



Original Article

The effect of the nurse-led ROOTS program and soft skills training on emotional regulation to prevent bullying in high school students in Bandung city

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ARTICLE INFO

Received 27 October 2025

Accepted 18 January 2026

Available online at:
<http://npt.tums.ac.ir>

Keywords:

adolescents;
emotional regulation;
nurse-led intervention;
ROOTS program;
soft skills training

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DOI: 10.18502/npt.v13i2.21468

ABSTRACT

Background & Aim: Bullying is a significant issue affecting adolescents' mental well-being, with emotional regulation playing a key role in preventing such behavior. In Bandung, high rates of bullying among high school students indicate the need for effective prevention strategies. Nurse-led interventions, combined with soft skills training, offer a promising approach to improving emotional regulation and reducing bullying. This study examined the effect of the Nurse-Led ROOTS Program integrated with Soft Skills Training on emotion regulation among high school students in Bandung City.

Materials & Methods: A class-cluster randomized pretest–posttest control-group study was conducted in July 2025 in two high schools in Bandung, Indonesia. A total of 100 students aged 13–18 years were randomly assigned at the class level to an intervention group (n=50) or a control group (n=50). The intervention was delivered over 8 weeks through nurse-led face-to-face sessions. Emotion regulation was measured using the Emotion Regulation Questionnaire for Children and Adolescents (ERQ-CA) at baseline and post-intervention. Statistical analyses included descriptive statistics, Mann–Whitney U tests, Wilcoxon signed-rank tests, and mixed-effects ANCOVA.

Results: Baseline ERQ-CA scores did not differ significantly between groups ($p>0.05$). The intervention group showed a significant improvement in total ERQ-CA scores (28.9 ± 4.7 to 36.2 ± 4.3 ; $p<0.001$; $r=0.72$), with the largest gains observed in the cognitive reappraisal dimension, whereas the control group showed no significant change ($p=0.218$). At posttest, the intervention group had significantly higher ERQ-CA scores than the control group ($p<0.001$; $r=0.69$).

Conclusion: The Nurse-Led ROOTS Program integrated with Soft Skills Training significantly improved emotion regulation among high school students in Bandung. This nurse-facilitated, peer-leadership approach may represent a scalable strategy to strengthen adolescent mental health and support violence prevention in school settings.

Trial registration: ClinicalTrials.gov Identifier: NCT07261397.

Introduction

Bullying has been globally recognized as one of the most damaging forms of violence affecting adolescents' psychosocial development and mental well-being in educational settings. Previous survey reports that approximately 32% of students worldwide have experienced some form of bullying at school (1). The long-term impacts of this behavior include an increased risk of depression, anxiety, decreased self-esteem, impaired social relationships, and decreased academic performance (2). Bullying is also strongly correlated with dysfunctional emotion

regulation, which can trigger aggressive and maladaptive behavior in adolescents (3). Therefore, an individual's ability to regulate and manage emotions adaptively is a crucial element in preventing bullying behavior among students.

The phenomenon of bullying in Indonesia has shown a worrying trend and has continued to increase over the past decade. Data in Indonesia show that cases of violence and bullying against children in schools rank third among children's rights violations (4). Various forms of bullying are found in schools, ranging

Please cite this article as: Yosep I, Iskandar S, Mardhiyah A, Ramdhani M.R, Hikmat R. The effect of the nurse-led ROOTS program and soft skills training on emotional regulation to prevent bullying in high school students in Bandung city. *Nursing Practice Today*. 2026; 13(2): 187-97.



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from verbal and physical violence to social violence, and even cyberbullying, which is exacerbated by the increasing use of digital media among adolescents (5). Although various government policies have been implemented to reduce violent practices in schools, most interventions remain reactive and fail to address the psychological roots of aggressive behavior, namely students' weak emotional regulation and social skills (6,7). This highlights the need for a more comprehensive intervention approach based on mental health promotion.

Bandung, as one of Indonesia's centers of education and culture, also faces serious challenges related to high rates of bullying among high school students. A 2023 survey by the West Java Education Office showed that more than a quarter of high school students in Bandung had experienced or witnessed bullying at school. The social dynamics of urban youth, such as intense academic competition, exposure to social media, and changing social values, are factors that increase the risk of aggressive behavior (8). In this context, Bandung represents an educational environment that requires a contextual and integrated preventive intervention approach, particularly in strengthening students' emotional regulation capacity to build a healthy and supportive school culture.

