

Impact of A Mobile Health Intervention On Bullying Among Children: A Systematic Review

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ABSTRACT

Bullying is an anti-social behavior carried out by individuals or type of aggressive behavior that contains intentional aspects to dominate and hurt others and caused negative impact on the victim's physical and psychological. Imbalance of strength, whether physical, age, and social status, which is done repeatedly by one or several children against other children is a characteristic of bullying behavior. This study aimed to evaluate the effectiveness of mHealth on bullying among children. The studies using PRISMA and searched in four databases that published between 2016 until 2020. Twelve articles found were used in this systematic review that contains about an antibullying program that involves several parties has the preventive efforts in cases of bullying. A majority of interventions can be used in bullying and also be used as promotive and preventive efforts in cases of bullying in schools and communities.

Keywords: Bullying, Intervention, Mobile Health, Children

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BACKGROUND

Bullying cases among adolescents in Indonesia are still sufficiently high. Indonesian Child Protection Commission (KPAI) recorded that there are still many cases of bullying, the majority of which is most frequently occurs in schools (KPAI, 2020). Bullying is an anti-social behavior carried out by individuals or type of aggressive behavior that contains intentional aspects to dominate and hurt others (victims) to get self-satisfaction and a negative impact on the victim's physical and psychological (Hannah Gaffney, Maria M. Ttofi, 2019). Imbalance of strength, whether physical, age, cognitive abilities, skills, or social status, which is done repeatedly by one or several children against other children is a characteristic of bullying behavior (Garmy, Vilhjálmsón and Kristjánssdóttir, 2018).

Mental health disorders have been shown to have harmful effects significant on well-being, function, and development in adolescence, and associated with decreased academic achievement, poor social functioning, and even substance abuse or can end his life. Effect This negativity can continue well beyond adolescence, creating cycles continuing dysfunction and loss (Yin et al., 2017). Impact in the field of education for victims of bullying and violence is very significant. The bullying done by teachers or peers can make children and adolescents who the bullies feel afraid to go to school and interfere with their abilities to concentrate in class or participate in school activities (UNESCO, 2017).

The incidence of bullying can be suppressed with primary prevention efforts such as increasing health education and counseling activities, especially to youth and society to raise self-awareness not to do things that can cause others displeasure or hurt which later can have a negative impact. Anti-bullying programs that can be done in preventing and reducing bullying in the school environment, namely by there is an anti-bullying program in schools (Hannah Gaffney, Maria M. Ttofi, 2019), active school control and peer support as strategies prevention (Yin et al., 2017), as well as the school's approach to students who indicated that bullying is proven in terms of preventing and reducing bullying school (Chen et al., 2018).

METHODS

A systematic review without meta-analysis was carried out for this study. This review followed the steps that elements for Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement (Moher et al., 2009). Five databases were collected by Scopus, Ebsco, PubMed, ProQuest, and Science Direct published between 2016 and 2020. The scope of the article was limited to randomized controlled trials (RCTs) and protocol, human studies, and English publications. The researchers develop search terms to collect articles related to bullying intervention. The databases search used the following terms "Bullying" OR "Cyberbullying" AND "Mobile Health" OR "Telehealth" OR "mHealth Education" OR "Health Education" OR "intervention program" AND "Child" OR "Children". The respondents are students in schools or children in the community who were eligible for this review. All subjects in the intervention group used intervention programs for bullying prevention. While the exclusion criteria were including the experimental group that did not meet the basic scientific requirement, the intervention programs did not require and main intervention in the experimental group. The outcome measures of this review were self-management including changes in student behavior in preventing bullying, the results of which will be measured by a measuring scale. A comprehensive search strategy has been shown in figure 1.

