The Effect of Bullying on Depression, Academic Activity, and Communication in Adolescents in Surakarta: A Multilevel Logistic Regression

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ABSTRACT

Background: Human interaction requires communication as a transmission of information, ideas, emotions, skills, and so on. Communication occurs when a source conveys a message to the recipient with a conscious intention to influence the recipient's behavior. One of the problems in social communication is bullying. Bullying or harassment can be through words or through actions that aim to make the opponent's mental fall and pressure. The purpose of this study was to analyze the factors that influence bullying against depression with the Health Belief Model and Social Cognitive Theory.

Subjects and Method: This was a cross-sectional study conducted in junior high schools in Surakarta, in December 2019. A total sample of 250 adolescents was selected by simple random sampling. The dependent variable was bullying. The independent variables were perceived susceptibility, perceived severity, cues to action, perceived threat, perceived benefit, perceived barrier, self-efficacy, depression, academic activities, and communication. The data were collected by questionnaire and analyzed by a multiple multilevel logistic regression run on Stata 13.

Results: Bullying increased depression (b= 3.69; 95% CI= 1.51 to 9.00; p= 0.004) and poor communication (b= 4.95; 95% CI= 2.24 to 10.89; p <0.001). Bullying decreased academic achievement (b= - 5.68; 95% CI= -12.33 to -2.62; p<0.001). School had strong contextual effect on depression with ICC= ICC= 20.91%.

Conclusion: Bullying increases depression and poor communication. Bullying decreases academic achievement. School has strong contextual effect on depression.

Keywords: bullying, depression, Health Belief Model, Social Cognitive Theory

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BACKGROUND

Human interaction requires communication as a transmission of information, ideas, emotions, skills, and so on. The act or process of transmission is what is commonly called communication. According to Gerald R. Miller (in Mulyana, 2013), communication occurs when a source conveys a message to the recipient with a conscious intention to influence the recipient's behavior. Communication will form a group that becomes a social communication. Social communication in general is every person who lives in and society, from waking up to going to sleep again, by nature is always involved in communication. According to Sherif (in Barker, 1987), social communication is a social unit consisting of two or more individuals who

have conducted fairly intensive and regular social interactions, so that among those individuals there is already a division of tasks, structures, and certain norms.

One of the problems in social communication is bullying. Bullying or harassment can be through words or through actions that aim to make the opponent's mental fall and pressure. Another goal is to control someone through insulting, high-pitched words and threats or acts of violence (Sugijokanto, 2014).

This study aimed to analyze the effect of bullying on depression, academic activity, and communication in adolescents in Surakarta using a multilevel logistic regression.

SUBJECTS AND METHOD

1. Study Design
This was an analytic observational study with a cross sectional design. The study was carried out in junior high schools in Surakarta, in December 2019.

2. Population and Sample
The study population included all teenagers who attend junior high school in Surakarta. Sample of 250 students was selected by simple random sampling.

3. Study Variables
The dependent variable was bullying. The independent variables were perceived susceptibility, perceived severity, cues to action, perceived threat, perceived benefit, perceived barrier, self-efficacy, depression, academic activities, and communication.

4. Operational Definition of Variables
Perceived susceptibility refers to an individual's subjective perception of a decline in psychological health conditions or one's subjective perception of the risk of bullying. The greater the bullying, the higher the person's level of depression.

Perceived severity refers to the subjective perception of an individual that is related to the severity of bullying. Individuals assume that if a bullying is not treated, the effect will get worse.

Cues to action can come from people or events that are the reason for an individual or community to change their habits or behavior.

Perceived threats pushes someone to take preventative actions or healing steps.

Perceived benefit refers to an individual's perceptions regarding the perceived benefits or benefits of reducing the risk of bullying.

Perceived barrier refers to the perception of individuals or groups about barriers to healthy habits.

Self-efficacy was the ability or confidence in someone to be able to succeed in doing an action.

Depression was a mental disorder characterized by the appearance of symptoms of decreased mood, loss of interest in something, feelings of guilt, sleep disturbance or appetite, loss of energy, and decreased concentration.

Communication was the art of developing and gaining understanding among people. Communication is the process of exchanging information and feelings between two or more people, and is important for effective management.

Academic Activity
Academic activity was a way of life of a pluralistic, multicultural scientific community that is sheltered in an institution that bases itself on the values of scientific truth and objectivity.

Measuring Instrument: Questionnaire. Measurement Scale: Continuous. For the purpose of analysis, the data are converted into a dichotomy with the following results: 0 <0-50%; 1 ≥ 51-100%.

5. Data Analysis
Univariate analysis was used to describe each dependent and independent variable. Bivariate analysis is performed to explain the effect of one independent variable on a de-

pendent variable. The method used is the chi-square test, with a confidence level of 95%. Multilevel logistic regression is carried out to analyze the effect of perception of vulnerability, perception of severity, cues to action, perception of threats, perceived benefits, perceived range of obstacles, self-efficacy, depression, academic activities and communication on bullying. Univariate, bivariate, and multilevel logistic regression analyzes were performed using the Stata 13 program.