Emotional regulation is an individual's ability to recognize, monitor, and adaptively manage emotional responses to social situations (9). This ability plays a crucial role in shaping positive social behavior and preventing aggression. Students with high levels of emotional regulation tend to have greater empathy, are able to resolve conflicts constructively, and have a lower risk of becoming perpetrators or victims of bullying (10). Conversely, the inability to regulate emotions often contributes to impulsive behavior, verbal aggression, and intimidation in the school environment (11). Therefore, improving emotional regulation skills is a fundamental component of school-based bullying prevention strategies (12). Based on this evidence, the present study hypothesizes that intervention will lead to increased cognitive reappraisal and decreased expressive suppression among students.

In the realm of mental health promotion in schools, nurses play a strategic role as agents of change through nurse-led interventions. This approach positions nurses as primary facilitators in empowering students to recognize, understand, and manage their psychological and social conditions (13). Previous study have shown that nurse-led interventions are effective in reducing stress levels, improving emotional well-being, and strengthening coping skills among adolescents (14). Through collaboration with schools, nurses can also play a role in designing promotive and preventive programs that target the root causes of aggressive behavior, one of which is by integrating emotion regulation training into the non-academic curriculum (15). This nurse-led approach also expands the role of nurses beyond just healthcare professionals to also serve as educators and emotional counselors in the school environment. However, few existing programs combine nurse-led components with structured peer-based approaches.

The ROOTS Program is a student-led leadership-based intervention model aimed at changing school social norms to be more empathetic and anti-bullying (16). Meanwhile, soft skills training focuses on developing interpersonal competencies such as assertive communication, empathy, collaboration, and problem-solving skills, which contribute to improved emotional regulation (17). The combination of these two approaches has synergistic potential in fostering a school culture that supports positive social interactions, suppresses aggressive behavior, and strengthens students' psychological well-being. Although both approaches have shown positive effects, previous studies typically examine them separately and are dominated by Western settings. Research combining ROOTS with structured soft-skills components under nurse facilitation remains scarce, especially in Indonesia.

This knowledge gap, combined with the unique psychosocial dynamics among adolescents in Bandung, underscores the need for an integrated, contextually relevant intervention model. Therefore, this study aims to analyze the effect of the Nurse-Led ROOTS Program combined with Soft Skills Training on improving emotional regulation among high school students

in Bandung City as a means of preventing bullying behavior.

Methods

Study design

This study used a pretest–posttest control-group design with cluster random assignment at the class level to evaluate the effect of the Nurse-Led ROOTS Program integrated with Soft Skills Training on emotional regulation among high school students in Bandung City. The study was conducted in July 2025 and implemented over nine weeks: baseline assessment in Week 1, an eight-week intervention delivered during school hours (one 60–90-minute session per week), and post-intervention assessment in Week 9. The unit of randomization was the intact class, while outcomes were measured and analyzed at the student level.

Sample size

The required sample size was estimated a priori using G*Power for a two-group comparison, assuming an effect size of $d = 0.70$, $\alpha = 0.05$, power $(1-\beta) = 0.95$, and an allocation ratio of 1:1. The assumed effect size ($d = 0.70$) was informed by prior school-based social-emotional and anti-bullying interventions reporting moderate-to-large improvements in psychosocial outcomes, and by the intensity of the current nurse-facilitated eight-week program.

The calculation indicated a minimum total sample of 90 participants (45 per group). To anticipate potential dropout, the target sample was increased to 100 students (50 per group). No dropout occurred.

Because allocation occurred at the class (cluster) level, the a priori calculation should be interpreted as an approximation; clustering was addressed analytically through cluster-adjusted models and is also acknowledged as a limitation due to the small number of clusters.

Participants and setting

The study was conducted in two high schools (one Islamic high school and one public high school) in Bandung City in the 2025 academic year. Schools were selected purposively based on willingness to collaborate and the availability of an active school nurse. Eligible students were aged 13–18 years, enrolled in grades X–XII, able to read and write in Indonesian, and provided written parental/guardian consent and student assent. Students with medical or psychological conditions that could hinder participation in group activities were excluded. A total of 128 students were initially approached. During screening, 11 students did not meet inclusion criteria and 17 declined participation, resulting in 28 exclusions. The final sample included 100 students (Figure 1).

