

Skill Motivation Behavior Based Empowerment Education Model For Adolescent Reproductive Health

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ABSTRACT

Background

Adolescent reproductive health is a critical determinant of well-being, and building practical skill is central to comprehensive sex education and empowerment-based health promotion. However, structured models linking this skill to motivation and protective behavior remain scarce. This study aimed to develop a behavioral empowerment model, built on the constructs of skill, motivation, and behavior, for promoting positive adolescent reproductive health.

Method.

An analytical cross-sectional study was conducted among 385 female adolescents aged 12–15 years in public junior secondary schools in Semarang City, Indonesia. The variables studied were skill, motivation, and behavior related to reproductive health. Group differences were assessed with an independent-samples t-test, and associations among variables were assessed with Pearson correlation ($p < 0.05$).

Result.

Mean motivation scores were 34.08 ± 3.72 (low-skill) and 39.43 ± 3.52 (high-skill); mean behavior scores were 41.68 ± 4.65 (low-skill) and 47.45 ± 3.68 (high-skill) ($p < 0.001$). Skill correlated significantly with motivation ($r = 0.575$) and behavior ($r = 0.538$), and motivation correlated strongly with behavior ($r = 0.806$) (all $p < 0.001$), supporting a conceptual "Skill–Motivation–Behavior" empowerment model for adolescent reproductive health promotion.

Conclusion.

Adolescents with higher reproductive-health skill show higher motivation and healthier behavior. Strengthening skill may be a strategic entry point for empowerment-based reproductive health promotion programs, although the proposed model requires confirmatory testing.

Keywords: Adolescent; Health Behavior; Health Education; Health Promotion; Motivation; Reproductive Health.

INTRODUCTION

Adolescents make up more than 10% of the world's population. In 2021, an estimated 1.3 billion adolescents were living worldwide, equivalent to 16% of the global population of 7.94 billion people.¹

Reproductive health is among the most pressing concerns for this age group: early sexual activity places adolescents at risk of unintended pregnancy and sexually transmitted infection.² Access to effective, engaging reproductive-health education nonetheless remains limited for many students.³ Where school-based programs have been implemented, they have improved knowledge, attitudes, and skills related to sexual and reproductive health,⁴ strengthened gender norms and self-efficacy,⁵ and supported more positive sexual decision-making.⁶

Few studies, however, have examined how the skill adolescents gain through such programs translates into motivation and, ultimately, into protective behavior; structured models linking these three elements remain uncommon, particularly in school-based adolescent populations. This study therefore examined the relationships between skill, motivation, and behavior related to adolescent reproductive health, with the aim of deriving an empowerment-based promotion model that schools can use to guide their health programs.

METHODS

An analytical cross-sectional design was used. The source population comprised all students of public junior secondary schools (SMPN) in Semarang City, Central Java, Indonesia, during the 2024/2025 academic year (34,644 students across 46 schools in 16 districts). Data were collected from female adolescents aged 12–15 years over a three-month period, from January to March 2026.

The sample size was calculated a priori using G*Power ($f^2 = 0.15$, $\alpha = 0.05$, power = 0.80), an approach suited to a complex mediated model. After adjusting for anticipated non-response, this yielded a target of 385 respondents, which was fully met.

Participants were recruited using a stratified multistage random sampling technique. Schools were first stratified by district (kecamatan) so that all 16 districts were represented, and 22 of the 46 schools (47.8%) were then selected within each district by simple random sampling. Eligible students within each selected school were

randomly chosen with the assistance of the school's guidance and counseling (BK) teacher, with the number selected in each school proportional to its size. Students were eligible if they were enrolled in Grade VII–IX and had both parental/guardian consent and their own assent, and they were included as long as they participated actively until the study ended; students already taking part in another study, with a cognitive impairment, or who fell ill during data collection were excluded.

Skill, motivation, and behavior regarding reproductive health were measured using an 11-item structured questionnaire, with each item scored on a scale from 1 ("very poor") to 5 ("very good").

The instrument's validity and reliability were tested beforehand at a school not used as a study site. Item-level validity was confirmed by corrected item-total correlations (r) exceeding the r -table threshold across all domains: skill ($r = 0.512$ – 0.752), motivation ($r = 0.494$ – 0.823), and behavior ($r = 0.430$ – 0.723). Internal consistency (Cronbach's alpha) was 0.830 for the skill domain, 0.872 for the motivation domain, and 0.840 for the behavior domain, indicating good reliability throughout.

Skill scores were dichotomized into low (20–44) and high (45–55) categories using a median split.

