

Title :

Community violence exposure and determinants of adolescent mental health:

A school-based study of a post-conflict area in Indonesia

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Conflict of Interest:

The authors declare that they have no conflict of interest.

Abstract

Introduction: Studies have shown the adverse impact of exposure to community violence on adolescent health. However, most of the studies were conducted in high-income countries. This study aimed at assessing the community violence exposure and the determinants of mental health problems among adolescents in Ambon, a post-conflict area in Indonesia.

Material and methods: We conducted a cross-sectional, school-based study involving 511 of 10th-graders from six randomly selected high schools in Kotamadya Ambon. Our participants were assessed using a set of questionnaires including the Strength Difficulties Questionnaire (SDQ) to measure mental health problems, and the child version of the Screen for Adolescent Violence Exposure (KID-SAVE) to measure community violence exposure. The hierarchical regression analyses were used to explore the determinants of mental health problems.

Results: In this study, boys reported more exposure to community violence (both in frequency and severity) than girls. Meanwhile, the girls reported higher emotional problems than boys. The hierarchical regression analyses revealed that in the total sample and among boys, the community violence exposure was associated with mental health problems. However, it was the perceived impact of community violence exposure which showed an association with mental health problems among girls.

Conclusions: This study revealed the high community violence exposure among adolescents living in a post-conflict setting in Indonesia. The study also found gender differences in the determinants of mental health problems among adolescents who were exposed to CVE.

Keywords:

Community violence exposure, mental health, adolescent, SDQ, post-conflict, Indonesia

1. Introduction

During the past decade, adolescent health and its association with the community violence exposure (CVE) have become a focus of public health concerns (Krug et al., 2002; World Health Organization, 2014). The CVE is considered the most frequent type of violence exposure among children (Margolin & Gordis, 2000). The deleterious impacts of the CVE on adolescent mental health vary from poor physiological functioning, poor academic performance, internalizing and externalizing behaviors, to post-traumatic stress disorder (PTSD) (e.g., Fowler et al., 2009; Krug et al., 2002; Margolin & Gordis, 2000; Salzinger et al., 2002; World Health Organization, 2014). Even though most of the adolescent violence happened in low-and-middle-income-countries (LMIC), most of the published studies on adolescent violence are from the high-income countries (HIC) (Matzopoulos et al., 2008).

One important factor to be considered in post-conflict settings is the high risk of recurrent community violence (Silove et al., 2014). The negative impact of violent conflict on children was evident from previous studies; as well as some recommendations for intervention in the LMIC (Betancourt & Khan, 2008; Betancourt, Meyers-Ohki, Charrow, & Tol, 2013; Inter-Agency Standing Committee (IASC), 2006; Jordans, Tol, Komproe, & de Jong, 2009; Jordans, Pigott & Tol, 2016; WHO, 2017). In addition to the impact of war and community violence, daily stressors were equally important in influencing the mental health of people living in conflict-affected areas. Furthermore, Miller and Rasmussen (2010a; 2010b) emphasized that even though the conflict has ended, the destruction on social and material conditions are accounted for the mental health of the people living in war-affected areas. The present study aims to reduce the knowledge gap regarding the CVE in the post-conflict, LMIC settings. We

wanted to assess the CVE and mental health problems of adolescents living in Ambon, the capital of Maluku province, Indonesia.

The violent conflict between Muslim and Christian communities in Ambon occurred in 1999–2002. Hundreds to thousands of people had been killed, and more than one-third of the total population in Maluku were displaced during the conflict (International Crisis Group, 2011). After the conflict ended, several outbreaks happened, although on a much smaller scale than before. The latest outbreak was in 2011, caused seven persons killed, several injuries, and the displacement of more than 7000 people (International Crisis Group, 2011; Radio Australia, 2011; Simanjuntak, 2012). Most of the adolescents that we are going to study may have never experienced the big conflict. Yet they live in a conflict-affected community with specific characteristics and adversities to face (Miller & Rasmussen, 2010a; 2010b).

