Bullying as a Risk Factor of Depression on Undergraduate Health Students

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Abstract

Depression is a serious health problem that needs to be treated early so that it does not get worse in the future. Bullying can cause a mental health problem on students. This study aims to analyze the relationship between bullying and depression among undergraduate health students. This was an observational study with a cross-sectional design. Respondents filled out questionnaires online using the Google Form application. A total of 246 undergraduate health students participated in this study. Multivariate logistic regression was used to analyse the data. There was a relationship between bullying and the incidence of depression in undergraduate health students (AOR: 2.158 (95% CI: 1.050-4.435)) after being controlled by physical attacked, close friends, loneliness, and smartphone addiction. This study proves that bullying is a risk factor for depression. Prevention of bullying is important to prevent depression. Handling and prevention are done by involving peer support from students through peer-counselor or peer-educator programs. Students with severe depression need to be treated further through an appropriate referral system.

Keywords

bullying, depression, students, smartphone addiction

Background

Depression is a serious health problem that needs to be treated early so that it does not get worse in the future. In upper middle-income countries, depression is the largest single contributor to the global burden of disease in people aged 15 to 19 years.[1] Depression has become a major risk factor for suicide in adolescents and is the second to third cause of death and has caused alarming losses including social and educational disruption as well as physical and mental health problems in the future.[2] Meanwhile, according to WHO, depression is one of the 10 biggest causes of illness and disability in adolescents and is an early symptom of mental disorders which, if left untreated, will lead to worse mental disorders.[3]

Adolescence is prone to depression because it is going through the process of brain development, a phase in the life span in which susceptibility to developing depression can increase.[4] Adolescents often experience stress that has an impact on depression related to family relationship problems, school performance, interpersonal relationships with friends and financial problems.[5] According to Thapar et al[2] and Maughan et al,[6] the strongest risk factors for depression in adolescents are a family history of depression and exposure to psychosocial stress.

The problem of social relations that is often experienced by adolescents is bullying. The occurrence of this phenomenon of violence and aggression continues to increase in various countries.[7] Bullying is defined as aggressive behavior, intentional acts carried out by a group or an individual repeatedly and over time against a victim who cannot easily defend him or herself.[8] Östberg et al[9] explain that bullying as a stressor in adolescent.

Several recent studies have shown that depression in adolescents is significantly associated with bullying.[10-12] However, these studies were conducted on adolescents in high school. There are not many studies that prove bullying behavior in college students. This study aims to analyze the relationship between bullying and depression among undergraduate health students.

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Methods

Design and Sample

This was an observational analytic study with a cross-sectional design. This research was conducted in Samarinda, with a sample of undergraduate health students who are willing to fill out questionnaires online (web-based survey) through the Google Form application. The questionnaire link is distributed via social messenger (WhatsApp). Every health sciences college in Samarinda gets a link and spreads it to their students in the same way as they get from researchers. A total of 246 undergraduate health students in Samarinda participated in this study. Data collection in this study was conducted in June 2020.

Measures

Outcome measure. Measurement of signs and symptoms of depression in this study was carried out using the Beck Depression Inventory-II (BDI-II). 21 questions have been translated into Indonesian to make it easier for students to understand the questions and answer the questions according to what is felt right now. Each response filled by respondents will be given a score with a range of 0 to 3. The categorization of depression with BDI-II is done by looking at the scores obtained, namely: no depression (0-13), mild depression (14-19), moderate depression (20-28), and severe depression (29-63). In this study, the depression variable was divided into 2 categories: suffering from depression if the results of the respondents' assessment were mild—severe, and not

depressed. Validity testing of BDI instruments in the Indonesian form has been conducted with valid results.[13]

Main predictor. Bullying is measured using a questionnaire adapted from the 2015 Indonesian Global Student-based Health Survey (GSHS) by the WHO and the CDC. The questionnaire contains closed questions namely: "During the past 30 days, how many days have you been bullied?." The answer choices provided were 0 days, 1 to 2 days, 3 to 5 days, 6 to 9 days, 10 to 19 days, 20 to 29 days, and all 30 days. Health students who answered 0 days were categorized as not experiencing bullying, while other answers were categorized as experiencing it.

Control variables. In the respondent characteristic data, several questions were asked including sex, age, level of education, major of the study, time of the study (semester), parental education level, parents' working status, and adolescent living status.