6. Research Ethic

Research ethics includes consent sheets, anonymity, confidentiality, and ethical eligi-bility. Ethical feasibility in this study came from the Health Research Ethics Committee of Dr. Moewardi Hospital Surakarta with number 342/II/HREC/2020.

<div style="text-align:center">**RESULTS**</div>

1. Sample Characteristics

Table 1 shows the characteristics of the research subjects. Most of the research subjects were adolescents 13 years (30%), 14 years (30%), and there were 15 years (40%), junior high school educators and 177 male sex (70.8%) and 73 women (29.2%).

2. The result of bivariate analysis

Table 1. Bivariate analysis of effect of bullying on depression, academic activity, and communication in adolescents in Surakarta

Independent Variable	Bullying				Total		OR	p
	Yes		No					
	n	%	n	%	n	%		
Perceived susceptibility								
High	116	81.12	27	18.88	143	100	7.19	<0.001
Low	40	37.38	67	62.62	107	100		
Perceived Severity								
High	117	81.82	26	18.18	143	100	8.87	<0.001
Low	36	33.64	71	66.36	107	100		
Cues to action								
Yes	114	79.72	29	20.28	143	100	6.85	<0.001
No	39	36.45	68	63.55	107	100		
Perceived threat								
High	114	79.42	29	20.28	143	100	6.58	<0.001
Low	40	37.38	67	62.62	107	100		
Perceived benefit								
High	121	84.62	22	15.38	143	100	9.98	<0.001
Low	38	35.51	69	64.49	107	100		
Perceived barrier								
High	111	77.62	32	22.38	143	100	4.96	<0.001
Low	44	41.14	63	58.88	107	100		
Self-Efficacy								
Strong	111	77.62	32	22.38	143	100	6.04	<0.001
Weak	39	36.45	68	63.55	107	100		
Depression								
Positive	116	81.12	27	18.88	143	100	9.22	<0.001
Negative	34	31.78	73	68.22	107	100		
Communication								
Good	128	89.51	15	10.49	143	100	11.31	<0.001
Poor	46	42.99	61	57.01	107	100		
Academic Activity								
Good	123	86.01	20	13.99	143	100	11.63	<0.001
Poor	37	34.58	70	65.42	107	100		

3. Multivariate Analysis

Multivariate analysis is used to describe the effect of more than one independent variable simultaneously on the dependent variable.

Data processing in this study was carried out using the Stata 13. Program Based on the analysis with a multilevel logistic regression test, the results were obtained as follows:

Table 2. Multilevel logistic regression analysis of the effects of bullying on depression

Independent Variable	Regression coef. (b)	95% CI		p
		Lower Limit	Upper Limit	
Fixed Effect				
Bullying	4.44	1.91	10.29	0.010
High perceived susceptibility	3.69	1.51	9.00	0.004
High perceived severity	3.21	1.32	7.81	0.010
Weak self-efficacy	6.60	2.82	15.45	<0.001
Random Effect				
School				
Var (constanta)	0.87	0.62	0.211	
Log likelihood= -98.4				
P < 0.001				
ICC= 20.91%				

Table 2 shows that bullying (b= 4.44; 95% CI= 1.91 to 10.29; p= 0.010), perceived susceptibility (b= 3.69; 95% CI= 1.51 to 9.00; p= 0.004), and perceived severity (b= 3.21; 95% CI= 1.32 to 7.81; p= 0.010) increased the risk of depression in adolescents, and they were statistically significant.

School had strong contextual effect on depression in adolescents with ICC= 20.91%.

Table 3 Multilevel logistic regression analysis effects of bullying on communication

Independent Variable	Regression coef. (b)	95% CI		p
		Lower Limit	Upper Limit	
Fixed Effect				
Bullying	4.95	2.24	10.89	< 0.001
High perceived susceptibility	6.09	2.61	14.21	< 0.001
Weak self-efficacy	5.51	2.49	12.20	< 0.001
Random Effect				
School				
Var (constanta)	0.125	0.30	0.001	
Log likelihood= -90.6				
P < 0.001				
ICC= 3.68%				

Table 3 shows that bullying (b = 4.95; 95% CI= 2.24 to 10.89; p <0.001), perceived susceptibility (b= 6.09; 95% CI= 2.61 to 14.21; p <0.001), and weak self-efficacy (b= 5.51; 95% CI = 2.49 to 12.20; p <0.001) increased poor communication in adolescents, and they were statistically significant.

School had negligible contextual effect on the communication in adolescents with ICC= 3.68%.

Table 4. Multiple multilevel logistic regression analysis of the effects of bullying on academic activity

Independent Variables	Regression coefficient (b)	95% CI		p
		Lower Limit	Upper Limit	
Fixed Effect				
Bullying	-5.68	-12.33	-2.62	< 0.001
High perceived susceptibility	-4.37	-9.80	-1.95	< 0.001
Weak self-efficacy	-8.89	-19.27	-4.11	< 0.001
Random Effect				
School				
Var (constanta)	0.10	0.33	0.00	
Log likelihood= -90.9				
P < 0.001				
ICC= 2.95%				

Table 4 shows that bullying (b= - 5.68; 95% CI= -12.33 to -2.62; p <0.001), perceived susceptibility (b= - 4.37; 95% CI= - 9.80 to - 1.95; p <0.001), and weak self-efficacy (b= - 8.89; 95% CI= -19.27 to -4.11; p <0.001) decreased academic activity, and they were statistically significant. School had negligible contextual effect on the academic activity in adolescents with ICC= 2.95%.