In this study, we use the socioecological analysis framework, which has been used in similar studies (e.g., Krug et al., 2002; Lynch & Cicchetti, 1998; Overstreet & Mazza, 2003; Salzinger et al., 2002). The adolescent development in this framework is described as the dynamic interactions between the person and its environments (microsystem, mesosystem, exosystem, and macrosystem) (Bronfenbrenner, 2005). Previous studies show several predictors of adolescents' mental health after exposure to community violence; from individual factors, relationships with family, school, and community (e.g., Copeland-Linder, Lambert & Ialongo, 2010; Fowler et al., 2009; Lynch, 2003; Moon, Patton & Rao, 2010; Ozer, Lazi, Douglas & Wolf, 2015; Wallen & Rubin, 1997). This study focuses on several determinants of mental health: individual (age, sex, health, absenteeism, cognitive thinking, and self-esteem), interpersonal/ relationship (relationship with family, peers, school, and neighborhood factor) and

wider environment (community violence). We will measure mental health problems to indicate the mental health status.

The objectives of this study are: (1) to assess the CVE among adolescents in Ambon; (2) to assess the mental health status of the adolescents; and (3) to examine the determinants of mental health among adolescents with regards to the CVE.

2. Material and methods

2.1. Study design

We conducted a cross-sectional, school-based study in October - November 2013. Based on the list of schools provided by The Education Office of Kotamadya Ambon, we randomly selected the schools. We invited seven schools, but one school withdrew from the study due to a very low student admittance. We invited all 10th graders from the selected schools to participate in the study. We had approximately 640 potential participants. We obtained informed consent from the adolescents and their parents/guardians before the data collection.

The participants were sitting in their regular classrooms during the data collection. We distributed a set of questionnaires, and most participants completed it within 30–45 minutes. At least one of the research team members was present during data collection to explain the process and assist participants who needed clarification. We obtained the ethical clearance for the study from the Norwegian Regional Ethical Committee of Medical Research. Ethical clearance from any institution in Indonesia was not required when we conducted our study. At that time, there was no ethical committee available; neither at the Ministry of Higher Education nor at the university level. The Ethical Committee at the Faculty of Psychology Universitas Indonesia was

recently established in 2017. However, prior to the study, our research protocol had been evaluated by the Department of Research and Community Engagement, Universitas Indonesia.

2.2. Participants

The total participants in our study were 511 students (180 boys and 331 girls). Some of the schools have more female than male students; which may explain the imbalance number of boys and girls in our sample. The other reason may be related to the higher number of absent male students. Approximately 110 students were absent at the time of data collection (37% girls and 63% boys). We included participants who completed the measurements of mental health problems and the CVE in the statistical analyses (482 participants; 171 boys (35%) and 311 girls (65%)); yielded a response rate of 75%. The age range of our participants was 13–17 years (mean = 14.75, SD = 0.722).

2.3. Materials

We used instruments that had been validated to be used in Indonesia by the Community Mental Health Research Group, Faculty of Psychology, Universitas Indonesia (personal communication, 25 June 2013). To ensure that all participants understand the questionnaires, all instruments were designed to be understandable at the 7th-grade reading level. Before the actual data collection, we pre-tested the questionnaires on adolescents from various socioeconomic backgrounds.

2.3.1. The Strengths and difficulties questionnaire (SDQ)

We assessed the adolescent mental health using the self-report, Bahasa Indonesia version of the Strengths and Difficulties Questionnaire (SDQ) (SDQ, 2013). We made some wording adaptation to local idioms/terms. The instrument comprises 25 items covering four difficulty

scales (emotional symptoms, conduct problems, hyperactivity, and peer problems) and one strength scale (prosocial behavior). Each scale consists of five items with three response choices: “not true,” “somewhat true,” and “certainly true.” The sum of the four difficulty scales provides a “total difficulties” score, measuring overall mental health problems in children (Goodman & Goodman, 2009).

2.3.2. The Screen for adolescent violence exposure (SAVE), children version (KID-SAVE)

We measured the CVE using the Screen for Adolescent Violence Exposure - child version (KID-SAVE) questionnaire (Flowers et al., 2000). The KID-SAVE items were clustered into three groups according to severity: indirect violence (witnessing less-severe interpersonal violence or hearing about violent events), traumatic violence (witnessing a murder or being a victim of an assault), and physical/verbal abuse (low-level physical/verbal abuse). The KID-SAVE also measures the impact score, which provides information about the effect of CVE and the possibility of desensitization (Flowers et al., 2000). Each item in the frequency scale has three response options (0 = never, 1 = sometimes, and 2 = a lot). The impact score also has the same three response options (0 = not at all upsetting, 1 = somewhat upsetting, and 2 = very upsetting) (Flowers et al., 2000).