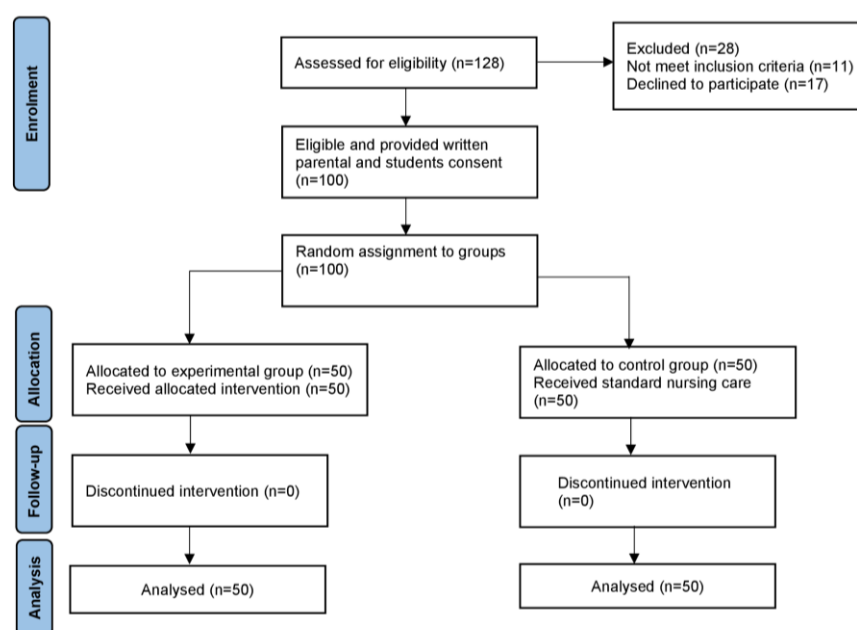


Figure 1. Flow diagram of the study

Random allocation

To minimize contamination between conditions, allocation was implemented at the intact-class level within each school. In each school, two existing classes were selected to participate. The two classes were randomly assigned to the intervention or control condition by drawing lots. Students were not mixed across classes. Thus, both schools contributed one intervention class and one control class (total four classes), yielding 50 students in the intervention group and 50 students in the control group (25 intervention and 25 control students per school). All participants completed pretest and posttest assessments, and no participants were lost to follow-up.

Intervention

The intervention group received the Nurse-Led ROOTS Program integrated with Soft Skills Training, designed to improve

students’ emotional regulation through peer leadership and nursing-based mental health promotion. The program adapted the ROOTS framework (18) and integrated structured soft skills content including assertive communication, emotional awareness, self-control strategies, cognitive reappraisal, empathy, and interpersonal problem-solving.

The school nurse served as the primary facilitator, delivering psychoeducation, guided reflection, brief regulation practices (e.g., breathing and grounding), and referral when needed. Teachers and/or school counselors accompanied sessions to support implementation and student safeguarding. The intervention was delivered once weekly for eight weeks (60–90 minutes/session). A session-by-session outline is provided in Table 1. The control group received no intervention and attended school as usual. After posttest data collection, the control group was offered a condensed program using a wait-list approach.

Table 1. Nurse-led ROOTS program and soft skills training program

| Session | Objectives | Key activities | Home practice |
|---------|---|--|--|
| 1 | Introduce program goals; establish group norms and psychological safety | Ice-breaking; explanation of ROOTS principles and soft skills; group rules | Short self-reflection on emotional challenges |
| 2 | Strengthen peer leadership and assertive communication | Communication role-play; ‘I-message’ practice; peer feedback | Practice assertive statements with peers/family |
| 3 | Improve emotional awareness and labeling | Emotion identification; trigger discussion; labeling practice | Daily mood log using emotion vocabulary |
| 4 | Build adaptive expression and self-control | Breathing; grounding; tone/facial control; practice | Apply one self-control technique in real life |
| 5 | Strengthen cognitive reappraisal | Reappraisal worksheets; nurse demonstration; problem-solving | Reframe one daily situation and record reflections |
| 6 | Enhance empathy and perspective-taking | Guided perspective-taking; dyadic sharing; prosocial stories | Reflection on another person’s perspective |
| 7 | Develop peer-led prosocial values campaign | Brainstorming; planning with nurse; link to regulation | Prepare campaign materials/tasks |
| 8 | Consolidate skills and review progress | Reflection circle; recap techniques; feedback and closure | Final reflection on changes and future goals |

