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Kopenting Program: A Cultural Intervention to Improve Adolescent Sexual Health and Prevent Stunting in Rural Indonesia

Yulia Irvani Dewi[1], Agrina[2*], Yanti Ernalia[3], Yessi Marlina[4], Wanda Lasepa[5], Zuli Laili Isnaini[6], Deswinda[7]

[1,2,6] *Universitas Riau, INDONESIA*
[3] *UIN Sultan Syarif Kasim Riau, INDONESIA*
[4] *Health Polytechnic of Riau, INDONESIA*
[5] *Nutrition Study Program, Pahlawan Tuanku Tambusai University, INDONESIA*
[7] *Institute of Health Science Payung Negeri Pekanbaru, INDONESIA*

*__Corresponding Author:__ agrina@lecturer.unri.ac.id

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ABSTRACT

This study evaluated the effectiveness of the Kopenting Program, a culturally embedded community-based intervention designed to transform adolescent sexual and reproductive health (SRH) norms and reduce stunting risk in rural Indonesia. By integrating Malay cultural expressions into health education, the intervention aimed to challenge sociocultural taboos surrounding sexuality and encourage community participation in adolescent health promotion. A quasi experimental pre–post design was conducted across 14 junior and senior high schools in stunting-locus areas of Rokan Hulu Regency, Riau Province, involving 967 adolescents. The intervention included traditional culturally resonant media like syair-kompang educational media, school-based modules, and community engagement activities focusing on SRH and stunting prevention. Data were collected using validated SRH Knowledge Scales, Attitude Toward Sexual Risk Behavior Scales, and a self-reported behavioral checklist. Quantitative data were analyzed using McNemar tests and generalized estimating equations (GEE) to account for school clustering effects. Qualitative insights were gathered from students, teachers, and school committees through semi-structured interviews and were thematically analyzed.The program resulted in significant improvements in SRH knowledge, attitudes, and protective behaviors among participants, with all pre–post comparisons demonstrating statistical significance ($p < 0.001$). Qualitative findings supported these outcomes by highlighting improved family communication, increased acceptance of SRH discussions within culturally appropriate boundaries, and strong school-community endorsement for program sustainability. The Kopenting program demonstrates that culturally grounded health interventions can effectively normalize discussions on sexual health, delay early marriage intentions, and contribute to stunting prevention efforts. This approach offers a scalable and socially acceptable model for similar cultural settings. Future longitudinal evaluations are warranted to assess sustained impacts on behavioral and nutritional indicators. Findings underscore the policy relevance of integrating culturally grounded SRH modules within Indonesia's national adolescent and stunting prevention frameworks.

Keywords: Cultural Change, Malay Riau, Adolescent Sexual Health, Community-Based Intervention, Social Norms, Stunting Prevention

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INTRODUCTION

Adolescence is a crucial developmental stage during which biological maturity intersects with shifting social expectations, rendering adolescents particularly vulnerable to sexual and reproductive health (SRH) challenges and intergenerational nutritional outcomes. In Indonesia, the adolescent birth rate remains elevated, necessitating interventions that are contextually embedded within cultural realities (World Bank, 2024). Evidence shows that adolescent pregnancy increases risks of adverse neonatal outcomes and childhood stunting (Laksono et al., 2022; Ma'arif & Djuwita, 2020). Stunting remains a major public health priority. According to the *Survei Status Gizi Indonesia* (SSGI), the national stunting prevalence among children under five was 21.6% in 2022 (Kementerian Kesehatan RI, 2022), with higher rates observed in rural provinces, including Riau. Systematic reviews demonstrate that child stunting risk is significantly associated with adolescent pregnancy, low maternal education, and limited health information access (Gusnedi et al., 2022; Astuti et al., 2021).