Our version of KID-SAVE consisted of 19 items; nine items are measuring indirect violence, eight items measuring traumatic events, and two items measuring physical/verbal abuse. All items related to guns/weapons were omitted because the ownership of gun/weapon in Indonesia is illegal. We also excluded two questions which specifically asked about violence experienced at home.

2.3.3. The Rosenberg self-esteem scale (RSES)

We used the Rosenberg Self-Esteem Scale (RSES) to assess adolescents' self-esteem (Heatherton & Wyland, 2003). The RSES consists of 10 items, with four response options ranging from "strongly disagree" (scored 1) to "strongly agree" (scored 4). We reversed the scores for the negatively worded items, except item number 8 ("I wish I could have more respect for myself"). Schmitt and Allik (2005) argued that item number 8 was associated with high self-esteem in countries like Indonesia and Malaysia. The higher scores in RSES indicate higher self-esteem (Heatherton & Wyland, 2003; Schmitt & Allik, 2005).

2.3.4. Psychosocial domain

We assessed adolescents' perceptions about support from families, teachers, and friends at school, and neighbors. The instrument was developed based on previous studies (Bernat et al., 2012; Moon et al., 2010). The instrument has 10 items, measuring support from family (4 items), school (4 items), and neighborhood (2 items). Participants were asked to assess the appropriateness of each statement to their real lives. Examples of the items are "my family understands me" (family), "my classmates care about me" (school), and "my neighbors care about me" (neighborhood). Four-response options were available, ranging from "not appropriate at all" (scored 0) to "very appropriate" (scored 3). We calculated the sum of total scores in each domain.

2.3.5. Socio-demographic data

We assessed the socio-demographic information by asking individual information and family background. We asked participants about their age, sex, absenteeism in the last 30 days, health status, and history of smoking and alcohol/drugs use. We also asked whether they belong to

specific groups (sports, art, and youth) and their involvement in a gang. The questions about family background including the parental background (marital status, highest education level attained, and occupation), the number of siblings, and the household members.

2.4. Data analyses

We carried out the data analyses using the IBM SPSS Statistics software for Windows version 24.0. We performed preliminary analyses to ensure no violation of the assumptions of normality, linearity, multicollinearity, and homoscedasticity. In the descriptive analyses, we collapsed the violence exposure scores into categorical data: “not experiencing” (scored 0) and “experiencing” (scored 1). The SDQ total difficulties score served as the dependent variable in further analyses.

We conducted bivariate correlation analyses. We then entered all variables with $p < 0.1$ on the correlations with the total difficulties score, in the hierarchical regression analyses. In the hierarchical regression analyses, we entered the variables in three steps. First, we entered the total violence exposure as a predictor. We entered individual factors in the second step and interpersonal/relationship factors in the third step. Besides the total sample, we also stratified the analyses by sex, since we found significant interaction effects of sex and other determinants.

3. Results

Table 1 describes the CVE and t-test result for sex differences. Nearly all the participants (99.4%) reported being exposed to at least one violent event in the previous year. On average, our participants experienced eight types of violent events. Compared to girls, boys reported greater total exposure to violence, exposure to traumatic violence and physical/verbal abuse.

The SDQ scores by sex are presented in Table 2. The only significant difference was on the emotional problems; the girls reported higher emotional problems than boys ($t = -4.316, p = 0.000$). Table 3 shows the results of the bivariate correlation analyses between the total difficulties score and other variables. Only the variables with $p < 0.1$ on the associations with the total difficulties score were presented in the table.

Table 4 shows the hierarchical regression analyses with total difficulties score as the dependent variable. In the full sample, the total violence exposure explained 9.8% of the variance, and the explained variance in the final model was 32.6%. The significant contributors to the total difficulties score were higher violence exposure, being a girl, lower health status, perceived negative impact of violence, lower self-esteem, and lower school support.