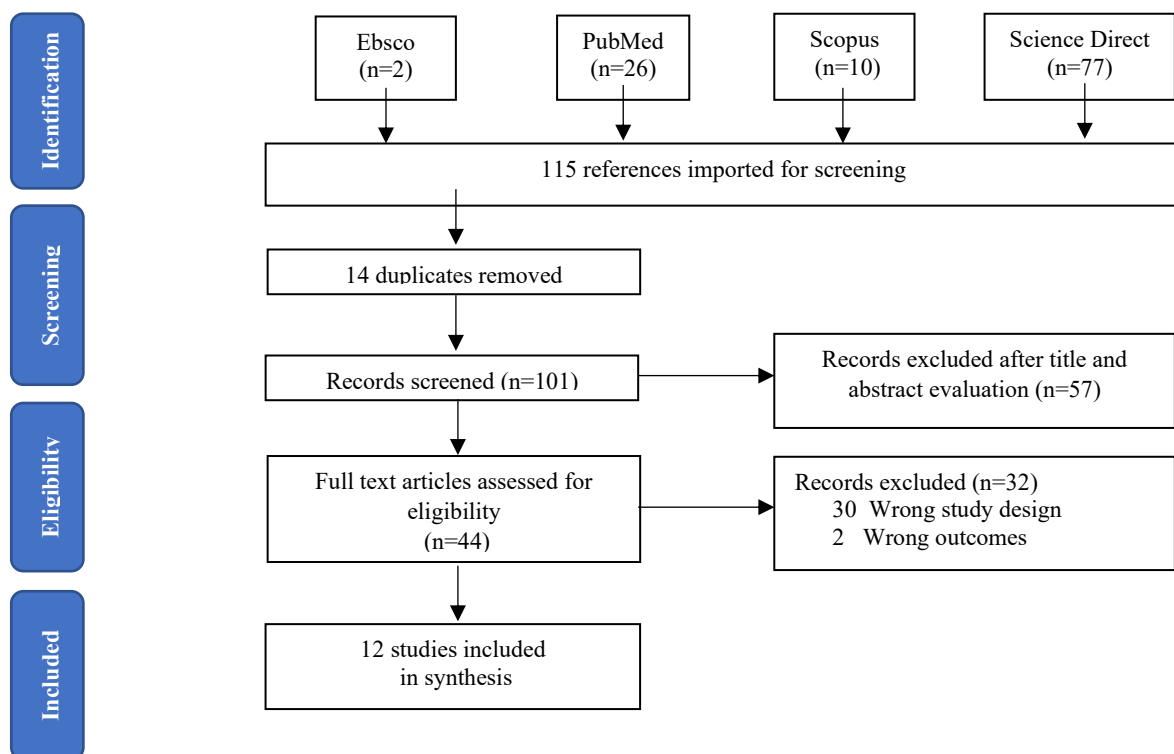


Figure 1. Flow chart of the study identification process

RESULT

In the initial searching the databases, there were 115 articles. After removing duplicates and screen the article, Twelve articles were finally enrolled in the study (Table 1). Table 1 also showed that the articles were published between 2016 and 2020 in many countries.

Table 1. Summarize of Selected Studies

Article	Sample	Design	Findings
(Ingram <i>et al.</i> , 2019)	118 middle school students	RCT	The virtual reality condition yielded increased empathy from pre-to post-intervention compared to the control condition. Through the mediating role of empathy, changes in the desired directions were also observed for traditional bullying, sense of school belonging, and willingness to intervene as an active bystander, but not for cyberbullying or relational aggression.
(Edgerton <i>et al.</i> , 2016)	500 participants between 12 – 18 years at school in the USA	RCT	HRSA is a Health Resources and Services administration effort to manage bullying in schools and communities by launching social marketing to promote prevention and intervention strategies. HRSA is now better positioned to provide the target with research-based materials about bullying, educate stakeholders