Research instruments

Emotion regulation was the primary outcome and was measured using the Emotion Regulation Questionnaire for Children and Adolescents (ERQ-CA) (19). The ERQ-CA contains 10 items comprising two subscales: Cognitive Reappraisal (6 items) and Expressive Suppression (4 items), rated on a five-point Likert scale (strongly disagree to strongly agree). Higher Cognitive Reappraisal scores indicate greater use of reappraisal strategies. Higher Expressive Suppression

scores indicate greater use of suppression strategies; subscale findings were interpreted cautiously because suppression can have context-dependent implications.

The ERQ-CA was translated into Indonesian using a back-translation procedure and assessed for content validity by three experts in educational psychology and community nursing. In this study, internal consistency was good (Cronbach’s $\alpha = 0.82$ for the total scale).

Ethical considerations and trial registration

Ethical approval was obtained from the Research Ethics Committee of Padjadjaran University (No. 830/UN6.KEP/EC/2025, approved in 2025). Written informed consent was obtained from parents/guardians and assent from students. Data were anonymized and stored securely in password-protected files. Students showing signs of distress were referred to school counseling services. The study was registered retrospectively at ClinicalTrials.gov (Identifier: NCT07261397).

Data collection procedures

Data were collected at two time points: baseline (pretest, Week 1) and post-intervention (posttest, Week 9). All participants completed the ERQ-CA at both assessments. Questionnaires were administered in classrooms under trained research assistant supervision (30–40 minutes). Standardized instructions were used, and participants were asked not to discuss responses during administration. Research assistants were not involved in intervention delivery and were instructed not to disclose or discuss group assignment during data collection.

Data analysis

Data were analyzed using SPSS version 26. Descriptive statistics summarized participant characteristics and ERQ-CA scores. Normality was tested using Shapiro–Wilk tests and indicated non-normal distributions ($p < 0.05$); therefore, non-parametric analyses were applied.

Between-group comparisons of ERQ-CA outcomes at baseline (pretest) and post-intervention (posttest) were conducted using the Mann–Whitney U test. Within-group pre–post changes were examined using the Wilcoxon signed-rank test as complementary analyses describing changes over time in each group. Effect sizes were reported as $r = Z/\sqrt{N}$. Hodges–Lehmann estimates and 95%

confidence intervals were reported for key non-parametric comparisons.

Because randomization occurred at the class (cluster) level, a cluster-adjusted analysis was additionally conducted as a sensitivity analysis to account for potential intra-class correlation. A mixed-effects ANCOVA model was fitted with posttest ERQ-CA as the dependent variable, group as a fixed factor, baseline (pretest) score as a covariate, and class as a random intercept. Given non-normality, rank-transformed ERQ-CA outcomes were used in the mixed-effects model. The intra-class correlation coefficient (ICC) was estimated and reported. Given the small number of clusters (four classes), cluster-adjusted results were interpreted cautiously. Statistical significance was set at $p < 0.05$ (two-tailed). Subscale analyses were interpreted as exploratory because no family-wise error adjustment was applied.

Results

A total of 128 students were approached. Eleven students did not meet eligibility criteria and 17 declined participation, resulting in 100 enrolled students. Randomization was conducted at the class level within each school using drawing lots. Across two schools, four intact classes participated (two classes per school): one class assigned to intervention and one class to control in each school. All students completed pretest and posttest assessments with no loss to follow-up ($n=100$).

A total of 100 students participated (intervention $n=50$; control $n=50$). Each school contributed 25 participants to each group. The mean age was 16.7 ± 0.8 years (median 17, IQR 16–17), and 56% were female. Baseline comparisons showed no significant differences in age, gender, or school type (all $p > 0.05$) (Table 2).

Baseline (pretest) ERQ-CA outcomes were comparable between groups (all $p > 0.05$), indicating similar baseline emotion regulation levels prior to intervention (Table 3).