Despite the government's efforts, adolescents' access to reliable SRH information remains restricted by cultural taboos and structural challenges. A meta-analysis in low-income and middle-income countries (LMICs) revealed that SRH interventions combining knowledge, communication skills, and community involvement yield the most sustained behavior improvements, yet few address cultural constraints (Desrosiers et al., 2020). Strengthening parent–adolescent SRH communication is particularly essential, as it normalizes sensitive topics and informs safe decision making (Agyei et al., 2023). In Malay Riau communities including Rokan Hulu Regency discussions on sexuality are influenced by the values of *malu* (modesty/shame) and preserving *marwah* (family honor), leading to avoidance of reproductive discourse in family settings (Dewi et al., 2023; Hang-Kuen, 2019). These cultural mechanisms restrict adolescents' knowledge access and reinforce stigma, positioning SRH as taboo. Therefore, interventions must align with cultural norms and utilize local wisdom not as an obstacle but as an enabler of positive transformation. Traditional performance cultures such as *syair* accompanied by *kompang* are widely recognized as carriers of moral instruction and identity in Malay communities. Integrating these media into SRH learning provides culturally legitimate messaging pathways and increases adolescent engagement (Golden et al., 2024; Huang et al., 2022). This approach supports community acceptance and co-ownership, which are critical to program sustainability.

The Kopenting Program was designed to operationalize these cultural values. By integrating *syair-kompang* performance, structured SRH learning modules, and community involvement-driven stunting awareness, the program aims to normalize conversations around sexuality, enhance knowledge, and empower adolescents in rural Indonesia. A quasi-experimental pre-post study was conducted in fourteen junior and senior high schools in Rokan Hulu Regency to evaluate the program's effectiveness on SRH outcomes and cultural acceptability. This study draws upon ecological and social norms frameworks, proposing that adolescents' knowledge and intentions are shaped by community structures and value systems. When cultural norms are reframed as supportive, SRH communication shifts from taboo to acceptable guidance, building a stronger foundation for delaying early marriage and reducing stunting risks. Beyond intervention effectiveness, this study highlights cultural mechanisms enhanced parental communication, stigma reduction, and community endorsement that enable social change. However, few studies in Indonesia have empirically tested culturally embedded interventions that directly link adolescent SRH, social norms, and stunting prevention.

Finally, this work is situated within Indonesia's current policy environment. As the country pursues multi sectoral strategies to reduce stunting such as linking school feeding, maternal and child nutrition, and adolescent health community co designed, culturally resonant SRH programmes offer a complementary path to impact by addressing upstream social norms driving early pregnancy. By empirically examining a programme that mobilises local expressive culture to normalise sensitive health discourse, our aim is to inform scalable, culturally responsive models for adolescent health and nutrition in Indonesia and comparable settings.

RESEARCH METHODS

A quasi experimental pre–post intervention design was employed to evaluate the effectiveness of the Kopenting Program in improving adolescent sexual and reproductive health (SRH) outcomes and strengthening cultural communication related to stunting prevention. The study was conducted in Rokan Hulu Regency, Riau Province, Indonesia, a rural area designated as a stunting-locus region. Fourteen junior and senior high schools were purposively selected based on local stunting prevalence and accessibility. A total of 967 adolescents, aged 11–18 years, who were present during data collection and provided assent and parental consent, were included in the final analysis. Students with cognitive or communication impairments were excluded.

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Intervention Overview

The Kopenting Program incorporated three core components:

1. ***Culturally-Based Media Education:*** Delivery of SRH and stunting messages through traditional *syair* poetic verses combined with *kompang* performance, emphasizing moral reflection, self-respect, and delaying early marriage.
2. ***Structured Learning Modules:*** "Remaja Sakti" booklet addressing puberty, SRH, gender roles, early marriage risk, and stunting prevention.
3. ***Community Collaboration:*** Engagement of teachers, counselors, and Indonesian Planned Parenthood Association (PKBI) facilitators to support counseling and reinforce parental involvement in SRH communication.