			about the public health effects of bullying, and ultimately decrease the likelihood that children will be bullied in the future.
(Palladino, Nocentini and Menesini, 2016)	622 students from 9th-grade in high school	RCT	Noncadiamointrappola (The NoTrap) program from Italy is a web-based peer-led anti-bullying intervention. The use of Information and Communication Technologies (ICTs) can increase the risk of both traditional and cyberbullying
(Mertens <i>et al.</i> , 2018)	720 students	RCT	This project will provide information on the effectiveness of (different levels of school and parental involvement in) Rock and Water, which can be used by schools to decide upon the most efficient way to improve the care for the students. We will be able to shed more light on what works for whom and the working mechanisms of Rock and Water.
(Radovic <i>et al.</i> , 2016)	300	RCT	Apps resulting for symptom relief, containing approaches to improving mental health, anxiety, trauma in schools, and bullying that may benefit only milder symptoms. Although low treatment intensity may alleviate some symptoms of anxiety, effects likely depend on symptom severity and without clinician support, App users may be unaware of when to seek professional help.
(Gaete <i>et al.</i> , 2017)	1.495 students in Santiago	RCT	Full KiVa schools receive an online game that has the aim to raise awareness of the role of the group in bullying, increase empathy and promote strategies to support victimized peers. Self-reported victimization, bullying others, and peer-reported bullying actions, psychological and academic functioning, and sense of school membership will be measured 12 months after randomization.
(Shinde <i>et al.</i> , 2018)	14.414 participants randomized 25 schools	RCT	SEHER The multicomponent whole-school SEHER health promotion intervention had substantial beneficial effects on school climate and health-related outcomes when delivered by lay counselors, but no effects when delivered by teachers.

(Bonell <i>et al.</i> , 2017)	6.667 students at the end of year 7	RCT	INCLUSIVE is a multi-component school intervention including a social and emotional learning curriculum, changes to school environment (an action group comprising staff and students reviews local data on needs to review rules and policies and determine other local actions) interventions are effective in reducing bullying.
(Ferrer-Cascales <i>et al.</i> , 2019)	2.057 students	RCT	TEI (Tutoria Entre Iguale), a school-based intervention of peer-tutoring, is effective in reducing bully and cyberbully behavior, and at the same time, improving the school climate.
(Zagorscak <i>et al.</i> , 2019)	897 students from 5 schools in the German city	RCT	Changes in cyberbullying are correlated with changes in subjective norms and changes in attitudes toward cyberbullying in the intervention group
(Nickerson, Livingston and Kamper-DeMarco, 2018)	822 children	RCT	The intervention increased knowledge about child sexual abuse. The main effect was the intervention's direct effect of increasing motivation immediately after the intervention, which then increased self-reported conversations with children about personal safety.
(Yin <i>et al.</i> , 2017)	755 Students in China	RCT	Anti-bullying programs Enhancement of active control as a prevention strategy to reduce adverse mental health outcomes in adolescents due to bullying victims

Table 2. Main Study Characteristics and Finding

Category	Number of Studies		Study ID
	N	%	
Place of Intervention			
School			1,2,3,4,5,6,7,8,9,10,12
Community			2,5,11
Origin Country			
USA			1,2,5,6,11
UK			8
Italy			3
China			12
India			7
Netherlands			4
Spain			9
Germany			10
Intervention time			
2-4 weeks			2,11,12

Category	Number of Studies		Study ID
	N	%	
4-8 weeks			1,3,5,9,10
2-3 months			4,6
3-6 months			7,8
Intervention results			
Improving Stress management			4,5,10,12
Improving self-efficacy			1,2,4,10,11
Improving self-concept			1,2,4,10,11
Improving knowledge			1,2,3,4,6,7,8,10,11,12

The main findings were presented in table 2. In the selected articles, almost all (91,7%) were based in school, and 3 studies (25%) were based in a community. All studies have known that almost half (41,7%) developing country in the USA and 7 studies (58,3%) in another country such as UK, China, Italy, Germany, Spain, Netherland, and India. Table 2 also shows four types and times of the intervention. It all about 2 weeks until the longest 6 months for each intervention. Most commonly found 5 studies (41,7%) become most frequent study duration between 2 weeks until 4 weeks. The longest duration of intervention was found in articles 7 and 8 for about 3 - 6 months. Table 2 also shows intervention results about all studies that collected being four types, most frequent study (83,3%) or 10 articles reporting knowledge contain can improve knowledge students or respondents. Other results are improving stress management (33,3), improving self-efficacy (41,7%), and improving self-concept (41,7%).