DISCUSSION

a. Effects of bullying on depression on
The results showed that high depression can increase bullying behavior. The results of this study are in line with research conducted by Fekkes et al. (2013), which shows that victims of bullying show depression at a moderate level some three times larger and depression with severe levels of seven times greater when compared to subjects who are not experiencing bullying. Depression is a factor caused by bullying (Papanikolaou et al., 2011; Salehi et al., 2016).

b. The effect of perceived susceptibility on depression
The results showed that the perception of strong vulnerability can increase bullying which results in depression. Rutter (1985) explains that protective factors are factors that modify, change, or make a person's response

stronger against various kinds of challenges that come from their environment.

c. The effect of perceived severity on depression
The results showed that the perception of strong severity can increase depression due to bullying. The results of this study are in line with the National Institute of Mental Health (2010) which states that depression is a serious mental disorder characterized by feelings of sadness and anxiety. The higher the severity of a person, the higher the level of depression caused by an act of bullying they experience.

Adolescence is a key developmental time where the incidence and prevalence of mental illnesses such as major depression (MD) increases considerably. Peer bullying has been associated with increased severity of depression symptoms (van Harmelen et al., 2016).

d. Effect of self-efficacy on depression
The results showed that if adolescents who had good self-efficacy did not experience depression compared to children who did not have self-efficacy. Self-efficacy is a characteristic that should be present and owned by someone to be able to deal with stressful events (Hobfoll, 1989).

e. The effect of bullying on communication

Bullying in school-aged children is a universal problem, which continues to be a serious threat to physical and emotional health of children and adolescents. Bullying is defined as negative physical, verbal, or relational actions that (a) have hostile intent, (b) cause distress to the victim, (c) are repeated and (d) involve a power imbalance between perpetrators and victims. Bullying may take multiple forms varying from physical confrontation, teasing, and humiliation to more indirect ways of victimization such as spread of rumors or exclusion from the peer group and social marginalization of the victim (Tsitsika et al., 2014).

f. The effect of perceived susceptibility on communication

Theory of changes in health behavior shows that the perceived vulnerability to bullying experienced by adolescents. Another factor is perception of vulnerability. Based on research by Tarkang and Zotor (2015), perception of vulnerability is one's belief about the possibility of contracting certain health conditions.

g. The effect of self-efficacy on communication

Besides the factors that also affect a person experiencing fluency in communication is self-efficacy. Teenagers who have self-efficacy will be more fluent in communicating compared to teenagers who do not have self-efficacy. That's because it was influenced by depression. This is consistent with the theory of General self-efficacy, general self-efficacy (GSE) which explains our ability to perform in times of stressful conditions as a function of our confidence or confidence or the level of self-efficacy (Bandura, 1977).

h. The effect of bullying on academic activity

The results showed that poor academic activity was caused by bullying, strong perception of vulnerability and lack of self-efficacy. Rigby (2007) and Alika (2012) do not focus the definition of bullying on victims who are unable to defend themselves on their own. Therefore, researchers focus on the definition of bullying based on the definitions put forward by Rigby (2007) and Alika (2012), which are acts of suppressing or intimidating other children both physically and verbally and there is usually an imbalance of power between perpetrators and victims of bullying. The higher the bullying action experienced by adolescents, the better the eating activities of adolescents will be.

i. The effect of perceived susceptibility on academic activity

Vulnerability perceptions actually refer to subjective assessments of risks to health problems. Individuals who believe that they have a low risk of disease are more likely to take unhealthy actions, and individuals who view having their high risk will be more likely to engage in behaviors to reduce their risk of disease (Kamran et al., 2014; Larki et al., 2018; Obirikorang et al., 2018). Rosenstock et al. (1988) mention the vulnerability theory in accordance with the Health Belief Model theory that a person will be vulnerable who is a victim of bullying which will ultimately result in a lack of academic activity compared to vulnerable bullying.

j. The effect of self-efficacy on academic activity

Bandura (in Baron and Byrne, 2002) also explains that self-efficacy is an evaluation of someone's ability or competence to carry out a task, achieve goals, or overcome obstacles.

Malkoç and Mutlu (2018), stated that academic self-efficacy has been investigated in relation to various domains, including gender, academic motivation, and academic success.

High self-efficacy, in addition to higher academic achievement and greater dedication to work, fosters elimination of unwanted

emotional reactions and those students with higher academic self-efficacy experience less stress in school than those students, who doubt in their efficacy and abilities (Malkoç and Mutlu, 2018; Uchida et al., 2018),

This is consistent with Alderman and Kay (2004), which states that intrinsic and extrinsic motivation are complementary components in the achievement of academic achievement.

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