Table 2. Demographic characteristics (n=100)

| Variables | Intervention (n=50) | Control (n=50) | P-value |
|----------------------------|---------------------|----------------|---------|
| Age (mean ± SD) | 16.7 ± 0.8 | 16.8 ± 0.9 | 0.563 |
| Age (median, IQR) | 17 (16 - 17) | 17 (16 - 17) | |
| Male, n (%) | 22 (44.0%) | 22 (44.0%) | 1.000 |
| Female, n (%) | 28 (56.0%) | 28 (56.0%) | |
| Islamic High School, n (%) | 25 (50.0%) | 25 (50.0%) | 1.000 |
| Public High School, n (%) | 25 (50.0%) | 25 (50.0%) | |

Table 3. Baseline (pretest) ERQ-CA outcomes between groups

| Outcome (Pretest) | Intervention Median (IQR) | Control Median (IQR) | p-value (Mann-Whitney U) |
|-------------------------------|---------------------------|----------------------|--------------------------|
| Total ERQ-CA | 29 (26-32) | 29 (26-32) | 0.91 |
| Cognitive Reappraisal (6-30) | 18 (16-20) | 18 (16-20) | 0.84 |
| Expressive Suppression (4-20) | 11 (10-12) | 11 (10-12) | 0.76 |

After eight weeks, the intervention group showed a significant improvement in total ERQ-CA scores ($p < 0.001$), with a Hodges–Lehmann median difference of +7 (95% CI 5-8; $r = 0.72$). The control group showed no significant change ($p = 0.218$) (Table 4). At posttest, the intervention group had significantly higher total ERQ-CA scores than the control group ($p < 0.001$; $r = 0.69$). Significant differences were also observed for Cognitive Reappraisal and Expressive Suppression (Table 5).

Although primary analyses used non-parametric tests due to ordinal scale properties, a

mixed-effects ANCOVA was conducted as a confirmatory analysis to account for baseline differences and class-level clustering. Because randomization was conducted at the class level, a cluster-adjusted mixed-effects ANCOVA model was conducted with posttest ERQ-CA as the dependent variable, group as a fixed effect, baseline ERQ-CA as a covariate, and class as a random intercept. After adjustment for baseline and clustering, the intervention effect remained significant (Table 6). The estimated ICC indicated low-to-moderate within-class correlation.

Table 4. Within-group pretest–posttest changes (ERQ-CA)

| Group | Pretest median (IQR) | Posttest median (IQR) | HL difference (95% CI) | P-value (Wilcoxon) | r (n=50) |
|--------------|----------------------|-----------------------|------------------------|--------------------|----------|
| Intervention | 29 (26-32) | 36 (33-39) | +7 (5-8) | <0.001 | 0.72 |
| Control | 29 (26-32) | 30 (27-32) | +1 (0-2) | 0.218 | 0.10 |

Table 5. Posttest comparison between groups

| Variables (Posttest) | Intervention median (IQR) | Control median (IQR) | HL difference (95% CI) | p-value | r (n=100) |
|------------------------|---------------------------|----------------------|------------------------|---------|-----------|
| Total ERQ-CA | 36 (33-39) | 30 (27-32) | +6 (5-7) | <0.001 | 0.69 |
| Cognitive reappraisal | 22 (21-24) | 18 (16-20) | +4 (3-5) | <0.001 | 0.71 |
| Expressive suppression | 14 (12-15) | 12 (10-13) | +2 (1-3) | 0.004 | 0.45 |

Table 6. Cluster-adjusted mixed-effects ANCOVA

| Outcome | Adjusted group effect (Intervention vs Control) | SE | 95% CI | p-value | ICC |
|-----------------------------------|---|-----|------------|---------|------|
| Total ERQ-CA (posttest) | +5.6 | 1.1 | 3.4 to 7.8 | <0.001 | 0.03 |
| Cognitive Reappraisal (posttest) | +3.7 | 0.8 | 2.1 to 5.3 | <0.001 | 0.04 |
| Expressive Suppression (posttest) | +1.6 | 0.7 | 0.2 to 3.0 | 0.028 | 0.02 |

Overall, the Nurse-Led ROOTS Program integrated with Soft Skills Training significantly improved emotion regulation in this class-cluster randomized school sample. Improvements were primarily driven by gains in Cognitive Reappraisal. Expressive Suppression also increased and should be interpreted cautiously. Given the small number

of clusters (four classes) and two-school setting, findings should be generalized carefully.

