

Reducing Early Adolescent Risk Behaviors through Indonesia's PIK-R Counseling Program

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Abstract: This study examines the effectiveness of a school-based counseling intervention, the Youth Information and Counseling Center (Pusat Informasi dan Konseling Remaja, PIK-R), in reducing risk behaviors among early adolescents in Indonesia. A quasi-experimental design with a non-equivalent control group was applied to sixth-grade primary school students aged 11-12 years. The experimental group received a six- to eight-week PIK-R intervention consisting of peer education, guided counseling, role-playing, group discussion, and case-based learning, while the control group continued regular school activities. Data were collected using a validated Likert-scale questionnaire and analyzed through descriptive statistics, paired-samples t-tests, independent-samples t-tests, and effect-size estimation. The findings indicate that students who participated in the PIK-R intervention showed a statistically significant decrease in risk behavior scores compared with students in the control group. The intervention also produced a large practical effect (Cohen's $d = 0.85$), suggesting that PIK-R can serve as an effective preventive strategy in primary education. This study contributes to the literature by extending evidence on counseling-based risk behavior prevention to early adolescents and by providing context-specific insights from Indonesian schools.

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1. Introduction

Risk behaviors among early adolescents have become a major concern in public health and education. Early adolescence, commonly defined as the period between 10 and 14 years of age, is a critical developmental stage characterized by rapid biological, cognitive, and socio-emotional changes. During this period, students begin to develop identity, autonomy, and peer relationships; however, these transitions may also increase their vulnerability to substance-related tendencies, aggression, rule-breaking, unsafe social interactions, and other behaviors that can undermine well-being and academic development (Batte et al., 2024; Mahatmya et al., 2026; Thai et al., 2026).

Adolescent risk behaviors are multidimensional and frequently interconnected. Engagement in one form of risk behavior may increase the likelihood of involvement in other problematic behaviors, forming behavioral clusters that can persist into later adolescence and adulthood (Champion et al., 2018; Gomez Gutierrez et al., 2004; Teh et al., 2019). These behaviors are influenced by individual characteristics, peer norms, family support, school climate, and broader socio-cultural conditions. Risk-taking may also affect educational outcomes, particularly when behavioral problems disrupt learning engagement, attendance, and academic performance (Maslak, 2022; Ngware et al., 2016).

Schools provide a strategic setting for preventive interventions because they offer structured access to information, guidance, and continuous support. School-based counseling, social-emotional learning, and life-skills education have been associated with improvements in self-regulation, decision-making, resilience, and behavioral adjustment among adolescents (Jones et al., 2010; Jones et al., 2011; Moilanen, 2024; Russell et al., 2019; Singha, 2025). Evidence from developmental intervention research also suggests that earlier support can produce more sustainable benefits because it addresses behavioral tendencies before they become firmly established (Kaytez, 2022; Spittle & Treyvaud, 2016).

In Indonesia, one relevant initiative is the Youth Information and Counseling Center, known as Pusat Informasi dan Konseling Remaja (PIK-R). The program provides youth-friendly information, peer education, counseling, and life-skills support related to healthy development, social relationships, and responsible decision-making. Its peer-based and participatory approach is particularly relevant for early adolescents because peer influence becomes increasingly important during this developmental stage (Brown & Anistranski, 2020; Suleiman & Deardorff, 2015).

Despite the practical importance of PIK-R, rigorous empirical evidence regarding its effectiveness among early adolescents in primary education remains limited. Most previous studies have focused on older students in secondary education, whereas primary school students have received less attention. This gap is important because early adolescence represents a formative period in which attitudes, behavioral norms, and peer-related choices begin to develop. Therefore, evaluating PIK-R at the primary school level can provide stronger evidence for designing preventive education programs that are developmentally appropriate and contextually relevant.

This study addresses this gap by examining whether the PIK-R school-based counseling program can reduce risk behaviors among sixth-grade primary school students in Indonesia. The study contributes to the literature in three ways: first, it extends adolescent risk behavior prevention research to the primary school level; second, it provides empirical evidence from a developing-country context; and third, it offers practical implications for integrating counseling and life-skills education into school-based prevention systems.

2. Literature Review

Risk behavior in early adolescence should be understood within a developmental and ecological perspective. Early adolescents experience increasing curiosity, emotional sensitivity, and dependence on peer acceptance. These characteristics can support positive growth when students receive appropriate guidance, but they can also increase vulnerability when self-regulation, family support, and school-based protection are insufficient. Problem Behavior Theory explains that adolescent risk behavior emerges from interactions among individual dispositions, perceived environments, and behavioral systems (Dembo et al., 2016; O'Connor et al., 2016). Therefore, preventive programs should not only provide information but also strengthen protective competencies and reshape the social environment surrounding adolescents.