Cultural Adaptation and Community Involvement

A preliminary cultural assessment was conducted with key stakeholders including school principals, teachers, and community leaders to ensure cultural appropriateness. The *syair-kompang* content was co-designed with local cultural practitioners to ensure alignment with Malay values of *malu* and *marwah*. The implementation process emphasized:

1. Cultural legitimacy of SRH topics
2. Acceptability across age and gender groups
3. Community ownership to support sustainability

Data Collection and Instruments

Data were collected before and after the intervention using:

1. ***SRH Knowledge Scale:*** Measuring comprehension of puberty, sexual risk, and reproductive health (categorized: low vs. high)
2. ***Attitude Toward Sexual Risk Behavior Scale:*** Using a 4-point Likert scale to assess values and beliefs toward sexual behavior (positive vs. negative)
3. ***Self-reported Sexual Health Behavior Checklist:*** Evaluating protective vs. risk behaviors in romantic interactions

The instruments were adapted from validated national SRH surveys and underwent expert review for content validity (CVI > 0.80) and reliability testing in a pilot sample (Cronbach's $\alpha = 0.71–0.84$). Written informed consent from parents and assent from adolescents were secured prior to participation. Confidentiality and anonymity were upheld throughout the study.

Data Analysis

Descriptive statistics were performed for socio-demographic variables. Pre-post changes in categorical outcomes were analyzed using McNemar test for paired categorical comparisons and Generalized Estimating Equations (GEE) with logit link function to account for school-level clustering. Statistical significance was determined at $p < 0.05$. All analyses were conducted using SPSS Version 20. Moreover, for qualitative component using semi-structured interviews were conducted with school principals, teachers, student representatives, and school committee members to assess cultural acceptability and perceived impact. Data were analyzed using thematic content analysis to identify reinforcing cultural mechanisms. Illustrative quotations were selected to represent emergent themes including Enhanced family communication, reduced taboo around SRH topics, and continued cultural endorsement for program sustainability

RESULTS

Sociodemographic Characteristics

A total of 967 adolescents participated in this study, consisting of 51.1% female and 48.9% male. The majority of participants were aged 15–18 years (64.9%), and 60% were senior high school students. Most fathers were employed in agriculture, labor, or fishing work (50.3%), while more than half of mothers were housewives (58.7%). The majority of mothers had a moderate education level (63.2%), indicating a community with relatively low socioeconomic background.

Table 1 Socio-demographic characteristics of the study participants (n=967)

Variables	Total (N)	Percentage (%)
Sex		

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Female	494	51.1
Male	473	48.9
Age		
11- 14 years old	320	33.1
15- 18 years old	628	64.9
>18 years old	19	2
Education Level		
Junior High Schools	387	40
Senior High Schools	580	60
Father's Occupation		
Unemployed	71	7.3
Farmers/labor/fisherman	486	50.3
Private employee	321	33.2
Variables	**Total (N)**	**Percentage (%)**
Civil Servant	89	9.2
Mother's Occupation		
Housewife	568	58.7
Self-employed	313	32.4
Civil Servant	86	8.9
Mother's Education		
Low	244	25.2
Medium	611	63.2
High	112	11.6
Total	967	100

Sources of Sexual and Reproductive Health Information

The most common sources of SRH information reported by students were categorized as "others", a broad group likely including social media and peers (58.8%). Schools played a substantial educational role, with teachers identified as the second most frequent source (26.7%). Only 5.5% cited parents, while access to professionals and educational media such as health workers, siblings, books, or films remained very limited (< 5%). This pattern indicates inadequate family communication and limited exposure to formal SRH information.