Discussion

The improvements in emotional regulation skills also have broader implications for the mental health and well-being of

students. Strong emotional regulation is associated with better stress management, emotional resilience, and overall psychological health, which can contribute to a more positive school environment and greater academic success (20). Addressing emotional regulation early can serve as a preventive measure for a range of mental health challenges in adolescence. The significant increase in emotional regulation scores in the intervention group compared to the control group suggests that a peer-based leadership approach and school nurse facilitation may contribute to a more supportive, reflective, and conducive learning environment for the development of emotional management skills. These findings align with previous studies that confirm that group-based interventions and structured psychosocial support can improve adolescents' capacity to regulate emotions and reduce emotional reactivity to social stressors (17).

The improvement in emotional regulation in this study primarily occurred in the cognitive reappraisal dimension, which describes students' ability to rationally reassess an emotional situation before responding. This dimension is important because it plays a role in reducing impulsivity and aggressiveness that often appear in adolescents (21,22). Soft skills training such as assertive communication, situational empathy, and self-reflection has been shown to contribute to the improvement of this reappraisal strategy (23). This is supported by the finding that students in the intervention group were better able to restrain excessive emotional reactions and chose more adaptive ways of dealing with social conflicts at school (15). Thus, the combination of a peer-based leadership approach and school nurse guidance appears to be effective in strengthening the cognitive component of adolescent emotional regulation.

This study's findings have important implications for educational policy, particularly in how schools can integrate emotional regulation training into the curriculum. Schools should consider incorporating programs like the Nurse-Led ROOTS Program into their health and wellness initiatives, as part of a broader effort to promote mental health and

emotional resilience among students. Policymakers can play a key role in facilitating these programs by supporting the training of school nurses and counselors in psychosocial interventions. During the program, nurses serve not only as educational facilitators but also as role models, demonstrating calm and empathetic emotional responses. A nursing approach based on interpersonal relationship theory and mental health promotion contributes to an increased sense of psychological safety in students (24). Nurses provide microskills training, such as paced breathing techniques, grounding techniques, and positive reframing, which helps students internalize emotion regulation strategies in real-life school situations. These findings align previous study which shows that school nursing-based interventions can reduce stress and improve adolescents' emotional well-being (25).

From a psychosocial perspective, these results reinforce the theory of emotion regulation, which posits that reappraisal is more adaptive than suppression (26). The findings of this study also underline the importance of considering cultural norms in the development and delivery of emotional regulation programs. In Indonesian culture, where emotional restraint is often seen as a sign of maturity, interventions that focus on both emotional expression and regulation may need to be tailored to avoid cultural misunderstandings. The success of this Nurse-Led ROOTS Program in Bandung suggests that similar adaptations could be made for diverse cultural contexts to increase the effectiveness of such programs worldwide. One possible explanation is that, in many Asian and Indonesian cultural contexts, emotional restraint and control of overt expression are socially valued and can be perceived as signs of maturity and respect (21). Another explanation is that the ERQ-CA suppression subscale captures the frequency of using suppression rather than its functional consequences; thus, higher scores may partly reflect greater awareness and intentional modulation of emotional displays. This is important because excessive emotional suppression can increase the risk of

psychological stress and maladaptive behavior (11).

The improvements in emotional regulation skills found in this study have important implications for bullying prevention efforts in schools. Adolescents with strong emotional regulation skills tend to have higher empathy, are better able to control impulsive reactions, and engage in less aggressive or bullying behavior (8). Nevertheless, a major limitation of the present study is that bullying perpetration and victimization were not measured directly. Therefore, any inference about bullying prevention remains indirect and should be interpreted cautiously. The Nurse-Led ROOTS Program can be considered a promotive intervention that potentially strengthens students' emotional resilience, enabling them to respond more constructively to social conflict rather than destructively (27), but its direct impact on bullying behavior still needs to be empirically tested.

The involvement of school nurses also strengthens the program's sustainability. Through attendance recording, observing behavioral changes, and routinely evaluating students' emotional well-being, nurses play a role in ensuring consistent implementation and maintaining the program's integrity (6). Furthermore, the nurses' involvement in coordination with guidance counselors allows for a clear referral pathway for students needing additional psychological support (7). The presence of nursing staff in schools plays a strategic role in linking social-emotional interventions with ongoing mental health services (28).

