positive family communication demonstrated a protective effect. Adolescents who reported positive communication within their family were significantly less likely to exhibit behavioral problems (OR=0.33–0.41, p<0.05). Similarly, positive family cohesion showed a potential protective effect, although the confidence intervals suggest variability in its impact (OR=0.47, p>0.05). Family affective function and control did not demonstrate a statistically significant protective effect, as their odds ratios remained close to 1. These findings suggest that while family function plays a role in buffering the impact of ACEs on behavioral problems, certain aspects – particularly family communication – may have a stronger influence in mitigating risk.

Table 5 measures the mediating role of family function between ACEs and behavioral problems. The results of the analysis showed that the direct effect of ACEs on behavioral problems was significant (OR=2.92, p<0.001), whereas the indirect effect through family function was not significant (OR=2.73, p>0.05). Although about 23.7 % of the total effect was mediated, the wide confidence interval suggests that the mediation role is not strong enough. The total effect remained significant (OR=7.97, p<0.001), confirming that ACEs contribute greatly to behavioral problems, especially through direct pathways. These results suggest that family function may not be the primary mediator in these relationships, so it is necessary to explore other factors, such as coping strategies or social support, to better understand the mechanisms that link ACEs to behavioral problems.

Discussion

This study examined the moderating role of family function in the association between ACEs and behavioral problems in

Table 4: Unadjusted (bivariable) and adjusted (multivariate) odds ratio of risk and protective factors for behavioral problems in male adolescents aged 10–17 Years in Indonesia (n=198).

Variable	Unadjusted OR [CI:95 %]	Adjusted			
		Model 1 OR [CI:95 %]	Model 2 OR [CI:95 %]	Model 3 OR [CI:95 %]	Model 4 OR [CI:95 %]
ACEs experience					
1–2	5.96[c][2.29, 15.5]	2.99[b][1.47, 6.05]	2.98[b][1.48, 6.02]	3.16[b][1.58, 6.32]	3.18[b][1.59, 6.36]
	2.98[b][1.48, 6.02]	3.16[b][1.58, 6.32]	3.18[b][1.59, 6.36]		
3 or more	8.65[c][3.21, 23.3]	6.04[c][2.46, 14.8]	6.03[c][2.49, 14.6]	6.65[c][2.77, 16.0]	6.37[c][2.71, 14.9]
No	1[1, 1]	1[1, 1]	1[1, 1]	1[1, 1]	1[1, 1]
Communication					
Positive	0.26[c][0.13, 0.54]	0.41[a][0.17, 0.99]	0.41[a][0.17, 0.98]	0.33[b][0.15, 0.75]	0.36[b][0.17, 0.77]
Negative	1[1, 1]	1[1, 1]	1[1, 1]	1[1, 1]	1[1, 1]
Affective					
Positive	0.46[0.18, 1.20]	1.46[0.46, 4.65]	1.46[0.46, 4.61]	1.4[0.45, 4.34]	
Negative	1[1, 1]	1[1, 1]	1[1, 1]	1[1, 1]	
Cohesion					
Positive	0.24[c][0.11, 0.54]	0.47[0.19, 1.19]	0.47[0.19, 1.18]		
Negative	1[1, 1]	1[1, 1]	1[1, 1]		
Control					
Positive	0.51[a][0.29, 0.90]	1[0.50, 2.00]			
Negative	1[1, 1]	1[1, 1]			
Pseudo R^2	0.111	0.149	0.149	0.139	0.138
aic	247.9	245.6	243.6	244.3	242.7
df_m	1	5	4	3	2
N	198	198	198	198	198

Resource: I-NAMHS. [a]$p<0.05$, [b]$p<0.01$, [c]$p<0.001$. OR, odd ratio; CI, confidence interval; ACEs, adverse childhood experiences; AIC, Akaike's information criterion ($-2\ln(\text{likelihood}) +2zk$); df_m=Degree of model freedom.

Table 5: The mediation effect of simple logistic regression between ACEs and behavioral problems through family function (n=198).

Mediation variable	OR	Mean	[CI 95 %]
ACEs → Family function → Behavioral problems			
ACME	2.73	0.189	0.583–1.426
Direct effect	2.92[c]	0.238	0.662–1.480
Total effect	7.97[c]	0.255	0.156–0.346
% of tot eff mediated	–	0.237	0.051–0.114

ACME, average causal mediated effect. [a]$p<0.05$, [b]$p<0.01$, [c]$p<0.001$. OR, odd ratio; CI, confidence interval; ACEs, adverse childhood experiences.

male adolescents aged 10–17 years in Indonesia. The findings indicate that adolescents with behavioral problems were significantly more likely to have been exposed to 1–2 ACEs compared to those in the control group. These findings are consistent with previous research highlighting the long-term adverse effects of childhood adversity on adolescent psychosocial outcomes [8, 24]. ACEs often result in trauma and impose a significant burden on adolescents, both globally and in Indonesia [25]. Such trauma involves emotional and psychological strain caused by negative or violent experiences, leading to heightened stress responses. These adversities are strongly associated with symptoms such as depression, anxiety, and various behavioral problems, which collectively undermine adolescents' overall mental and social well-being [2].