In the hierarchical regression model for boys, the total violence exposure explained 12.4% of the variance in the total difficulties score. Although the psychosocial factors did not significantly influence the total difficulties score in the final model, but the overall model remained to be significant with the total variance explained of 28.4%. Higher violence exposure, lower health status, and lower self-esteem were the significant determinants of the total difficulties score among boys.

The hierarchical regression analyses for girls show that the total violence exposure explained 10.1% of the total difficulties score. However, after controlling for other factors, the total violence exposure lost its influence on the total difficulties score. The significant determinants of mental health problems were lower health status, perceived negative impact of violence, lower self-esteem, lower family support, and lower school support. This final model explained 37.1% of the total variance.

4. Discussion

The objective of this study is assessing the CVE and mental health status among adolescents living in a post-conflict area in Indonesia. The result shows the high CVE among adolescents, especially boys. Aside from the possibility of recurrent violence (Silove et al., 2014), high CVE may be related to the local culture. Violence is socially and culturally accepted in Ambon; a phenomenon that can also be found in some other LMICs (Ribeiro et al., 2009). One of the indicators is the extensive use of corporal punishment as a method of discipline or to show power. In the parenting practice, many Ambonese parents still hold on to “the old wisdom” which says, “There are love and education at the tip of a rattan.” Furthermore, van Klinken (2007) described Maluku as the province with the second-highest prevalence of violence in Indonesia.

This study shows that compared to general adolescents populations in some other countries, our sample has higher averages on the difficulties scores (e. Bele, et al., 2013; Perera et al., 2013; Stratton et al., 2014; SDQ, 2013). The SDQ scores of our participants were similar to those of female adolescents in Iran (Rabbani et al., 2012), and clients in the child welfare system in the Netherlands (Janssens & Deboutte, 2009). These findings indicate that adolescents in our study may be at elevated risk of having psychological problems.

Since the national SDQ norm for Indonesia is unavailable, it has not been possible to accurately estimate the prevalence of high-risk adolescents in this study. Using the cut-off scores from the British population, only 54.8% of our participants would be considered “normal.” The others would be categorized as “borderline” (16.2%) and “abnormal” (29%). However, the actual prevalence might be higher if we consider the potential participants who were absent during the

survey. Goodman and Goodman (2009) described absenteeism as one of the symptoms of troubled students.

We found out that the CVE was associated with mental health problems among boys. In girls, it was the perceived impact of violence which showed an association with mental health problems. These results are in accordance with other studies; which show that higher CVE was associated with more mental health problems among boys (e.g., Fowler et al., 2009; Krug et al., 2002). However, although boys were more likely to experience violence, girls reported more severe adverse effects than boys (Schwab-Stone et al., 2013).

In our study, the lower self-esteem was associated with mental health problems in both sexes. The associations between self-esteem, the CVE, and mental health of adolescents exposed to violence were found in other studies (e.g., Copeland-Linder et al., 2010; Dupéré et al., 2012; Soler et al., 2012). Living in violent neighborhoods may invoke the helplessness and hopelessness feelings among adolescents, which may negatively influence their self-esteem and adaptive behaviors (Copeland-Linder et al., 2010; Dupéré et al., 2012; Lynch & Cicchetti, 1998).

Family and school supports were associated with mental health problems only among girls in our sample. One possible explanation is because although parents and schools are still important for boys, friends and peers gradually take a greater role in their lives (Tummala-Narra et al., 2014; Yi et al., 2013). Another possible explanation is because family support may lose its protective effect when violence is very prevalent (Luthar & Goldstein, 2004; Proctor, 2006). The protective effect of parental support is more likely to deteriorate with increased exposure to violence (Javdani et al., 2014). Similarly, positive school environments may lose their protective function among the victims of violence (O'Donnell et al., 2011). The high CVE among boys in

our sample may indicate greater environmental challenges that outweighed the role of psychosocial supports.

Furthermore, girls are more willing to express their feelings and receive support from others (e.g., McDonald et al., 2011; Yi et al., 2013). Based on our observations, more girls were willing to disclose their problems; pouring their heart (locally called “*curhat*”) to their significant others. Openness toward significant adults enables girls to receive instrumental or emotional support; helps them to integrate their experiences of the CVE and promotes better mental health (Ozer et al., 2015).