The peer-led structure of the ROOTS Program plays a crucial role in fostering emotional regulation skills by enabling students to act as leaders and role models. By taking on leadership roles, students are not only responsible for their own emotional regulation but also influence their peers through social learning (16). This peer-to-peer dynamic is particularly effective in adolescence, a stage where individuals are highly susceptible to the behaviors of their peers (10). The program capitalizes on this influence, encouraging students to model and practice adaptive

emotional responses, which can have lasting effects on their emotional regulation and interpersonal interactions.

The significant difference in outcomes between the intervention and control groups in this study also suggests that conventional approaches relying solely on formal teacher guidance are less effective in building students' emotional capacity. The control group, which did not receive intervention, showed minimal changes in emotion regulation scores, reinforcing the notion that programs based on active student participation are more successful in fostering emotional awareness and reflective skills (29). This aligns with international literature showing that interventions based on social norms and peer support produce more significant impacts than one-way or authoritative approaches (30).

Implications

The scientific contribution of this study lies in demonstrating that a nurse-led, peer-leadership intervention (ROOTS integrated with Soft Skills Training) can be contextualized to Indonesian school culture without losing its core functions. The adaptation used locally relevant language and adolescent case examples, and leveraged OSIS as a practical platform for peer leadership and norm change. This structure likely strengthened student engagement and ownership of behavior change, supporting improvements in emotional regulation. Practically, these findings suggest that school nurses can play an expanded role as mental health promotive-preventive facilitators by integrating structured emotion regulation and interpersonal skills training into routine school health activities. The program can be embedded within school wellness initiatives (e.g., life skills education, counseling referrals, and student leadership activities), with follow-up booster sessions to help maintain gains over time.

Limitations

Several limitations should be considered when interpreting these findings. First, the study involved only two schools and a limited number of clusters (four intact

classes), which restricts generalizability and limits statistical power to fully account for cluster effects. Although a cluster-adjusted sensitivity analysis can be conducted, estimates should still be interpreted cautiously given the small number of clusters. Second, although classes were randomly assigned, the design was implemented in a natural school setting and outcomes were assessed at the student level; therefore, residual confounding related to classroom and school-context factors cannot be ruled out. Third, the study relied on self-report (ERQ-CA), which may introduce response and social desirability bias. Finally, the study evaluated emotion regulation but did not directly measure bullying perpetration or victimization, so conclusions about bullying prevention remain indirect. Future research should include a larger number of schools/classes using multi-stage cluster sampling, incorporate direct bullying outcomes (e.g., peer/teacher reports or school records) alongside self-report, and add longer follow-up to test durability of effects and potential impacts on school climate and academic outcomes.

Conclusion

This study demonstrates significant effectiveness in improving emotional regulation among high school students in Bandung, but these findings are based on a non-randomized sample. Therefore, the results should be interpreted with caution, and future research with a randomized design and larger sample size is recommended to confirm these findings. The intervention group showed notable gains in cognitive reappraisal, while expressive suppression increased, a pattern that must be interpreted cautiously given cultural norms around emotional restraint among Indonesian adolescents. These findings indicate that the peer-led leadership approach facilitated by school nurses may support students in developing greater emotional awareness and more adaptive strategies for managing emotional situations.

These results have important implications for education and community nursing practice, particularly in efforts to strengthen adolescent mental health. Schools

may consider integrating peer-leadership-based emotional regulation programs and structured nurse facilitation into routine curricular and extracurricular activities. Given that expressive suppression did not decrease, future implementations should include closer monitoring of suppression-related outcomes to ensure strategies are being used adaptively.

This study was limited to two schools, involved a short eight-week period, and did not directly measure bullying perpetration or victimization. Therefore, the findings should be generalized with caution, and future research should adopt larger samples, multi-school cluster designs, longer follow-up periods, and include direct measures of bullying behavior to assess whether improvements in emotional regulation translate into measurable reductions in school aggression. Despite these limitations, the intervention shows promise and may be scaled with careful fidelity monitoring and longitudinal evaluation to ensure sustained and meaningful impact on students' emotional and social well-being.

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