Data were tested for normality and homogeneity of variance before parametric analysis. Differences in motivation and behavior scores between the low- and high-skill groups were assessed with an independent-samples t -test, and associations among skill, motivation, and behavior were assessed with Pearson's correlation coefficient. Statistical significance was set at $p < 0.05$, and all analyses were performed in IBM SPSS Statistics version 25.

Ethical considerations

This study was approved by the Research Ethics Commission for Medical/Health Research (Komisi Bioetika Penelitian Kedokteran/Kesehatan), Faculty of Medicine, Universitas Islam Sultan Agung (UNISSULA), Semarang, Indonesia (Approval No. 613/XI/2025/Komisi Bioetik). Written informed consent was obtained from each participant's parent or guardian, and informed assent was obtained from each adolescent before enrollment; participation was voluntary, and respondent confidentiality was protected by having participants record only their initials, rather than their full name, on the questionnaire.

RESULTS

A total of 385 female adolescents took part in the study: 249 (64.7%) were classified as having low skill and 136 (35.3%) as having high skill (Table 1, Figure 1).

Table 1. Descriptive statistics of motivation and behavior scores by skill group

Variable	Group	N	Mean	SD
Behavior	Low skill	249	41.68	4.65
	High skill	136	47.45	3.68
	Total	385	43.72	5.13
Motivation	Low skill	249	34.08	3.72
	High skill	136	39.43	3.52
	Total	385	35.97	4.46

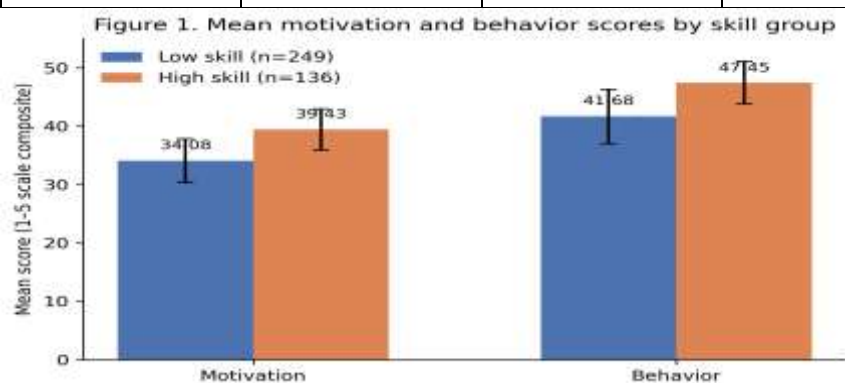


Figure 1. Mean motivation and behavior scores by skill group (error bars = SD).

Normality and homogeneity tests indicated that the data were normally distributed and that variances were homogeneous ($p > 0.05$), meeting the assumptions for parametric testing.

Table 2. Group comparison (independent-samples t-test)

Comparison	Mean difference	t	df	p
Skill – Motivation	-34.62	-161.65	384	<0.001
Skill – Behavior	-42.36	-169.91	384	<0.001
Motivation – Behavior	-7.75	-49.77	384	<0.001

Motivation and behavior scores were significantly higher in the high-skill group than in the low-skill group across all comparisons ($p < 0.001$) (Table 2).

Table 3. Correlation between skill, motivation, and behavior (Pearson's r)

Pair	Variables	r	p
1	Skill & Motivation	0.575	<0.001
2	Skill & Behavior	0.538	<0.001
3	Motivation & Behavior	0.806	<0.001

Skill correlated significantly and positively with both motivation ($r = 0.575$) and behavior ($r = 0.538$), and motivation correlated strongly with behavior ($r = 0.806$); all correlations were significant at $p < 0.001$ (Table 3). These bivariate associations formed the basis for a conceptual "Skill–Motivation–Behavior" empowerment model for adolescent reproductive health, shown in Figure 2.

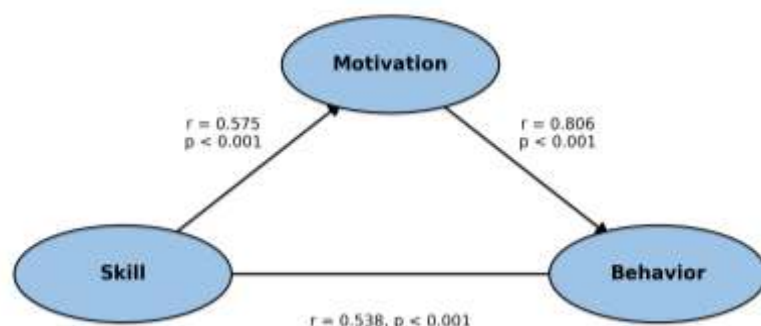


Figure 2. Conceptual structure of the empowerment education model for healthy behavior based on skills and motivation regarding adolescent reproductive health