This study is one of the few that focuses on the associations between the CVE and mental health of adolescents in post-conflict areas in Southeast Asia. The socioecological framework enabled us to consider sociocultural aspects and the post-conflict context. Although our participants may be too young to remember the main conflict, they were nonetheless living in a community which had experienced considerable transformations in its structure and dynamics because of the violent conflict. The biggest challenge in conducting a study in conflict-affected areas was obtaining permission from the authorities. Good collaboration with a local NGO that had a good relationship with local authorities were the key factors that enabled us to conduct this study.

There were several limitations to this study. First, the cross-sectional design refrains us from establishing the causal relationships. A longitudinal study should be conducted to confirm the causal relationships between determinants and adolescent mental health. Furthermore, we need to be careful in providing a recommendation for a particular intervention based on the findings. However, introduction to some self-help or problem-solving skills may be beneficial to

adolescents, especially those identified with behavioral problems (Jordans, Komproe, Tol & de Jong, 2009; Jordans, Pigott & Tol, 2016; WHO, 2017). Interventions involving families and communities may also be beneficial to the adolescents in Maluku, with regards to the result of future studies regarding determinants of mental health and cultural factors (Jordans, Pigott & Tol, 2016).

Another limitation is information bias. We did not measure the specific forms of the CVE that may be more commonly experienced by adolescents in Ambon, such as throwing stones at people/buildings and arson. We also did not measure the settings where the violence happened. More detailed measurement of CVE may provide more comprehensive understanding on the determinants of adolescent mental health. On the other hand, it means longer questionnaires; hence increase the risk of adolescents being bored and less motivated to give accurate responses.

The school-based design also created the information bias. We missed the information from adolescents who did not attend high school. We also missed information from some of the more vulnerable students (e.g., the physically unhealthy) or delinquent students (e.g., those who often skip school). However, to minimize the information bias, we randomly selected the schools and ensured that all potential participants were well informed about the exact time of the data collection.

Despite the limitations, the random sampling method in this study enabled us to make some generalizations of the results. The results may represent a real picture of high school students in Ambon. Furthermore, our findings may also be generalizable to other post-conflict situations, especially in other low-and-middle-income countries, where violence is still socially and culturally accepted.

In conclusion, this study highlighted the disconcerting rate of CVE among adolescents in a conflict-affected area in Indonesia. It also revealed an elevated risk of psychological problems among the exposed adolescents. These findings may function as a reminder for parents, teachers, community leaders, and other stakeholders, about the importance of reducing the CVE in post-conflict settings.

Table 1 Participants' experiences of violence during the previous year, by sex

	Range	Boys Mean (SD)	Girls Mean (SD)	Total sample Mean (SD)	t-test
Indirect violence	0–9	6.22 (2.034)	6.18 (1.933)	6.20 (1.968)	0.208
Traumatic violence	0–8	2.35 (1.737)	1.58 (1.448)	1.85 (1.598)	4.928 **
Physical/verbal abuse	0–2	1.12 (0.806)	0.63 (0.746)	0.80 (0.803)	6.781**
Total violence exposure	0–19	9.69 (3.673)	8.39 (3.288)	8.85 (3.483)	3.994**

**Significant at $p < .001$.

Table 2 Strengths and Difficulties Questionnaire (SDQ) scores of participants

	Total Mean (SD)	Boys Mean (SD)	Girls Mean (SD)	t-test
Emotional problems	4.49 (2.466)	3.88 (2.144)	4.83 (2.568)	-4.316**
Hyperactivity Conduct problems	3.28 (1.825)	3.31 (1.736)	3.27 (1.915)	0.226
Peer problems	3.04 (1.804)	3.46 (1.861)	3.36 (1.774)	0.574
Prosocial behavior	2.27 (1.523)	2.44 (1.495)	2.18 (1.532)	1.787
Total difficulties	7.66 (1.851)	7.61 (2.021)	7.69 (1.753)	-0.403
	13.45 (5.451)	13.09 (4.993)	13.64 (5.686)	-1.059

**Significant at $p < .001$.

Table 3 Bivariate analyses of all variables significantly associated with total difficulties