Table 2 Source Of Sexual Health Information Of The Study Participants

Source of Information	Total (N)	Percentage (%)
Teachers	258	26.7
Parents	53	5.5
Friends	35	3.6
Doctor	20	2.1
Sisters/brothers	13	0.13
Books/magazines	11	1.1
Film/ video	8	0.8
Others	569	58.8
Total	967	100

Changes in Knowledge, Attitudes, and Sexual Health Behaviors

Before the intervention, 69.2% of adolescents demonstrated poor SRH knowledge, and 51.2% reported engaging in risky sexual behaviors. After exposure to the Kopenting Program, there was a substantial and statistically significant improvement across all outcomes ($p < 0.001$). Adolescents with high knowledge increased to 72.2%, positive attitudes increased to 85.8%, and those practicing protective behaviors rose to 77.6%, reflecting improved decision-making in romantic and social interactions.

Table 3 Changes in Knowledge, Attitudes, and Sexual Behaviors Before and After the Kopenting Intervention (n=967)

Variables	Pre- Intervention	Post- Intervention	Pvalue
Knowledge			0.00
Low	669 (69.2%)	269 (27.8%)	
High	298 (30.8%)	698 (72.2%)	

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Attitudes			0.00
Negative	310 (32.1%)	137 (14.2%)	
Positive	657 (67.9%)	830 (85.8%)	
Behaviors			0.00
Negative	495 (51.2%)	217 (22.4%)	
Positive	472 (48.8%)	750 (77.6%)	
Total	967 (100%)	967 (100%)	

Note: p-values obtained from McNemar test; statistical significance was set at $p < 0.05$.

Quantitative findings indicate that the Kopenting Program effectively enhanced the cognitive (knowledge), affective (attitude), and behavioral domains of adolescent SRH outcomes within a relatively short intervention period. These changes demonstrate the program's potential to foster healthy social norms and informed choices that are essential to reducing early marriage and adolescent pregnancy risks.

Qualitative Findings: Cultural Acceptability and Social Change

Thematic analysis of interview data revealed three primary cultural and social mechanisms that supported behavioral improvement:

Enhanced Family Communication

Teachers and school committees reported that students and parents began discussing puberty and relationship boundaries more openly, reducing discomfort around SRH topics.

"Sangat bermanfaat… orang tua lebih memahami untuk menjaga pergaulan anak dan menunda usia pernikahan." (Committee Member)

Cultural Reframing of SRH as Acceptable

Use of Malay syair-kompang made SRH messages feel familiar, respectful, and aligned with community values. "Video ini kami putar hari Sabtu pagi setelah senam pagi." (School Principal)

Strengthening School and Community Support

Educational staff expressed readiness to continue program implementation independently, signaling sustainability.

"Kami akan tetap menyampaikan edukasi stunting ini… komunikasinya tetap dijaga." (Principal)

Additionally, adolescents expressed motivation to adopt safer behaviors and articulated greater self-control in peer interactions.

"Ada teman-teman yang susah dibilangin, tapi kami lebih mengerti sekarang." (Student)

These narratives confirm that cultural resonance enhanced emotional engagement and reinforced internalization of positive behaviors key goals of community-based social change interventions. Together, quantitative and qualitative findings indicate that the program initiated a positive shift in both individual behavior and community norms.

DISCUSSION

This study provides strong evidence that the Kopenting Program, a culturally embedded, community based intervention implemented in rural Indonesia achieved significant improvements in adolescents' sexual and reproductive health (SRH) knowledge, attitudes, and protective behaviours. Quantitatively, the shift in high SRH knowledge, positive attitudes and healthy behaviour practices among 967 adolescents demonstrates that the intervention effectively addressed cognitive, affective and behavioural determinants of SRH decision making. Qualitatively, the data revealed three interlinked mechanisms of change: enhanced family–adolescent communication, the reframing of cultural taboo around SRH discussions, and strong institutional or community leadership support. The alignment between measured behavioral improvements and cultural acceptability signals that the programme engaged both individual-level change processes and societal-level normative transformation.

