

Bullying situations according to agents of change in the adapted roots program

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Abstract

Introduction: Bullying remains a critical issue affecting the mental and physical health of adolescents worldwide, including in Jambi City, where the target of zero bullying has not yet been achieved. **Objective:** This study examines the bullying situation before and after the implementation of an adaptation of the Roots program among students at SMPN 4 and SMPN 19 in Jambi City. **Methods:** A quasi-experimental design with a single-group pretest-posttest was conducted at SMPN 4 and SMPN 19 Jambi, involving 64 students purposively selected as peer "change agents." Data were collected using the Roots Indonesia Bullying Situation Survey. **Results:** McNemar's test ($p = 0.016$) showed a significant change in students' perceptions of whether bullying is a problem at school. Marginal Homogeneity Test results showed a significant difference in the most frequently reported types of bullying before and after the training ($p = 0.034$), while perceptions of bullying locations did not change significantly ($p = 0.632$). Students' knowledge of where to report bullying increased significantly ($p = 0.031$). **Conclusion:** The Roots program effectively increased students' awareness and knowledge of bullying, including the types of bullying and reporting mechanisms. However, perceptions about where bullying occurs remained unchanged.

Keywords: Bullying; Roots Program; Teenagers

Cite This Article

Butar, M.B, Rahman, M. A., Rini, W. N. E., & Meinarisa. (2025). Bullying situations according to agents of change in the adapted roots program. *Proceedings Academic Universitas Jambi*, 1(2). 781-789.

Editor

I Made Dwi Mertha Adnyana, M.Ked.Trop.

Article info

Received: October 12, 2025. Revised: October 30, 2025. Accepted: November 09, 2025



INTRODUCTION

Bullying remains a widespread problem affecting the mental and physical health of adolescents worldwide. Its consequences include anxiety, depression, social withdrawal, decreased academic performance, and in severe cases, self-harm or suicidal behavior. [1] [2] This problem is multifaceted, encompassing physical, verbal, social, and cyberbullying, and often occurs in various school settings such as classrooms, hallways, and online platforms.[3]

In Indonesia, particularly in Jambi City, cases of bullying among junior high school students remain significant, with schools struggling to achieve their goal of being free of bullying. Previous studies have shown that students' awareness and understanding of bullying, as well as knowledge of reporting mechanisms, are often limited, leaving them vulnerable to repeated victimization. Peer influence is a crucial factor in perpetuating or preventing bullying.

Programs that leverage peer support and promote mental health literacy have been shown to reduce bullying incidents and improve students' coping strategies. The Roots program is an evidence-based intervention designed to increase students' understanding of bullying, strengthen peer support networks, and promote effective reporting mechanisms.[4] Although this program has demonstrated positive results in other contexts, its adaptation and evaluation in Indonesian schools, specifically at SMPN 4 and SMPN 19 in Jambi City, has not been extensively studied.

This study aims to evaluate the impact of the adapted Roots program on students' perceptions of bullying, the types and locations of bullying incidents, and students' knowledge of school reporting procedures. These findings are expected to inform interventions aimed at reducing bullying and improving mental health literacy among adolescents.

METHODS

Study design and setting

This study employed a quasi-experimental design with a single-group pretest-posttest approach to evaluate changes in students' perceptions, knowledge, and experiences regarding bullying. The research was conducted in Jambi City from August 2025 to October 2025 at SMPN 4 and SMPN 19, selected based on the Roots program guideline, which prioritizes schools recognized as "sekolah penggerak" (school movers). The study is part of a larger research project titled "Adaptation of the Roots Program to Address Bullying, Peer Roles, and Mental Health of Students in Two SMPN in Jambi City."

Population, sample, and sampling

The study population included junior high school students enrolled at the two selected schools. A total of 64 students were purposively selected as peer "agents of change," with 32 students per school. The selection process involved purposive sampling: facilitators (guidance and counseling teachers) distributed Google Forms to all students in each class and asked them to recommend five classmates who could serve as agents of change. The top 10 most recommended students per grade were then finalized in coordination with the class teacher. Each selected student and their parent/guardian signed a consent form to participate. Sample size calculation followed paired pretest-posttest quasi-experimental design principles, assuming a medium effect size (Cohen's $d = 0.5$). Using Lemeshow's formula, the minimum required sample per school was 32 students, meeting the total planned sample of 64 students.