Peer influence is one of the most important mechanisms shaping adolescent behavior. Social Learning Theory suggests that students learn attitudes and behaviors through observation, modeling, reinforcement, and interaction with significant others, including peers (Ott, 2024; Saka, 2024). Peer-based counseling and education are therefore relevant because adolescents may be more willing to internalize messages delivered by relatable social agents. Previous studies also indicate that peer-led interventions can support positive youth outcomes when facilitators are properly trained, supervised, and embedded within a supportive school environment (Brown & Anistranski, 2020; Ekubagewargies et al., 2025; Suleiman & Deardorff, 2015).

School-based counseling programs provide a preventive strategy that integrates information, emotional support, and behavioral skill development. Such programs are aligned with social-emotional learning and life-skills approaches because they encourage students to recognize risks, regulate emotions, communicate responsibly, and make informed decisions. Evidence from school-based interventions shows improvements in

self-concept, emotional regulation, behavioral adjustment, and reduced risk-taking tendencies among young people (Stalker et al., 2018; Verissimo et al., 2022; Zapolski et al., 2022).

The PIK-R program is consistent with this preventive logic because it combines youth-friendly information, peer education, counseling, and life-skills development. In the Indonesian context, PIK-R is practically relevant because it can be implemented through school structures and adapted to local socio-cultural values. Nevertheless, the evidence base for PIK-R among primary school students remains underdeveloped. Empirical evaluation at the early adolescent stage is therefore necessary to determine whether the program can reduce risk behaviors before they become more stable patterns.

3. Research Method

This study employed a quasi-experimental design with a non-equivalent control group. This design was considered appropriate because random assignment was difficult to implement in natural school settings, while comparison between an intervention group and a control group was still required to evaluate program effectiveness. The intervention examined in this study was the PIK-R school-based counseling program, which aims to reduce risk behaviors through counseling, peer support, and life-skills education.

The participants were sixth-grade primary school students aged 11-12 years from public schools in Indonesia. A total of 100 students participated in the study and were divided into two groups: 50 students in the experimental group and 50 students in the control group. The experimental group received the PIK-R intervention, whereas the control group continued regular school activities without exposure to the program. Participants were selected through purposive sampling based on school readiness, the availability of PIK-R-related activities, and institutional willingness to participate.

The intervention was implemented over six to eight weeks through a structured series of school-based counseling activities aligned with the objectives of PIK-R. The activities included peer education, guided counseling sessions, group discussions, role-playing, and case-based learning. The program content emphasized awareness of healthy social relationships, self-control, decision-making, communication, reproductive health information appropriate to students' developmental stage, and essential life skills. Sessions were facilitated by trained school counselors in collaboration with peer educators to create a participatory and supportive learning environment.

Data were collected using a self-administered questionnaire designed to measure adolescent risk behaviors, including substance-related tendencies, aggressive behavior, rule-breaking, and susceptibility to negative peer pressure. The instrument used a five-point Likert scale ranging from strongly disagree to strongly agree. Content validity was established through expert judgment involving specialists in education and adolescent psychology. Construct validity was examined through factor analysis, and internal consistency reliability was assessed using Cronbach's alpha, with values of 0.70 or higher considered acceptable.

Data collection was conducted in three stages. First, both groups completed a pre-test to establish baseline risk behavior scores. Second, the experimental group participated in the PIK-R intervention, while the control group continued regular school activities. Third, both groups completed a post-test after the intervention period. The data were analyzed using descriptive statistics, paired-samples t-tests to examine within-group changes, independent-samples t-tests to compare post-test differences between groups, and Cohen's d to estimate the practical magnitude of the intervention effect.

Ethical considerations were observed throughout the study. Permission was obtained from relevant educational authorities, and informed consent was secured from students and parents before participation. Participants were informed that their involvement was voluntary, and the confidentiality and anonymity of their responses were maintained. All data were handled in accordance with ethical standards for research involving human participants.

4. Result and Discussion

4.1 Results

This study examined the effectiveness of the PIK-R school-based counseling program in reducing risk behaviors among early adolescents. The analysis was conducted through descriptive statistics, within-group comparisons, between-group comparisons, and effect-size estimation to determine both statistical and practical significance.

Table 1 presents the descriptive statistics of risk behavior scores for the experimental and control groups at pre-test and post-test. At baseline, the mean scores of the experimental group ($M = 3.21$, $SD = 0.45$) and the control group ($M = 3.18$, $SD = 0.47$) were comparable, indicating similar initial levels of risk behavior. After the intervention, the experimental group showed a clear decline ($M = 2.61$, $SD = 0.40$), whereas the control group showed only a slight reduction ($M = 3.10$, $SD = 0.44$).