The influence of cultural legitimacy and community endorsement was critical in the success of the Kopenting Program. In rural Malay communities, shared moral values such as *malu* (modesty) and *marwah* (family honour) determine acceptable public discussions and shape intergenerational communication. This finding aligns with prior community based health research in the same cultural setting, where Agrina et al. (2025) demonstrated that

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sociocultural norms significantly predicted health behaviour particularly exclusive breastfeeding practices among mothers in Riau. Their study revealed that communities with stronger normative support for maternal–child health were nearly three times more likely to sustain positive health behaviours.

These insights affirm that cultural coherence where interventions resonate with collective identity and moral frameworks acts as a central mechanism of change. By embedding SRH content within cultural media like *syair-kompang*, the Kopenting Program replicated these mechanisms of normative reinforcement, enabling both youth and parents to perceive reproductive health as a legitimate topic of discussion rather than a cultural taboo.

Institutional Leadership and Normative Change

A central finding is the pivotal role of the school principal (headmaster) as the linchpin of change within the school and community ecology. Institutional endorsement of the programme enabled integration of culturally grounded syair-kompang sessions into the school routine, signalling to adolescents, parents and community members that SRH discussion is culturally acceptable and relevant. This observation mirrors the evidence from LMIC settings where school-based interventions with strong institutional leadership and stakeholder engagement achieve better outcomes (Xu et al., 2020). Within the socio-ecological model, this role corresponds to the "organizational/institutional" layer, bridging the meso-level (school) with the macro-level (community/culture). As such, the headmaster's leadership functioned as a normative catalyst by changing the "rules of engagement" around SRH within the school-community complex.

Multi-level Engagement: From Individual to Community

The programme's success is further explained through its alignment with the socio-ecological framework: individual adolescents (micro-level) were engaged through modules, families (meso-level) through improved communication, and the broader community (macro-level) through cultural media and leadership endorsement. Social norms theory posits behaviours are influenced by perceptions of what others do (descriptive norms) and what others approve (injunctive norms) (Jakobsson et al., 2024). In our study, family communication improvements (qualitative theme) indicate a shift in injunctive norms ("it is acceptable to talk about SRH"), while increased protective behaviour (from 48.8% to 77.6%) reflects change in descriptive norms ("others are doing protective behaviours"). This multi-layer engagement reinforces that normative change is not achieved solely at the individual level but requires systemic influence across family, school, and community networks.

Cultural Media as Catalysts of Acceptability and Engagement

Embedding SRH messages within the *syair-kompang* cultural form aligned the content with Malay values of *malu* (modesty) and *marwah* (family honour), making the intervention emotionally and culturally resonant. Arts-based and heritage-embedded health interventions have been shown to improve engagement and behaviour among youth (Golden et al., 2024). Here, the cultural media operated at both the meso (school/community) and macro (culture) levels, signifying a dual mechanism: one of content relevance (what is said) and one of symbolic legitimacy (who says it, and in what form). This suggests that aligning SRH education with local expressive culture can shift taboo into normative conversation and behaviour.

Implications for Stunting Prevention via Behavioural & Normative Pathways

Although the present study did not measure stunting directly, the observed increases in protective behaviours and normative changes hold major implications for stunting prevention. Early pregnancy, poor communication and low SRH literacy are known upstream risk factors for child undernutrition and stunting (Laksono et al., 2022). While we did not measure long-term nutritional outcomes, the normative and behavioural shifts observed suggest that culturally grounded SRH programmes may contribute to stunting prevention by delaying early marriage and enhancing family nutrition dynamics.

Contribution to Social Norm Transformation

This study contributes to the literature by showing that culture is not merely a backdrop but can act as a strategic lever for normative and behavioural change. By operationalising local cultural assets (syair-kompang) and institutional leadership, the programme demonstrates a change pathway: cultural performance contributes to family communication and behavioural shift. This extends arts and health research into adolescent SRH and nutrition in rural LMIC contexts, providing empirical support for models of normative transformation in public health.