Smartphone addiction was assess using Smartphone Addiction Scale—Short Version (SAS-SV). The SAS-SV questionnaire contains 10 question items using a Likert scale ranging from strongly agree to strongly disagree. The results of Cronbach's Alpha in previous studies amounted to 0.911.[14] The cut-off score in this study was 30, meaning that respondents who got score more than 30 were categorized addicted to smartphones, and vice versa.

Results

Characteristics of respondents can be seen in Table 1:

Table 1. Characteristics of Respondents (n = 246).

Characteristics	Frequency	Percentage	Characteristics	Frequency	Percentage
Sex:			Fathers' education level		
Boys	36	14.6	Uneducated	1	0.4
Girls	210	85.4	Basic	64	26
Age			Middle	112	45.5
<21 years old	167	67.9	High	69	28
21 years old or older	79	32.1	Mothers' education level		
Major of study			Uneducated	3	1.2
Medical	1	0.4	Basic	85	34.6
Nursing	90	36.6	Middle	97	39.4
Midwifery	16	6.5	High	61	24.8
Public health officer	37	15	Fathers' working status		
Pharmacy	31	12.6	Working	230	93.5
Environment health	11	4.5	Unemployment	16	6.5
Medical laboratory technology	32	13	Mothers' working status		
Nutrition and dietetics	24	9.8	Working	86	35
Health promotion	4	1.6	Unemployment	160	65
Time of study (semester)			Live with parents		
1-2	29	11.8	Yes	166	67.5
3-4	104	42.3	No	80	32.5
5-6	81	32.9			
7-8	29	11.8			
9-10	3	1.2			

Source: Primary Data, 2020.

Based on Table 1, the majority of respondents were girls at 85.4%, aged at least 20 years at 67.9%. Nearly half of the respondents were nursing students (36.6%), public health students (15%), and medical laboratory technology (13%). Almost half of the respondents (42.3%) were in semesters 3-4. The majority of parental education levels were at the secondary education level, both the level of father and mother education, respectively at 45.5% and 39.4%. In parental work status, almost all fathers work, which is 93.5%, while the majority of mothers are housewives at 65%. Most respondents lived with their parents (67.5%).

According to Table 2, it was found that there were 11% of undergraduate health students who experienced physical attacks. 19.1% of health students were bullied in the last 30 days, of which 6.1% were bullied frequently (more than 3 days/month). A small proportion of adolescents (4.9%) claimed to have had sex, and 7.3% of adolescents claimed to have been forced to have sex. Most students (85%) have felt lonely, with frequent loneliness of 14.6% and infrequently of 70.4%, and 4.9% of students who did not have any close friends. Based on the level of smartphone addiction, the majority of respondents are addicted to smartphones which are 74.4%. Meanwhile, 47.1% of undergraduate health students were experiencing depression with severe depression (13.4%), moderate depression (12.6%), and mild depression (21.1%).

Bivariate analysis was carried out to assess the relationship between bullying and depression in undergraduate health students. The statistical test used is a simple logistic regression. The results of the analysis can be seen in Table 3:

> Bivariate test results on factors that contribute to depression (Table 3) found that respondents who have experienced bullying in the last 30 days have a 2.3 (95% CI: 1.12–4.63) times greater risk of experiencing depression, where if the frequency of bullying is more often experienced (>3 days/month) it will increase the risk to 3.77 (95% CI: 1.16–12.23) times greater than those who have never experienced bullying. Other variables related to depression in a row with the greatest risk are adolescents who have been forced into sex (OR: 4.32; 95% CI: 1.38–13.54), followed by adolescents who did not have any close friends (OR: 3.99; 95% CI: 1.05–13.49), loneliness (OR: 3.26; 95% CI: 1.47–7.12), physical attacked (OR: 2.99; 95% CI: 1.25–7.12), and smartphone addiction (OR: 2.61; 95% CI: 1.42–4.81).

Based on the results of bivariate selection using a simple logistic regression test (Table 3), candidates for variables that were analyzed further included: bullying as the main independent variable, parental work status, having had sex, physical attacked, being forced to have sex, close friends, loneliness, and smartphone addiction as confounding variables ($P < .25$).

Table 2. Frequency of Respondents based on Behavior and Depression Level (n = 246).