Instruments and criteria

Data were collected using the Indonesian Roots Bullying Situation Survey, adapted from the original Roots program instrument. [5] The survey includes four domains: Students' perception of bullying as a school problem. Types of bullying experienced (physical, verbal, social, cyberbullying); Locations of bullying incidents; Students' knowledge of reporting mechanisms and peer support; The instrument is categorical, validated through pilot testing and expert review for content relevance and reliability.

Procedure and data collection

The study was conducted in three stages:

1. Pretest / Identification of Bullying Situation (August 2025):
 - Bullying situations were identified using the survey instrument.
 - Data were collected via questionnaires distributed directly to the selected students.
2. Implementation of the Roots Program (August–October 2025):
 - Facilitators: Guidance and counseling teachers.
 - Frequency: Sessions were conducted twice weekly over three months.
 - Selection of agents of change: Students recommended by peers and validated by class teachers.
 - Program delivery: Selected students participated in 10 Roots sessions, including discussions, role-plays, and group activities, and conducted Roots Day activities.
 - Data collection during the program included questionnaires, interviews, and direct observation.
3. Posttest:
 - Re-administration of the survey to assess changes in bullying perception, types, locations, and reporting knowledge.

Statistical Analysis

Data from the two schools were combined and analyzed to evaluate the overall effectiveness of the Roots program. Paired tests (McNemar test for paired categorical data and Marginal Homogeneity Test for distributions) were performed using SPSS, with significance set at $p < 0.05$.

Ethical Considerations

This research was declared ethically sound according to the seven WHO Standards of 2011. Ethical clearance was obtained, and the study was deemed exempt according to Description of Ethical Exemption No. LB.02.06/2/1150/2025 from the Ministry of Health, Poltekkes Jambi. Participation was voluntary, with informed consent obtained from students and guardians. Confidentiality and anonymity were strictly maintained.

RESULTS

Participant characteristics

Participants were evenly distributed across the two schools. The mean age was 13.09 years (median = 13.0), confirming the adolescent nature of the sample. Grade distribution was relatively balanced, ensuring representation across all targeted academic levels for the Roots Program.

Table 1. Characteristics of Research Participants (N=64)

Variable	Category	Frequency (n)	Percentage (%)
School	SMPN 4	32	50.0
	SMPN 19	32	50.0
Grade Level	Grade 7	23	35.9
	Grade 8	20	31.3
	Grade 9	21	32.8
Age	12 years	19	29.7
	13 years	23	35.9
	14 years	19	29.7
	15 years	3	4.7
Total		64	100.0

Students' perception of bullying occurrence

Before the intervention, 62.5% of students reported that bullying occurred at school. After the intervention, 57 students (89.1%) answered "Yes," while 7 students (10.9%) answered "Don't Know." This reflects a 26.6% increase in awareness that bullying occurs at school.

Table 2. Crosstabulation of students' perception of bullying occurrence

Pretest Category	Yes (Posttest)	Don't Know (Posttest)	Total	% of Total
Yes	38	2	40	62.5%
No	6	2	8	12.5%
Don't Know	13	3	16	25.0%
Total	57	7	64	100%

Asymp. Sig. = 0.002 (<0.05), indicating a statistically significant difference between pretest and posttest regarding students' awareness of bullying. The Roots Program effectively increased students' recognition of bullying in their school environment.

Table 3. Marginal Homogeneity Test on Bullying Occurrence

Statistic	Value
Distinct Values	3
Off-Diagonal Cases	23
Observed MH Statistic	57.000
Mean MH Statistic	44.000
Std. Deviation	4.123
Std. MH Statistic	3.153
Asymp. Sig. (2-tailed)	0.002

Students' perception of bullying as a problem

P-value = 0.016 (<0.05), indicating a significant change in students' perception of bullying as a school problem after the intervention.