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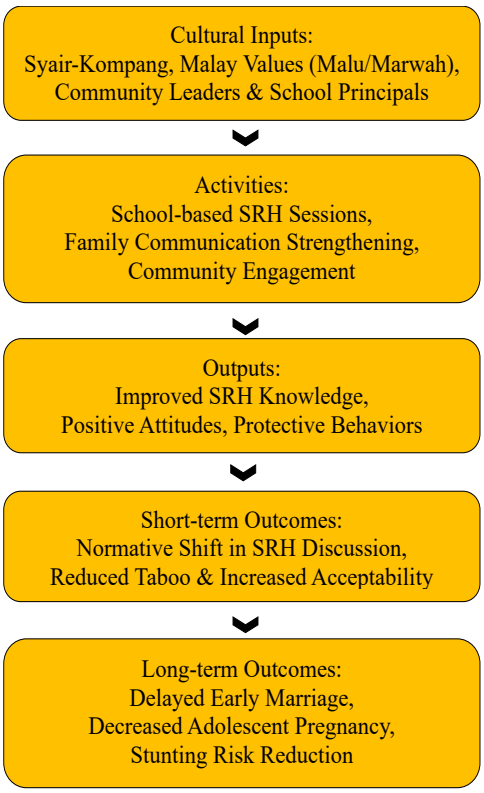

Figure 1. Cultural Change Logic Model of the Kopenting Program

This model illustrates the cultural and social mechanisms driving the Kopenting Program. Malay cultural assets, *syair-kompang*, values of *malu* (modesty) and *marwah* (family honour), and school, community leadership served as entry points for engagement. These inputs informed school-based sessions, family communication modules, and community performances that reframed sexual and reproductive health (SRH) as culturally acceptable. The program's outputs included increased SRH knowledge, positive attitudes, and protective behaviours. Short-term outcomes were the normalization of SRH dialogue and reduced cultural taboos, while long-term outcomes included delayed early marriage, improved adolescent wellbeing, and potential stunting prevention. The model demonstrates how cultural expression functions not merely as communication but as a transformative mechanism linking cognitive, emotional, and behavioural change across individual, family, and community levels.

Policy Relevance for Indonesia

For Indonesia, where adolescent pregnancy remains high and stunting persists despite national programmes, this study provides several policy implications:

1. Embedding SRH curricula within local cultural frameworks (e.g., syair-kompang) can increase acceptability and reach in rural settings.
2. Empowering school leadership (especially headmasters) as change agents may institutionalise interventions beyond project timelines.
3. Integrating SRH programmes with stunting prevention frameworks can provide synergistic impact across health sectors (Ministry of Health, Education, and Culture).
4. National guidelines such as the *Rencana Aksi Percepatan Penurunan Stunting* and *Kebijakan Penguatan Remaja* could adopt culturally grounded modules as part of school health collaborations.

LIMITATIONS AND FUTURE RESEARCH

Limitations include reliance on self-report data (which may be subject to social desirability bias), the short follow-up period (hindering assessment of long-term stunting impact), and the dependency on institutional leadership (which may limit scalability in less resourced schools). Future research should include longitudinal follow-up (≥12 months), objective anthropometric measures, cost-effectiveness analyses, and explore the role of additional community actors (religious leaders, grandparents) to deepen normative networks. Replication in other culturally distinct rural areas is recommended to assess the model's cross-cultural adaptability.

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CONCLUSION

The Kopenting Program successfully improved adolescent sexual and reproductive health knowledge, attitudes, and protective behaviors in rural Indonesia by integrating culturally meaningful media, strengthening school leadership, and enhancing family communication. These findings demonstrate that local cultural expressions can serve as powerful vehicles for shifting social norms and improving adolescent well-being, while potentially contributing to long-term stunting prevention efforts. By aligning individual, family, school, and community domains, this culturally grounded intervention also offers a scalable model for health promotion in rural, culturally diverse settings. Future longitudinal studies are recommended to assess sustainability and downstream nutritional impacts.

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Conflict of Interest

The authors have no conflicts of interest associated with the material presented in this paper.

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