DISCUSSION

The study found that all intervention programs both school-based and community based are effective to reduce traditional-bullying or cyberbullying. Several findings related to duration, type of intervention, and outcome of the intervention. This study describes an application and programs can help to reduce the negative effects of bullying report that occurs and take further action based on the results (Hannah Gaffney, Maria M. Ttofi, 2019). Also, this application will provide private consultations open to offenders and victims to reduce bullying activities and be recognized as bullying. Create forums for both communities are interested in reducing the negative effects of bullying and providing information about the negative effects of bullying will help people to educate themselves about bullying (Salimi *et al.*, 2019).

Overall many studies explain the effect of m-health and others explain intervention program which are equally effective to reduce bullying behavior. This application aims to make survivors not only assisted by reports to the police but also managed by psychiatrists and sharing experiences with others, besides that the community that is involved and cares about bullying and its problems can be helped by this application so that it can reduce the perpetrators and victims of bullying so that others humans can respect each other (Larson *et al.*, 2020). In the future, several things can be improved and developed in this application, among others, by adding more features, such as emergency contacts and emergency notes. This application is expected to reduce bullying and provide a deterrent effect to the perpetrators. Without bullying, people will feel comfortable and better, children's development will not be disturbed and everyone will not feel intimidated (Hall, 2017).

CONCLUSION

Antibullying programs in the form of m-health or another type of program that define in multi-definition and no standard system for classifying it. World Health Organization (WHO) stated that mHealth has the potential to deliver health services. Now that many types of intervention including mobile health applications and others can deliver information and education not only for the illness but also providing information for the prevention of bullying behavior in children and adolescents. Principals and teachers can be a bridge for students to recognize the development of mobile-based health education innovations. which is expected to be able to help students understand the information mechanisms that students want to get, such as antibullying programs.

CONFLICT OF INTEREST

No conflict of interest was declared.

REFERENCES

- Bonell, C. *et al.* (2017) 'Initiating change locally in bullying and aggression through the school environment (INCLUSIVE) trial: Update to cluster randomised controlled trial protocol', *Trials*. *Trials*, 18(1), pp. 17–19. doi: 10.1186/s13063-017-1984-6.
- Edgerton, E. *et al.* (2016) 'Identifying New Strategies to Assess and Promote Online Health Communication and Social Media Outreach: An Application in Bullying Prevention', *Health Promotion Practice*. Health & Human Services, Health Resources and Services Administration, Rockville, MD, United States: SAGE Publications Inc., 17(3), pp. 448–456. doi: 10.1177/1524839915620392.
- Ferrer-Cascales, R. *et al.* (2019) 'Effectiveness of the TEI program for bullying and cyberbullying reduction and school climate improvement', *International Journal of Environmental Research and Public Health*, 16(4). doi: 10.3390/ijerph16040580.
- Gaete, J. *et al.* (2017) 'The KiVa antibullying program in primary schools in Chile, with and without the digital game component: Study protocol for a randomized controlled trial', *Trials*. BioMed Central Ltd., 18(1). doi: 10.1186/s13063-017-1810-1.
- Garmy, P., Vilhjálmsdóttir, R. and Kristjánssdóttir, G. (2018) 'Bullying in School-aged Children in Iceland: A Cross-sectional Study', *Journal of Pediatric Nursing*, 38, pp. e30–e34. doi: 10.1016/j.pedn.2017.05.009.
- Hall, W. (2017) 'The effectiveness of policy interventions for school bullying: A systematic review', *Journal of the Society for Social Work and Research*, 8(1), pp. 45–69. doi: 10.1086/690565.
- Hannah Gaffney, Maria M. Ttofi, D. P. F. (2019) 'Evaluating the effectiveness of school-bullying prevention programs: An updated meta-analytical review', *Aggression and Violent Behavior*. Elsevier Ltd, 45, pp. 111–133. doi: 10.1016/j.avb.2018.07.001.
- Ingram, K. M. *et al.* (2019) 'Evaluation of a virtual reality enhanced bullying prevention curriculum pilot trial', *Journal of Adolescence*. Academic Press, 71, pp. 72–83. doi: 10.1016/j.adolescence.2018.12.006.
- KPAI (2020) *Sejumlah Kasus Bullying Sudah Warnai Catatan Masalah Anak di Awal 2020, Begini Kata Komisioner KPAI | Komisi Perlindungan Anak Indonesia (KPAI)*. Available at: <https://www.kpai.go.id/berita/sejumlah-kasus-bullying-sudah-warnai-catatan-masalah-anak-di-awal-2020-begini-kata-komisioner-kpai> (Accessed: 13 April 2020).
- Larson, K. L. *et al.* (2020) 'A Contextual Approach to Inform a Mobile Health Application for Adolescent Health', *Journal of Child and Family Studies*. Springer, 29(12), pp.