The bivariate analysis revealed a strong dose-response relationship between ACEs and behavioral problems, in which adolescents exposed to 1–2 ACEs had nearly six times the risk of developing behavioral problems, and those exposed to three or more ACEs had an even higher risk (OR=8.65). These findings align with existing literature demonstrating that cumulative exposure to ACEs is associated with an increased likelihood of engaging in risky behavior [24, 26]. The study conducted by [24] suggests that adolescents with one or more

ACEs have an increased risk of behavioral problems. Negative parental behaviors, such as child abuse and substance abuse, have been shown to increase the risk of behavioral problems and are strong risk factors for subsequent violence, including violent behavior in young adulthood and child abuse when they become parents [27, 28]. Additionally, childhood abuse is a predictor of later criminality [29].

The multivariate analysis demonstrated that family function reduces the negative impact of ACEs on behavioral problems. When family function was considered, the odds ratios for behavioral problems among adolescents with ACE exposure decreased significantly, indicating that a supportive family environment can buffer against the detrimental effects of early adversity. Specifically, positive family communication emerged as the most stable and significant protective factor, reducing the likelihood of behavioral problems (OR=0.33–0.41, p<0.05). This finding is in line with research suggesting that open and supportive communication within families fosters emotional regulation and resilience in adolescents facing adversity [30].

Previous studies have shown that family support plays a protective factor against the adverse effects of ACEs [31]. The parent-child relationship has been identified as a mediator in the association between childhood abuse and adolescent behavioral problems [32]. Specifically, there is a well-documented link between maternal violence victimization and behavioral issues in adolescents, wherein children subjected to maternal abuse exhibit higher levels of both externalizing and internalizing problems [33]. Furthermore, paternal violence victimization has been found to predict violent behavior in adolescents [34].

The relationship between ACEs and family function is complex, as they often coexist. ACEs are associated with family instability, particularly in precarious living conditions [35]. Dysfunctional family environments further exacerbate mental health issues stemming from ACEs [36]. Additionally, the intergenerational effects of ACEs can shape family functioning over time [37]. However, ACEs do not always lead to family dysfunction – some individuals develop resilience through external support or adaptive coping mechanisms [38].

Despite the protective effects of family function, the mediation analysis revealed that family function did not fully mediate the relationship between ACEs and behavioral problems. Although approximately 23.7 % of the total effect was mediated, the indirect effect was not statistically significant. This suggests that while family function plays a role in moderating the impact of ACEs, other factors, such as peer support, school environment, and individual coping strategies, may also contribute to adolescent behavioral outcomes [39, 40]. Future research should explore these alternative pathways to provide a more comprehensive understanding of the mechanisms linking ACEs to behavioral problems.

These findings have significant implications for interventions aimed at reducing behavioral problems among adolescents exposed to ACEs. Strengthening family cohesion and enhancing communication skills within families may serve as key strategies to mitigate the adverse effects of ACEs, especially when integrated with broader social support systems such as school-based counseling and community resilience programs. The results are particularly relevant for stakeholders in Indonesia, including the Ministry of Population and Family Development, whose existing programs could incorporate evidence-based components to foster emotional bonding and family communication, making interventions more preventive and contextually relevant. Beyond Indonesia, these insights may also inform family-centered policies and practices in other low- and middle-income countries, contributing to global efforts to promote child and adolescent mental health.

Conclusions

This study reinforces the significant impact of adverse childhood experiences (ACEs) on behavioral problems among male adolescents and highlights the protective role of family functioning. Although family functioning did not fully mediate the relationship between ACEs and behavioral problems, it remains an important buffering factor. Strengthening family-based strategies – particularly those that promote emotional cohesion and effective communication – may help reduce the risk and severity of behavioral problems among adolescents exposed to adversity. Future studies should consider other potential mediators, including peer support and coping strategies, to develop more targeted interventions aimed at reducing the negative effects of childhood adversity on adolescent behavioral outcomes.

References

1. Sarfika R, Moh Yanuar Saifudin IM, Sari IM, Murni D, Malini H, Abdullah KL. Investigating associations between emotional and behavioral problems, self-esteem, and parental attachment among adolescents: a cross-sectional study in Indonesia. Heliyon [Internet] 2023;9:e21459. Available from: https://www.sciencedirect.com/science/article/pii/S240584402308667X.