Table 1. Descriptive Statistics of Risk Behavior Scores

Group	N	Pre-test Mean (M)	SD	Post-test Mean (M)	SD
Experimental group	50	3.21	0.45	2.61	0.40
Control group	50	3.18	0.47	3.10	0.44

The paired-samples t-test results in Table 2 indicate that the experimental group experienced a statistically significant reduction in risk behavior scores, $t(49) = 6.87$, $p < .001$. In contrast, the control group did not show a statistically significant change, $t(49) = 1.21$, $p > .05$. These results suggest that the reduction observed in the experimental group was associated with participation in the PIK-R intervention rather than natural variation alone.

Table 2. Paired-Samples t-Test Results for Within-Group Differences

Group	Mean difference	SD difference	df	t-value	Decision
Experimental group	0.60	0.62	49	6.87***	Significant
Control group	0.08	0.47	49	1.21	Not significant

Note. *** $p < .001$.

The independent-samples t-test shown in Table 3 demonstrates a significant difference between the experimental and control groups at post-test, $t(98) = -4.95$, $p < .001$. Students in the experimental group reported lower risk behavior scores than students in the control group. Cohen's d was 0.85, indicating a large effect size and confirming that the intervention had substantial practical significance.

Table 3. Independent-Samples t-Test of Post-Test Scores

Comparison	Mean Exp.	Mean Ctrl.	Mean difference	df	t-value	Effect size
Post-test	2.61	3.10	-0.49	98	-4.95***	$d = 0.85$

Note. *** $p < .001$.

Figure 1 illustrates the change in risk behavior scores from pre-test to post-test. The experimental group shows a sharper downward trend than the control group, visually reinforcing the statistical evidence that the PIK-R program reduced risk behavior among early adolescents.

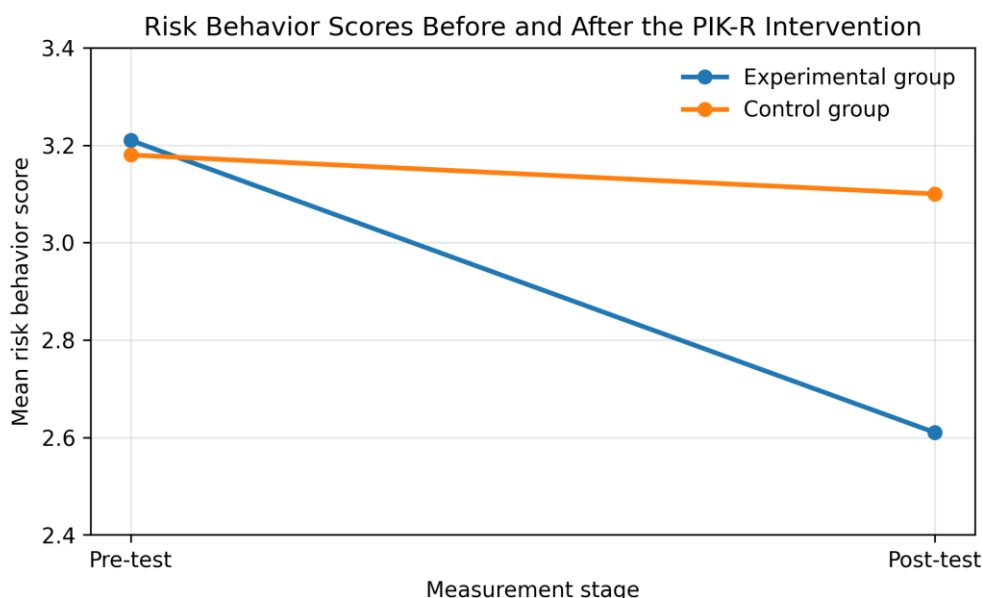


Figure 1. Changes in Risk Behavior Scores Before and After the PIK-R Intervention

4.2 Discussion

The findings provide empirical evidence that school-based counseling through the PIK-R program can reduce risk behaviors among early adolescents. The significant decrease in the experimental group and the large effect size indicate that the program had both statistical and practical relevance. This result supports the argument that preventive intervention should begin early, particularly during the primary school years, when attitudes, self-control, and peer-related behavioral patterns are still developing.

Theoretically, the findings can be explained through Problem Behavior Theory, which emphasizes that adolescent risk behavior is shaped by interactions among individual, social, and environmental factors (Dembo et al., 2016; O'Connor et al., 2016). The PIK-R intervention addressed these dimensions by providing accurate information, strengthening positive norms, improving decision-making skills, and creating supportive peer interactions. By combining cognitive, emotional, and social elements, the program functioned as a protective mechanism against problematic behavior.