DISCUSSION

Skill, Motivation, and Adolescent Reproductive Health Behavior

This study aimed to examine the relationships between skill, motivation, and behavior related to adolescent reproductive health, and the findings directly support this aim: skill was significantly associated with both motivation and behavior, motivation was strongly associated with behavior, and adolescents with higher skill consistently reported higher motivation and healthier behavior (Tables 2 and 3), forming the consistent gradient that underlies the conceptual model in Figure 2. This pattern mirrors earlier work. Among Filipino female adolescents, a structural equation model of reproductive-health-promoting behavior found that skill-related self-efficacy predicted motivation, which in turn predicted protective behavior.⁷ Comparable results have been reported in Indonesian school-based health promotion models, where structured skill-building was linked to improved reproductive-health behavior,⁸ and in senior-high-school programs that combined knowledge, life-skills training, and peer support.⁹

Health Empowerment as a Framework for Reproductive Health Promotion

These consistencies support the broader concept of health empowerment, whereby individuals are given the practical skills to control and improve their own health rather than remain passive recipients of information.¹⁰ Health education and promotion grounded in empowerment has been described as a process that increases people's control over the determinants of their own health,¹¹ WHO guidance on adolescent sexual and reproductive health and rights makes a similar case, calling for adolescents' skills and agency to be built rather than relying on information provision alone,¹² and this approach is consistent with national health-promotion regulations in Indonesia, which similarly emphasize individual and community capacity-building rather than information provision alone.¹³

Skill-Based Health Promotion in Schools

Elsewhere, skill-based health promotion, which teaches concrete and transferable skills rather than knowledge alone, has produced more sustained behavior change than purely informational approaches,¹⁴ and schools are well positioned to deliver this kind of skill-building at scale, offering repeated contact with students, a structured curriculum, and access to large adolescent populations.¹⁵ Role modeling and mentoring by teachers and peers have similarly been identified as effective strategies for building these skills within school settings.¹⁶ What distinguishes the present study from this literature is its explicit test of skill, motivation, and behavior together within a single city-wide population of junior secondary school adolescents in Indonesia, using a stratified multistage random sampling design that offers a replicable approach for future research in similar settings.

Motivation as a Pathway from Skill to Behavior

The strong correlation between motivation and behavior ($r=0.806$) points to motivation as a proximal driver of behavior and a possible pathway through which skill is translated into practice, while the more moderate skill–behavior correlation ($r=0.538$) suggests that skill's influence on behavior may be only partly direct, with motivation carrying part of that influence, consistent with frameworks in which self-efficacy and confidence mediate the link between competence and action.⁷ Because the sample size was calculated a priori for a complex mediated structural model, the corresponding path coefficients, explained variance, and bootstrapped indirect effect for this pathway would need to be reported alongside the bivariate correlations presented here before this mediating role can be considered established.

Contextual and Environmental Determinants

Beyond skill and motivation at the individual level, several contextual factors are also recognized as important determinants of adolescent reproductive health behavior: 1. Parental and stakeholder support, which strengthens communication and guidance around reproductive health;^{8,9} 2. Prevailing social norms and attitudes, which shape adolescents' confidence and behavior;⁷ 3. Access to and utilization of youth-friendly health services, supported by community-based interventions and policies that address stigma and confidentiality barriers;^{17,18,19} and 4. The role of social media and peer-based outreach in disseminating reproductive-health information.⁹

Contribution and Implications for School-Based Reproductive Health Programs

Together, these findings suggest that school-based adolescent reproductive health programs should prioritize structured, skill-based components rather than knowledge transmission alone, while also embedding them within supportive family, community, and service-access environments, and continuing efforts to identify which intervention frameworks should be prioritized across different settings.²⁰ Theoretically, the findings add empirical support, within a school-based Indonesian adolescent population, for a Skill–Motivation–Behavior pathway consistent with empowerment-based health promotion; practically, they point programs toward structured skill-building as a concrete entry point for empowerment; and more broadly, they support incorporating such components into school health curricula alongside policies that strengthen supportive social norms and expand access to youth-friendly services.

Limitations

Several limitations should be acknowledged honestly. In terms of design, the cross-sectional design does not allow definitive causal inference, even though the sample size was powered for a mediated structural model. In terms of sample, the study was restricted to female adolescents in junior secondary schools, limiting generalizability to male adolescents and to older or out-of-school youth. In terms of method, all measures were self-reported and may have been affected by social desirability bias given the sensitivity of the topic.

CONCLUSION

In this study of female adolescents aged 12-15 years, higher reproductive-health skill was associated with higher motivation and healthier reproductive-health behavior. The Skill Motivation Behavior framework proposed here offers a practical basis for empowerment-centered reproductive health promotion, particularly through school-based programs, though it will need confirmatory testing before it can be applied more broadly.

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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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