Variables	Frequency	Percentage
Bullying		
Frequently (≥3 days/month)	15	6.1
Infrequently (1-2 days/month)	32	13
Never been bullied	199	80.9
Form of bullying		
Physical	1	2.1
Verbal	31	66
Social	4	8.5
Others	11	23.4
Never been bullied	199	80.9
Physical attacked by others		
Yes	27	11
No	219	89
Close friends		
No close friend	12	4.9
1-2 close friend(s)	36	14.6
3 or more close friends	198	80.5
Forced to have sex history		
Yes	18	7.3
No	228	92.7
Loneliness		
Yes	209	85
No	37	15
Have sex		
Yes	12	4.9
No	234	95.1
Smartphone addiction		
Addicted	183	74.4
Not addicted	63	25.6
Level of depression		
Severe	33	13.4
Moderate	31	12.6
Mild	52	21.1
Undepressed	130	52.9

Source: Primary data, 2020.

Table 4 shows that the relationship between bullying and depression in undergraduate health students in Samarinda was statistically significant (*P*-value: 0.036), with an effect size of 2.16 (95% CI: 1.05-4.44). This means that health students who have been victims of bullying in the past 30 days have an odds of 2.16 times greater for depression compared to adolescents who have never experienced bullying, after being controlled by physical attacked, close friends, loneliness, and smartphone addiction.

Discussion

Bullying is a form of aggressive behavior (physical contact, verbal, or act of ignoring) that is done intentionally

Table 3. Factors Related to Depression in Undergraduate Health Students.

Factors	Depression		100%	OR (95% CI)
	Yes (%)	No (%)		
Sex				
Boys	14 (38.9)	22 (61.1)	36	Reference
Girls	102 (48.6)	108 (51.4)	210	0.67 (0.33-1.39)
Aged				
<21 years old	79 (47.3)	88 (52.7)	167	Reference
21 years or older	37 (46.8)	42 (53.2)	79	1.02 (0.6-1.74)
Fathers' education level				
Uneducated	1 (100)	0 (0)	1	Reference
Basic	31 (48.4)	33 (51.6)	64	NA
Middle	47 (42.0)	65 (58)	112	NA
High	37 (53.6)	32 (46.4)	69	NA
Mothers' education level				
Uneducated	2 (66.7)	1 (33.3)	3	Reference
Basic	41 (48.2)	44 (51.8)	85	2.15 (0.19-24.57)
Middle	45 (46.4)	52 (53.6)	97	2.31 (0.20-26.34)
High	28 (45.9)	33 (54.1)	61	2.36 (0.20-27.39)
Fathers' working status				
Working	106 (46.1)	124 (53.9)	230	Reference
Unemployment	10 (62.5)	6 (37.5)	16	0.51 (0.18-1.46)*
Mothers' working status				
Working	35 (40.7)	51 (59.3)	86	Reference
Unemployment	81 (50.6)	79 (49.4)	160	0.67 (0.39-1.14)*
Live with parents				
Yes	76 (45.8)	90 (54.2)	166	Reference
No	40 (50)	40 (50)	80	0.84 (0.50-1.44)
Physical attacked				
Yes	19 (70.4)	8 (29.6)	27	Reference
No	97 (44.3)	122 (55.7)	219	2.99 (1.25-7.12)**
Bullying				
Yes	32 (68.1)	15 (31.9)	47	Reference
No	84 (42.2)	115 (57.8)	199	2.92 (1.49-5.74)**
Bullying frequency				
Frequently (≥3 days/month)	11 (73.3)	4 (36.7)	15	Reference**
Infrequently (1-2 days/month)	21 (65.6)	11 (34.4)	32	1.44 (0.37-5.60)
Never been bullied	84 (42.2)	115 (57.8)	199	3.77 (1.16-12.23)**
Close friends				
No close friend	9 (75)	3 (25)	12	Reference
1-2 close friends	22 (61.1)	14 (38.9)	14	1.91 (0.44-8.29)
3 or more close friends	85 (42.9)	113 (52.8)	198	3.99 (1.05-15.18)**
Have sex				
Yes	9 (75)	3 (25)	12	Reference
No	107 (45.7)	127 (54.3)	234	3.56 (0.94-13.49)*
Forced into sex history				
Yes	14 (77.8)	4 (22.2)	18	Reference
No	102 (44.7)	126 (55.3)	228	4.32 (1.38-13.54)**
Loneliness				
Yes	107 (51.2)	102 (48.8)	209	Reference
No	9 (24.3)	28 (75.7)	37	3.26 (1.47-7.25)**
Smartphone addiction				
Addicted	97 (53.0)	86 (47.0)	183	Reference
Not addicted	19 (30.2)	44 (69.8)	63	2.61 (1.42-4.81)**

Source: Primary data, 2020.
Abbreviation: NA, not applicable.
*P < .25. **P < .05.