- 3420–3432. doi: 10.1007/s10826-020-01826-x.
- Mertens, E. C. A. *et al.* (2018) ‘The effectiveness of Rock and Water in improving students’ socio-emotional adjustment and social safety: Study protocol for a randomized controlled trial’, *BMC Psychology*. BioMed Central Ltd., 6(1). doi: 10.1186/s40359-018-0247-y.
- Moher, D. *et al.* (2009) ‘Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement’, *PLoS medicine*. Public Library of Science, 6(7), p. e1000097.
- Nickerson, A. B., Livingston, J. A. and Kamper-DeMarco, K. (2018) ‘Evaluation of second step child protection videos: A randomized controlled trial’, *Child Abuse and Neglect*. Elsevier Ltd, 76, pp. 10–22. doi: 10.1016/j.chiabu.2017.10.001.
- Palladino, B. E., Nocentini, A. and Menesini, E. (2016) ‘Evidence-based intervention against bullying and cyberbullying: Evaluation of the NoTrap! program in two independent trials’, *Aggressive Behavior*, 42(2), pp. 194–206. doi: 10.1002/ab.21636.
- Radovic, A. *et al.* (2016) ‘Smartphone Applications for Mental Health’, *Cyberpsychology, Behavior, and Social Networking*. Children’s Hospital of Pittsburgh of UPMC, University of Pittsburgh School of Medicine, Pittsburgh, PA, United States: Mary Ann Liebert Inc., 19(7), pp. 465–470. doi: 10.1089/cyber.2015.0619.
- Salimi, N. *et al.* (2019) ‘The effect of an anti-bullying intervention on male students’ bullying-victimization behaviors and social competence: A randomized controlled trial in deprived urban areas’, *Journal of Research in Health Sciences*. Health Hamadan University of Medical Sciences, 19(4). doi: 10.34172/jrhs195075.
- Shinde, S. *et al.* (2018) ‘Promoting school climate and health outcomes with the SEHER multi-component secondary school intervention in Bihar, India: a cluster-randomised controlled trial’, *The Lancet*. Lancet Publishing Group, 392(10163), pp. 2465–2477. doi: 10.1016/S0140-6736(18)31615-5.
- UNESCO (2017) *School Violence and Bullying: Global Status Report*. Paris: UNESCO.
- Yin, X. *et al.* (2017) ‘The promotive effects of peer support and active coping on the relationship between bullying victimization and depression among chinese boarding students’, *Psychiatry Research*. Elsevier Ireland Ltd, 256(2), pp. 59–65. doi: 10.1016/j.psychres.2017.06.037.
- Zagorscak, P. *et al.* (2019) ‘Efficacy of Cyberbullying Prevention on Somatic Symptoms—Randomized Controlled Trial Applying a Reasoned Action Approach’, *Journal of Research on Adolescence*, 29(4), pp. 908–923. doi: 10.1111/jora.12429.