The results also align with Social Learning Theory, which highlights the role of observational learning and peer modeling in shaping adolescent behavior (Ott, 2024; Saka, 2024). The peer education component of PIK-R likely made the intervention more relatable for students. When positive messages are delivered through peers and reinforced through interactive activities, students may be more willing to discuss sensitive issues, reflect on their choices, and internalize healthy behavioral norms.

The effectiveness of the program further supports previous research on school-based counseling, social-emotional learning, and life-skills interventions. Programs that combine guided counseling, participatory learning, and emotional skill development have been shown to improve self-regulation, reduce behavioral problems, and support healthier decision-making (Stalker et al., 2018; Verissimo et al., 2022; Zapolski et al., 2022). In this study, group discussions, role-playing, and case-based learning helped students connect program content with real-life situations, making the intervention pedagogically meaningful.

This study contributes to the literature by focusing on early adolescents in primary education, a population that has received less attention in previous intervention research. Many prevention programs are implemented in secondary schools after risk behavior has become more visible. The present findings suggest that earlier intervention can be strategic because it addresses behavioral tendencies before they are firmly established. This is particularly important for Indonesian schools, where PIK-R can be adapted to local values, available resources, and students' developmental needs.

Several limitations should be acknowledged. First, the quasi-experimental design without random assignment may limit the ability to control all potential confounding variables. Second, the use of self-reported data may introduce response bias, particularly because risk behavior is a sensitive topic. Third, the intervention was conducted over a relatively short period; therefore, the long-term sustainability of behavioral change was not examined. Future studies should employ longitudinal designs, involve multiple data sources such as teachers and parents, and explore digital or blended counseling models to strengthen accessibility and engagement.

5. Conclusion

This study concludes that the PIK-R school-based counseling program is effective in reducing risk behaviors among early adolescents. Students who participated in the intervention showed a significant decline in risk behavior scores compared with students in the control group. The large effect size indicates that the program produced meaningful practical benefits in addition to statistically significant outcomes. The study contributes to adolescent risk behavior prevention literature by extending the focus to primary school students and by providing empirical evidence from the Indonesian context. The integration of peer education, counseling, and participatory learning supports the development of self-regulation, decision-making, and healthy social behavior. These findings demonstrate that school-based counseling can serve as a strategic preventive approach during early adolescence. In practical terms, the findings suggest that counseling-based preventive programs should be strengthened within primary education. Schools can use PIK-R as a platform to provide accurate information, build life skills, and create supportive peer networks. Nevertheless, long-term evaluation and stronger implementation support are required to ensure program sustainability and broader impact.

6. Recommendation

First, policymakers should strengthen the institutionalization of PIK-R and similar school-based counseling programs within primary education systems. Preventive counseling and life-skills education should be integrated into school programs with clear implementation guidelines, adequate resources, facilitator training, supervision, and monitoring mechanisms. Second, school administrators and teachers should implement counseling programs in a structured and consistent manner. Professional development should be provided for teachers, counselors, and peer facilitators, particularly in adolescent psychology, peer counseling techniques, interactive learning, and ethical communication with students. Third, the peer education component should be optimized. Schools should carefully select, train, and mentor peer facilitators so that they can communicate effectively, model positive behavior, and help classmates engage with the program. Strong peer-led activities can increase students' acceptance of prevention messages. Fourth, parents and community stakeholders should be involved in reinforcing program outcomes. Collaboration between schools and families can create a more consistent support system for adolescents, ensuring that healthy behavior is encouraged both at school and at home. Finally, future research should use randomized controlled trials or longitudinal designs to examine the long-term effects of PIK-R. Researchers should also explore digital and blended counseling platforms, compare implementation across different cultural and educational contexts, and include teacher, parent, and peer assessments to strengthen data validity.

Data availability

The data generated and analyzed during this study are not publicly available because they involve school-age participants and are subject to ethical and institutional restrictions. Anonymized data may be made available by the corresponding author upon reasonable request and with permission from the relevant educational institution and ethics authority.

Declaration of the use of artificial intelligence (AI)

The authors declare that artificial intelligence (AI)-assisted tools were used only to support language refinement, grammar checking, sentence clarity, and academic style improvement during the manuscript preparation process. AI tools were not used to generate research data, conduct statistical analysis, interpret findings, or make scientific conclusions. All intellectual content, research design, data analysis, interpretation, and final conclusions remain the full responsibility of the authors. The authors have carefully reviewed, verified, and approved the final version of the manuscript.

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