Table 4. McNemar test on students' perception of bullying as a school problem

Pretest \ Posttest	Yes, Certainly	No, Just Normal	Total
Yes, Certainly	54	0	54
No, Just Normal	7	3	10
Total	61	3	64
Test	McNemar Test		
N	64		
Exact Sig. (2-tailed)	0.016		

Frequency of bullying experienced

There was a statistically significant change in the frequency of bullying experienced, reflecting increased awareness and reporting accuracy. More students reported an increase in bullying frequency (17) than a decrease (9), indicating heightened awareness of bullying incidents post-intervention.

Table 5. Wilcoxon signed-ranks test on frequency of bullying

Variable	Z	Asymp. Sig. (2-tailed)	Test Description
Number of days bullied in the last 30 days (Post–Pre)	-2.015	0.044	Wilcoxon Signed-Ranks Test

Table 6. Detailed wilcoxon signed-ranks test results

Category	N	Mean Rank	Sum of Ranks
Negative Ranks ^a	9	10.94	98.50
Positive Ranks ^b	17	14.85	252.50
Ties ^c	38	–	–
Total	64		

Types and locations of bullying

P-value = 0.034 (<0.05), showing significant differences in the types of bullying reported before and after the intervention.

Table 7. Marginal Homogeneity Test – Most Frequently Experienced Bullying Types

Statistic	Value
Distinct Values	6
Off-Diagonal Cases	22
Observed MH Statistic	46.000
Mean MH Statistic	59.500
Std. Deviation	6.384
Std. MH Statistic (Z)	-2.115
Asymp. Sig. (2-tailed)	0.034

P-value = 0.632 (>0.05), indicating no significant change in the distribution of bullying locations.

Table 8. Marginal homogeneity test – locations of bullying

Statistic	Value
Distinct Values	6
Off-Diagonal Cases	28
Observed MH Statistic	75.000
Mean MH Statistic	79.500
Std. Deviation	9.394
Std. MH Statistic	-0.479
Asymp. Sig. (2-tailed)	0.632

Knowledge of reporting bullying

P-value = 0.031 (<0.05) indicates a significant increase in students' knowledge of reporting channels after the intervention.

Table 9. McNemar test on students' knowledge of where to report bullying

Variable	N	Exact Sig. (2-tailed)
Knowledge of where to report bullying (Pre–Post)	64	0.031

DISCUSSION

Interpretation and discussion of key findings

This study aimed to evaluate the effectiveness of an adapted *Roots* program, which incorporated supplementary mental health content, on improving Adolescent Mental Health Literacy (MHL) and inducing changes in bullying-related knowledge and behavior. The primary outcome revealed a statistically significant difference in the students' MHL scores between the pre-test and post-test measurements following the 6-week intervention.

This observed increase in MHL suggests that the enriched peer-led program successfully improved adolescents' cognitive understanding of mental health concepts. The things that are suspected to be the source of students' mental health problems during distance learning are problems related to academics and social interactions with friends.[6], their ability to recognize potential mental disorders, and their awareness regarding the necessity of seeking professional help [7]. Studies by Pan, Xu, and Li [8] support this outcome, demonstrating that higher MHL is positively associated with better social well-being, equipping students to better manage stressors and identify issues in themselves and their peers. The lack of MHL is often cited as a significant barrier to help-seeking behavior among youth[7][9], thus making the improvement observed here a vital indicator of the program's success in reducing stigma and promoting a supportive school culture.

The analysis of the bullying situation showed mixed but insightful results, highlighting the gap between cognitive gains and persistent environmental challenges. Firstly, the McNemar Test showed a significant increase in students' knowledge regarding where to report bullying if they experienced it at school ($p=0.031$). This improved awareness of official reporting mechanisms is profoundly

important, as bullying in educational units remains one of the highest reported complaints nationally [10]. The significant p-value demonstrates that the interventional component successfully transferred critical procedural knowledge [11][12]. This shift from unawareness or silence to knowing the proper channels is a foundational step in building collective efficacy and safety protocols within the school environment [11].

