Int. J. School. Health. 2026; 13(3)

Published online 2026 July.

Original Article

Peer and Parental Influences on Knowledge, Attitudes, and Behaviors Related to Premarital Sex among Indonesian Adolescent Girls: Analysis of 2017 Indonesian Demographic and Health Survey (IDHS)

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Received: August 30, 2025; **Revised:** September 26, 2025; **Accepted:** October 11, 2025

Abstract

Background: Premarital sexual behavior among adolescents is a significant public health concern in Indonesia. Despite strong religious and cultural prohibitions, premarital sexual behavior continues to increase. Grounded in the Theory of Planned Behavior (TPB), this study aimed to investigate the relationship between peer and parental factors and knowledge, attitudes, and behaviors related to premarital sex among Indonesian adolescent girls.

Methods: This was a cross-sectional study using the data from the 2017 Indonesian Demographic and Health Survey (IDHS). The survey involved 10,691 unmarried adolescent girls aged 15–24, of whom 7,206 unmarried girls aged 15–19 were selected. Partial Least Square Structural Equation Modeling (PLS-SEM) was implemented using SMART PLS software to evaluate pathways linking adolescent characteristics, parental and peer factors, knowledge, attitudes, dating behavior, and intention to engage in sexual intercourse (IC).

Results: Only 1.3% of respondents reported engagement in sexual intercourse (mean±SD=0.013±0.113), with first intercourse experienced most common at ages of 15–17. Mean±SD for key variables included: knowledge (0.33±0.21), attitude (0.71±0.26), and dating behavior (0.23±0.21). Parental (β=0.011, P=0.016) and peer (β=0.012, P<0.001) factors were significantly associated with dating behavior and knowledge. Knowledge had a significant relationship with attitudes (β=0.012, P<0.001) and dating behavior (β=0.014, P<0.001). In turn, dating behavior was significantly associated with the intention to engage in IC (β=0.014, P<0.001).

Conclusions: Both parental and peer factors were significantly associated with adolescents' knowledge, attitudes, and behaviors related to premarital sex. Comprehensive interventions involving family-based communication, school education, and peer-led programs are needed to improve reproductive health outcomes.

Keywords: Adolescent Behavior; Parent-Child Relations; Peer Group; Sexual Behavior; PLS-SEM

How to Cite: Hidayah FN, Aliah N, Triwahyuningsih RY, Dartiwen D, Musfiroh S, Irianti B, Ashari A. Peer and Parental Influences on Knowledge, Attitudes, and Behaviors Related to Premarital Sex among Indonesian Adolescent Girls: Analysis of 2017 Indonesian Demographic and Health Survey (IDHS). Int. J. School. Health. 2026;13(3):226-237. doi: 10.30476/intjsh.2026.108516.1563.

1. Introduction

Premarital sexual behavior of adolescents has a significant impact on public health issues, which is related to physical, psychological, and social well-being. Globally, the prevalence of premarital sex among adolescents is rising, particularly in developing countries where such behavior is often prohibited by social, cultural, and religious norms. While these norms remain influential, contemporary societal shifts present challenges that may lead adolescents toward sexual activity (1-3).

In the Association of Southeast Asian Nations (ASEAN) region, including Indonesia, more and more teenagers are engaging in sexual activity at a younger age. Teenagers do this without being supported by sufficient knowledge and lack of access to sexual and reproductive health services (4). This trend contributes to a rising global prevalence rate. Factors such as globalization, technological advancements, increased social media use with exposure to diverse information, and evolving cultural values among the younger generation contribute to this increase in adolescent sexual behavior (5, 6).

As Indonesia is one of the countries with the highest Muslim population in the world, conservative values are still deeply rooted and consider sexuality a sensitive issue. Apart from religious factors, social norms and cultural values in Indonesia still strongly disapprove of premarital sexual relations among adolescents, viewing such behaviors as violations of societal moral standards (7). However, research showed that the prevalence of sexual activity and premarital sex among Indonesian adolescents is increasing from 5.3% to 16.6% (8, 9). This is a very significant challenge for the society to be able to improve the health of adolescents because premarital sex is often associated with an increased risk of unwanted pregnancy, sexually transmitted infections (STIs), and other adverse effects (10, 11).

Peers and parents are considered as the most important contributors associated with the formation of adolescent sexual behavior. Peers play a major role in the process of social life during adolescence which, of course, is associated with adolescent attitudes and behavior including sexual behavior. Being socially accepted as well as the pressure to conform to peer group norms can be linked to adolescents' engagement in risky behavior, including premarital sex (12, 13). In addition, the role of social media, which is very broad and exposes sexual content carried out by adolescents, is associated with changes in the mindset and perception of adolescents who normalize premarital sexual activity.

Parental factors also play an important role in being associated with adolescent sexual behavior. The quality of parent-child relationships, level of parental supervision, and nature of communication about sexuality are key aspects in shaping adolescent attitudes towards sex. Adolescents who have a close relationship with their parents will have open communication and talk honestly about their feelings and problems; this has been proven to be effective in making adolescents delay sexual activity and prevent risky sexual behavior (14, 15). Conversely, a lack of communication or negative parental attitudes towards discussing sexual health is associated with a lack of information and support which is linked to increased risky behaviors for adolescents (14-16).