2. Lackova Rebicova M, Dankulincova Veselska Z, Husarova D, Madarasova Geckova A, van Dijk JP, Reijneveld SA. The number of adverse childhood experiences is associated with emotional and behavioral problems among adolescents. Int J Environ Res Public Health 2019;16. https://doi.org/10.3390/ijerph16132446.

3. Dong Y, He X, Ye L, Sun L, Li J, Xu J, et al. Determinants of depression, problem behavior, and cognitive level of adolescents in China: findings from a national, population-based cross-sectional study. Front Psychiatry 2023;14. https://doi.org/10.3389/fpsyt.2023.1159739.

4. Du X, Kim YK. Family functioning and adolescent behavior problems: a moderated mediation model of caregiver depression and neighborhood collective efficacy. Child Youth Serv Rev [Internet] 2020; 116:105270. Available from: https://www.sciencedirect.com/science/article/pii/S019074092030445X.

5. Harikrishnan U, Sailo GL. Prevalence of emotional and behavioral problems among school-going adolescents: a cross-sectional study. Indian J community Med Off Publ Indian Assoc Prev Soc Med 2021;46:232–5.

6. Institute of Health Metrics and Evaluation. Global burden disease [internet]; 2021. Available from: https://vizhub.healthdata.org/gbd-results/?params=gbd-api2019-permalink/380dfa3f26639cb711d908d9a119ded2.

7. Wahdi AE, Setyawan A, Putri YA, Wilopo SA. National adolescent mental health survey (I-NAMHS) [internet]. Ment Health 2022. Available from: https://qcmhr.org/outputs/reports/12-i-namhs-report-bahasa-indonesia.

8. Webster EM. The impact of adverse childhood experiences on health and development in young children. Glob Pediatr Heal 2022;9. https://doi.org/10.1177/2333794x221078708.

9. Burke NJ, Hellman JL, Scott BG, Weems CF, Carrion VG. The impact of adverse childhood experiences on an urban pediatric population. Child Abuse Negl 2011;35:408–13.

10. Kleber RJ. Trauma and public mental health: a focused review. Front psychiatry 2019;10:451.

11. Lansford JE, Miller-Johnson S, Berlin LJ, Dodge KA, Bates JE, Pettit GS. Early physical abuse and later violent delinquency: a prospective longitudinal study. Child Maltreat 2007;12:233–45.

12. Gao Y, Yu Y, Ng TK. A Study on the moderating effect of family functioning on the relationship between deviant peer affiliation and delinquency among Chinese adolescents. 2013;3:178–85.

13. Benson JE, Johnson MK. Adolescent family context and adult identity formation. J Fam Issues 2009;30:1265–86.

14. Walsh F. Family resilience: a framework for clinical practice. Fam Process 2003;42:1–18.

15. Saltzman WR, Pynoos RS, Lester P, Layne CM, Beardslee WR. Enhancing family resilience through family narrative co-construction. Clin Child Fam Psychol Rev 2013;16:294–310.

16. Patterson JM. Understanding family resilience. J Clin Psychol 2002;58: 233–46.

17. Zhang D, You Y, Cai L, Zhang W, Zhang K, Wu Y. The relationship between family communication and adolescent problematic internet use: the chain mediation effects of loneliness and depression. 2024: 4263–80, https://doi.org/10.2147/prbm.s486192.

18. Erskine HE, Maravilla JC, Wado YD, Wahdi AE, Loi VM, Fine SL, et al. Prevalence of adolescent mental disorders in Kenya, Indonesia, and Viet Nam measured by the national adolescent mental health surveys (NAMHS): a multi-national cross-sectional study. Lancet (London, England) 2024;403:1671–80.

19. Shaffer D, Fisher P, Lucas C, Dulcan P, Mina K. NIMH diagnostic interview schedule for children version IV (NIMH DISC-IV): description, differences from previous versions, and reliability of some common diagnoses. J Am Acad Child Adolesc Psychiatry [Internet] 2000;39: 28–38. Available from: https://www.sciencedirect.com/science/article/pii/S0890856709660986.

20. Erskine HE, Blondell SJ, Enright ME, Shadid J, Wado YD, Wekesah FM, et al. Measuring the prevalence of mental disorders in adolescents in Kenya, Indonesia, and Vietnam: study protocol for the national adolescent mental health surveys. J Adolesc Heal [Internet] 2023;72: S71–8. Available from.

21. Bitsko RH, Holbrook JR, Fisher PW, Lipton C, van Wijngaarden E, Augustine EF, et al. Validation of the diagnostic interview schedule for children (DISC-5) tic disorder and attention-deficit/hyperactivity disorder modules. Evidence-based Pract child Adolesc Ment Heal 2023; 9:231–44.