Table 4. Relationship between Bullying and Depression in Undergraduate Health Students.

Variable	B	*P*-value	AOR (95% CI)*
Bullying	0.769	.036	2.16 (1.05-4.44)
Physical attacked	0.727	.127	2.07 (0.81-5.26)
Close friends			
No close friend	—	.069	*Reference*
1-2 close friend(s)	0.716	.353	2.05 (0.45-9.26)
3 or more close friends	1.308	.062	3.70 (0.94-14.59)
Loneliness	0.879	.042	2.41 (1.03-5.62)
Smartphone addiction	0.793	.017	2.21 (1.15-4.24)

*Statistical tests with Multiple Logistic Regression for Risk Factor Models; significance level 0.05.

and repeatedly so as to cause others injury or discomfort.[15] The study results showed that the incidence of bullying in the last 30 days in undergraduate health students in Samarinda was 15.9%. This is quite alarming and needs to be addressed seriously because many negative impacts can be caused by bullying behavior.

The results of this study support the results obtained by Pengpid and Peltzer[16] stating that based on the results of the 2015 GSHS data analysis in 5 ASEAN countries, bullying that occurred during the last 30 days in adolescents based on the frequency of rare bullying (1-2 days/ month) was 18.6% and often (3-30 days/month) by 12%, while based on the United States National Bullying Prevention Centre it was found that 20.2% of adolescents get bullying, with the most bullying type was psychologically (26%), followed by physical and social bullying, with a prevalence of 5% each.[17,18] Prevalence based on the results of previous studies obtained smaller results were in adolescents aged 15 to 17 years at 6.4%,[19] and adolescents aged 15 to 19 years at 8.35%.[20]

In this study, the prevalence of depression in undergraduate health students was 47.1%, with a severe depression rate of 13.4%, moderate depression of 12.6%, and 21.1% experiencing mild depression. This figure is much higher than the results of the 2018 Basic Health Research which is 6.1% nationally and 6.2% in the province of East Kalimantan in individuals over the age of 15 years.[21] This result is in line with the previous studies which stated that the prevalence of depression in health students was 48.4%, with details of 33.6% mild depression, 13.5% moderate depression, 0.7% severe depression, and 0.7% very severe depression.[22]

The results of other studies found that the prevalence of depression in health students was highest in dentistry students (51.6%), followed by medical students (46.2%), and lowest in nursing students (44.2%).[23] In contrast to research conducted on health science students at Arsi University, Ethiopia, which stated that the prevalence of depression in medical laboratory technology students was 7.1%, followed by anesthesia, midwifery, nursing, public health, and pharmacy respectively at 6, 8%, 5.8%, 3.9%, 3.6%, and 1.4%.[24]

The author assumes that the difference in the depression of health students in this study with previous results is caused by differences in the instruments used to measure depression levels. Also, this study was conducted during the Covid-19 pandemic, which is known from the results of previous studies that the condition of this pandemic can increase psychosocial problems.[25] There was probably an increase in the level of depression in undergraduate health students due to the Covid-19 pandemic condition.

Based on the results of the study, it was found that there is a relationship between bullying and depression in undergraduate health students in Samarinda. Students who have experienced bullying in the past 30 days are 2.16 times more likely to experience depression than students who have never experienced bullying after being controlled by physical attacks, close friends, and smartphone addiction.

Bullying is a behavior that can cause negative impacts related to health, both physically and mentally. The results of previous studies related to the negative effects arising from bullying behavior more on mental and emotional disorders, such as anxiety, mental-emotional disorders, behavioral disorders, stress, and depression.[11,26-28]

Several previous studies suggested that bullying is a factor that can increase the risk of depression in adolescents.[29-31] Teenagers who are victims of bullying tend to show symptoms of depression, such as continuous sadness or anxiety, hopelessness and pessimism, feeling worthless and helpless, difficulty sleeping, difficulty concentrating, loss of interest, even having suicidal ideation.[32] Research conducted by Sigurdson et al[33] found that adolescents who involved in bullying, both as a victim or perpetrator, have increased the risk of mental health problems that require them to be admitted to psychiatry in the future.