	1	2	3	4	5	6	7	8	9	10	11
1. Sex	–	-.169**	.212**	.043	-.173**	-.174**	.003	-.041	.010	.068	.048
2. Health status		–	-.018	.004	-.001	-.114*	.112*	.227**	.169**	.146**	-.287**
3. Youth group participation			–	.000	-.072	.053	.184**	.079	.011	.049	-.126**
4. Gang involvement				–	.001	-.036	-.041	-.179**	-.064	-.067	.092*
5. Total violence exposure					–	.745**	-.103**	-.073	-.025	-.088	.313**
6. Total impact of exposure						–	.010	-.016	-.037	.079	.286**
7. Self-esteem							–	.290**	.251**	.258**	-.361**
8. Family support								–	.374**	.479**	-.306**
9. School support									–	.472**	-.267**
10. Neighborhood support										–	-.264**
11. Total difficulties											–

*Significant at $p < .05$; **significant at $p < .001$.

Table 4 Hierarchical regression analyses with total difficulties as the dependent variable

	Boys (N = 171)				Girls (N = 311)				Full sample (N = 482)			
	Mean	B	SE	β	Mean	B	SE	β	Mean	B	SE	β
Total difficulties	13.09				13.64				13.45			
Step 1												
Total violence exposure		0.311	0.067	0.351**		0.361	0.067	0.317**		0.322	0.048	0.313**
R ²	0.124				0.101				0.098			
Adjusted R ²	0.118				0.097				0.096			
ΔR^2	0.124				0.101				0.098			
F change	(1,149) = 21.004**				(1,259) = 29.000**				(1,414) = 45.065**			
F	(1,149) = 21.004**				(1,259) = 29.000**				(1,414) = 45.065**			
Step 2												
Total violence exposure		0.259	0.096	0.292**		0.162	0.087	0.143		0.204	0.066	0.199**
Sex		N/A	N/A	N/A		N/A	N/A	N/A		0.725	0.492	0.064
Health status		-3.747	1.025	-0.266**		-2.483	0.653	-0.200**		-2.877	0.553	-0.227**
Impact of exposure		0.046	0.090	0.055		0.182	0.084	0.0166**		0.122	0.063	0.124
Self-esteem		0.289	0.098	-0.213		-0.488	0.078	-0.366*		-0.425	0.0	-0.317**
R ²	0.247				0.349				0.280			
Adjusted R ²	0.226				0.339				0.272			
ΔR^2	0.123				0.249				0.182			
F change	(3,148) = 8.061**				(3,256) = 32.618**				(4,410) = 25.958**			
F	(4,148) = 12.114**				(4,256) = 34.368**				(5,410) = 31.953**			
Step 3												
Total violence exposure	12.60**	0.246	0.096	0.277*	10.68**	0.118	0.085	0.099	11.36**	0.176	0.065	0.172**
Sex	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.65	0.983	0.494	0.086*
Health status	0.85**	-3.216	1.042	-0.228**	0.70**	-1.442	0.654	-0.131*	0.76**	-2.333	0.553	-0.184**
Impact of exposure	11.06**	0.073	0.091	0.088	9.37**	0.203	0.082	0.203*	10.00**	0.146	0.063	0.149*
Self-esteem	30.73**	-0.221	0.104	-0.163*	30.75**	-0.526	0.079	-0.276**	30.74**	-0.321	0.060	-0.239**
Youth group participation	0.21	-0.700	0.899	-0.057	0.42**	-1.091	0.576	-0.089	0.35**	-1.003	0.493	-0.088
Gang involvement	0.13	1.393	1.081	0.095	0.17	0.623	0.750	0.033	0.16*	0.855	0.625	0.057
Family support	10.01**	0.100	0.201	0.040	9.84**	-0.288	0.074	-0.197**	9.90**	-0.257	0.131	-0.097
School support	9.15*	-0.131	0.192	-0.057	9.20**			-0.136*	9.18**	-0.271	0.128	-0.101*
Neighborhood support	4.53**	-0.559	0.321	-0.144	4.70**			0.029	4.64**	-0.231	0.225	-0.052
R ²	0.284				0.371				0.326			
Adjusted R ²	0.239				0.349				0.310			
ΔR^2	0.038				0.068				0.046			
F change	(5,143) = 1.506				(5,251) = 5.452**				(5,405) = 5.533**			
F	(9,143) = 6.312**				(9,251) = 16.458**				(10,405) = 19.626**			

*Significant at $p < 0.05$; **significant at $p < 0.001$.

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