22. World Health Organization. Adverse childhood experiences international questionnaire [internet]. In: Adverse childhood experiences international questionnaire (ACE-IQ). Geneva: WHO; 2018: 245–58 pp. Available from: https://www.who.int/publications/m/item/adverse-childhood-experiences-international-questionnaire-(ace-iq).

23. Kovács-Tóth B, Oláh B, Kuritárné Szabó I, Fekete Z. Psychometric properties of the adverse childhood experiences questionnaire 10 item version (ACE-10) among Hungarian adolescents. Front Psychol 2023;14: 1161620.

24. Hunt TKA, Slack KS, Berger LM. Adverse childhood experiences and behavioral problems in middle childhood. Child Abuse Negl 2017;67: 391–402.

25. Stoltenborgh M, Bakermans-Kranenburg MJ, Alink LRA, van IJzendoorn MH. The prevalence of child maltreatment across the globe: review of a series of meta-analyses. Child Abus Rev [Internet] 2015;24:37–50. Available from.

26. Garrido EF, Weiler LM, Taussig HN. Adverse childhood experiences and health-risk behaviors in vulnerable early adolescents. J Early Adolesc 2018;38:661–80.

27. Kerr DCR, Tiberio SS, Capaldi DM, Owen LD. Paternal and maternal prescription opioid use and misuse: general and specific risks for early adolescents' substance use. Addict Behav 2020;103:106248.

28. Tracy M, Salo M, Appleton AA. The mitigating effects of maternal social support and paternal involvement on the intergenerational transmission of violence. Child Abuse Negl 2018;78:46–59.

29. De Sanctis VA, Nomura Y, Newcorn JH, Halperin JM. Childhood maltreatment and conduct disorder: independent predictors of criminal outcomes in ADHD youth. Child Abuse Negl 2012;36:782–9.

30. Zhang Y, Hu Y, Yang M. The relationship between family communication and family resilience in Chinese parents of depressed adolescents: a serial multiple mediation of social support and psychological resilience. BMC Psychol 2024;12:33.

31. Hatch V, Swerbenski H, Gray SAO. Family social support buffers the intergenerational association of maternal adverse childhood experiences and preschoolers' externalizing behavior. Am J Orthopsychiatry 2020;90:489–501.

32. Song L, Fang P, Jiang Z, Li S, Song X, Wan Y. Mediating effects of parent-child relationship on the association between childhood maltreatment and depressive symptoms among adolescents. Child Abuse Negl 2022; 131:105408.

33. Cui N, Deatrick JA, Liu J. Maternal and paternal physical abuse: unique and joint associations with child behavioral problems. Child Abuse Negl 2018;76:524–32.

34. Jeong J, Bhatia A, Skeen S, Adhia A. From fathers to peers: association between paternal violence victimization and peer violence perpetration among youth in Malawi, Nigeria, and Zambia. Soc Sci Med 2021;278:113943.

35. Narayan AJ, Kalstabakken AW, Labella MH, Nerenberg LS, Monn AR, Masten AS. Intergenerational continuity of adverse childhood experiences in homeless families: unpacking exposure to maltreatment versus family dysfunction. Am J Orthopsychiatry 2017;87:3–14.

36. Rytilä-Manninen M, Haravuori H, Fröjd S, Marttunen M, Lindberg N. Mediators between adverse childhood experiences and suicidality. Vol. 77, Child Abuse & Neglect. Rytilä-Manninen, Minna: Hospital District of Helsinki and Uusimaa, Kellokoski Hospital, Kellokoski, Finland, 04500, minna@pixoi.com: Elsevier Science; 2018. p. 99–109.

37. Ri KN, Young Sook K, Jung-Kook S, Moon-Doo K, Park JH, Bung-Nyun K, et al. The intergenerational transmission of maternal adverse childhood experiences on offspring's psychiatric disorder and the mediating role of maternal depression: results from a cross sectional study. Clin Child Psychol Psychiatry [Internet] 2022;27:613–29. Available from.

38. Giovanelli A, Mondi CF, Reynolds AJ, Ou S-R. Adverse childhood experiences: mechanisms of risk and resilience in a longitudinal urban cohort. Dev Psychopathol 2020;32:1418–39.

39. Wang JH, Merrin GJ, Kiefer SM, Jackson JL, Huckaby PL, Pascarella LA, et al. Peer relations of adolescents with adverse childhood experiences: a systematic literature review of two decades. Adolesc Res Rev [Internet] 2024;9:477–512. Available from.

40. Haczkewicz KM, Shahid S, Finnegan HA, Monnin C, Cameron CD, Gallant NL. Adverse childhood experiences (ACEs), resilience, and outcomes in older adulthood: a scoping review. Child Abuse Negl [Internet] 2024:106864. Available from: https://www.sciencedirect.com/science/article/pii/S0145213424002540.