The relationship between bullying and depression is also influenced by social support from close friends and loneliness. Previous research conducted by Goosby et al,[34] revealed that loneliness is a factor associated with depression and metabolic conditions. Condition of loneliness can be caused by a lack of close relations with family or with peers. Other research related to closeness with peers states that it can prevent bullying behavior, both physically, verbally, and socially.[35] Teenagers who have been victims of bullying and do not have close friends will further increase the risk of depression.[31] Other previous similar research also stated that peer support is a mediator for the relationship between bullying and depression in adolescents.[36]

Peers have been known as a very important support system in the lives of adolescents. Most adolescents feel closer to their friends than their own families.[37] For teenagers who get bullying need peer support to get through it. Positive and adequate support from family members and peers can increase adolescent self-esteem, thereby reducing the risk of depression.[38] Psychological factors such as loss of affection, including loss of one's love and loss of self-esteem (theory of personality organization) can cause individuals to experience depression.[39]

Smartphone addiction is also found as a confounding variable to measure the relationship between bullying and depression in undergraduate health students. Most adolescents use their smartphones for internet activities, such as finding information related to college assignments, social media, and e-mailing. Especially in the middle of the Covid-19 pandemic situation, where all lecture activities are carried out online, resulting in many students spending their time using smartphones. Excessive use of smartphones can increase the risk of smartphone addiction among students, followed by an increased risk of experiencing health problems.

Previous research stated that some of the effects of smartphone addiction for adolescents include: mental-emotional disorders,[40] sleep disorders,[41] and depression.[42] Excessive use of smartphones is also often associated with addiction to the internet because most teenagers use smartphones to access the internet. The average time of internet use in adolescents via smartphones is more than 3 hours per day.[40] Addiction to the internet is proven to increase the risk of social anxiety, low self-esteem, and depression in students.[43]

More than half of teenagers used their smartphones to access social media and messengers,[40] such as WhatsApp, Twitter, Instagram, and Facebook. This could affect psychological health status in adolescents.[44,45] Besides, social media also allowed for two-way communication among adolescents which can increase the risk of cyberbullying.[46] Based on previous research, it was found that cyberbullying can increase the risk of depression in nursing students.[47]

This study has several limitations, namely: First, data collection is carried out using a questionnaire online (web-based survey), so that undergraduate health students who are respondents are limited to students who have internet access only, whereas in undergraduate health students who have no internet access do not have the opportunity to become a respondent. However, the authors believe that in the current Covid-19 pandemic situation, every undergraduate health students must have internet access to take part in online learning.

Second, the research instrument used in this study is a self-administered questionnaire, so there is a possibility of information bias because students tend to fill it with the choice of answers expected by others. This can prevent students from completing the questionnaire honestly. Therefore researchers do not require respondents to fill in their names on the questionnaire so that the confidentiality of their identities can be guaranteed and respondents feel safe to fill following what they experience and feel.

Conclusion

The prevalence of bullying experienced in the last 30 days among undergraduate health students in Samarinda was 19.1%, where 6.1% of them experienced frequent bullying (>3 days/month), and the most common type of bullying experienced was verbal bullying at 66%. The prevalence of depression in undergraduate health students in Samarinda is 47.1%, with a severe depression rate of 13.4%, moderate depression of 12.6%, and mild depression of 21.1%. This study proves that there is a relationship between bullying and depression in undergraduate health students (*P*-value: 0.036; AOR: 2.16 (95% CI: 1.05-4.44). Physical attacks, close friends, loneliness, and smartphone addiction are confounding factors on bullying and depression relationships.

A counseling and therapy forum is needed to deal with the depression of undergraduate health students. Also, it is necessary to establish a referral flow for undergraduate health students with severe depression to immediately get adequate treatment in health services. Efforts to improve peer counselor and peer educator programs are also needed to prevent bullying and depression in undergraduate health students.

Author Contributions

All authors contributed to the planning, determination of the research methodology, and the writing of the paper. NAS and A contributed to the selection and determination of the sample and carried out data collection, RS contributed to managing and analyzing research data. RS wrote the first draft of the paper. IMR and UK reviewed and edited the manuscript prior to submission. All authors agree with the final version submitted.

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