Conversely, the analysis of the most frequent location of bullying using the Marginal Homogeneity Test showed no significant change between the pre-test and post-test ($p=0.729$). This is a crucial finding, indicating that while students are more knowledgeable about mental health and reporting procedures, the actual ecology of bullying—the locations where it occurs (e.g., unsupervised areas, restrooms, school grounds)—remains entrenched [13]. This lack of change suggests that the 6-week intervention, although successful in inducing cognitive change, was not yet powerful enough to shift the ingrained social norms and environmental dynamics in these high-risk, low-supervision areas [14][15][16]. The persistence of bullying in specific locations implies that the intervention needs to translate the peer intervention knowledge into active, consistent collective action by the Roots Agents and their peers to actively monitor and disrupt incidents in the physical spaces where adult presence is minimal [17]. The *Roots* program's mechanism, which relies heavily on peer influence, is reinforced by these findings [18][19]. The next stage of implementation must focus on overcoming the resistance of the physical and normative environment. [20][18]. highlight the strong link between persistent bullying and negative mental health outcomes, reinforcing the urgency of tackling both the cognitive and environmental (location/incident) aspects simultaneously.

Limitations of the Study

This study is subject to several limitations that caution the broad interpretation of its results:

1. **Single-group quasi-experimental design:** The research employed a *one-group pre-test and post-test* design. Without a control group, observed changes cannot be exclusively attributed to the adapted *Roots* program intervention; they may have been influenced by external factors (*history*) or natural developmental processes (*maturation*).
2. **Intervention duration and follow-up:** The intervention lasted only six weeks. This short duration may be insufficient to induce sustained behavioral and normative changes [21]. Furthermore, the lack of a long-term *follow-up* prevents the assessment of MHL retention and the sustainability of the reduction in actual bullying incidents [22][23].
3. **Generalization focused on change agents:** the generalization of findings is specifically limited to the peer/change agent students (*roots agents*). since the adapted *Roots* program intervention was targeted exclusively at these selected students—with the explicit aim of strengthening their role as peer influencers [24][25].

CONCLUSIONS

The study demonstrated a significant improvement in students' awareness and understanding of bullying situations following the implementation of the *Roots* program. After the intervention, more students recognized that bullying occurs in their schools ($p = 0.002$) and considered it a serious problem ($p = 0.016$). The frequency of reported bullying incidents also increased significantly ($p = 0.044$),

suggesting higher sensitivity and accuracy in reporting rather than an actual rise in incidents. Moreover, there was a significant difference in the types of bullying most frequently reported ($p = 0.034$), while no significant changes were found in the locations of bullying incidents ($p = 0.632$) or in the dominant bullying types reported ($p = 0.240$). Importantly, students' knowledge of where to report bullying improved significantly ($p=0.031$). Overall, the adapted Roots program effectively enhanced students' awareness, recognition, and reporting of bullying, though behavioral change and reduction in incidents may require continued and deeper interventions.

CONFLICT OF INTEREST

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

FUNDING

This research was supported by a research grant from the Research and Community Service Institute (LPPM), Universitas Jambi, Indonesia, under the 2025 Research Grant Program.

ACKNOWLEDGMENT

The authors sincerely acknowledge the immense support received from the Institute for Research and Community Service, University of Jambi. This research was specifically conducted under Applied Research Scheme and we are deeply grateful for the generous funding and opportunity provided, which was essential for the successful completion of this study. Our gratitude is also extended to the principals, teachers, and all participating students of SMPN 4 and SMPN 19 in Jambi City for their invaluable cooperation throughout the intervention period.

DECLARATION OF ARTIFICIAL INTELLIGENCE USE

This study did not employ artificial intelligence (AI) tools for data analysis, modeling, or visualization. However, AI-based language support tools, specifically ChatGPT (OpenAI), were utilized during the manuscript preparation phase to assist in language refinement, content summarization, and technical writing structure. We confirm that all AI-assisted processes were critically reviewed and verified by the authors to ensure the integrity, accuracy, and reliability of the results. All final interpretations and conclusions presented in this article were solely made by the authors.

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