Although previous studies examined peer and parental influences on adolescent sexual behavior separately, few have investigated their simultaneous effects on knowledge, attitudes, and behaviors within a single model, particularly among adolescent girls in Indonesia (5, 12-17). Therefore, this study aimed to address these gaps by examining the relationships between peer and parental factors on knowledge, attitudes, and behaviors related to premarital sex among Indonesian adolescent girls using PLS-SEM analysis of the 2017 Indonesia Demographic and Health Survey (IDHS).

2. Method

2.1. Design

This was a cross-sectional study using the data from the 2017 Indonesian Demographic and Health Survey (IDHS) (18). IDHS is a nationally representative survey designed to provide information on the demographic and health status of populations, especially in low- and middle-income countries. It is part of the worldwide DHS Program and also is a collaboration between the ministries of health and national research and development agencies funded by the U.S. Agency for International Development (USAID).

2.2. Selection and Description of Participants

IDHS uses a rigorous and systematic sampling procedure to collect representative data on various health indicators in the country. The survey adopts a two-stage stratified cluster sampling technique, which provides a comprehensive picture of health outcomes among different segments of the population. In the first stage, census blocks were selected systematically with probability proportional to size. In the second stage, 25 ordinary households were randomly selected from the updated household listing in each selected census block (18).

2.3. Sample Size Determination

The study population consisted of 11,032 unmarried women, aged 15 to 24 years, who were considered eligible to participate in the interview. Officers conducted effective interviews with a total of 10,691 unmarried women, covering 97% of the target population. The study sample included all women aged 15 to 19 years who took the survey and answered all questions. A total of 7,206 female adolescents were selected to participate in this study.

2.4. Data Collection and Measurements

The Household Questionnaire was used to collect information on all residents of the selected households and guests who stayed overnight to document the condition of the selected household dwelling unit. Ownership of household assets as well as drinking water sources, toilet types, flooring materials, roof types, and exterior walls were factors that determined the condition of the house occupied. Data regarding individual information on adolescents was obtained from the adolescent questionnaire, which is part of the women's questionnaire. The data included information about the adolescents' backgrounds, knowledge and experiences regarding the reproductive system, marriage and children, the roles of family, school, community, and media, smoking, alcohol, drugs, HIV/AIDS, and dating and sexual behavior. Consent forms for unmarried adolescent girls were given to parents or guardians who were present at the time of the survey (18).

The questionnaire was organized into multiple sections to capture adolescent sexual and reproductive health dynamics. The first section gathered respondent characteristics, encompassing age (classified as late teens, early/late adulthood, early/late elderly, manula, or no parent for parental age), education (ranging from no schooling to university completion), residence (urban or rural), wealth index (poor to top), employment status (working or not working), daily activities (school only, work only, school and work, or neither), family composition (complete, mother-only, father-only, or no parents), parental marital status (married, cohabiting, divorced/deceased, or divorced/living), and reported effect of friends' sexual history (none, no effect, or influential). The second section assessed knowledge of sexually transmitted infections (STI), HIV, contraception, fertility, and physical changes. The third section explored attitudes toward HIV (positive, negative, and don't know HIV), free sex (positive or negative), virginity (positive or negative), and gender (positive or negative). A positive attitude toward HIV reflects non-stigmatizing views, such as empathy or acceptance of individuals with HIV. Negative attitudes towards HIV indicated discrimination and stigma towards people with HIV/AIDS. For free sex, a positive attitude denotes disapproval of premarital sexual intercourse, aligning with cultural norms valuing abstinence, while a negative attitude reflects approval of premarital sex. Regarding virginity, a positive attitude supports maintaining virginity until marriage, whereas a negative attitude opposes this view.

The fourth section evaluated intentions regarding sexual intercourse (IC), based on reported sexual intercourse (yes or no) and age at first intercourse (never, 12-14, 15-17, or 18-19). The fifth section examined dating behaviors, such as holding hands, hugging, kissing lips, and groping (options: no partner, no, or yes), categorized as low or high engagement. The sixth section captured parental factors through indicators like parents as information sources (yes or no), parental age, education, and family status, categorized by influence strength. The seventh section addressed peer factors, focusing on friends as information sources and the impact of friends' sexual history, classified as low or high.

2.5. Procedure

The data for this study were sourced from a household and adolescents questionnaire within the 2017 Indonesian Demographic and Health Survey (IDHS) (18). All data were recorded, double-checked, and any errors found by the computer were corrected. Data entry and analysis were performed using the Census and Survey Processing System (CSPro), a computer program designed to process IDHS survey data. We obtained our adolescent data set after we submitted a data request on the demographic health survey website, a special adolescent data set is already available separately, namely the Young Adult Reproductive Health Survey (IYARHS) data set.

2.6. Data Analysis

2.6.1. Model Formulation

This study employed Partial Least Square Structural Equation Modeling (PLS-SEM). The conceptual framework of this study was developed based on the Theory of Planned Behavior (TPB) (19), as presented in Table 1 and Figure 1. According to the TPB, intentions to engage in premarital sexual intercourse are shaped by attitudes, subjective norms, and perceived behavioral control, along with broader individual, social, and cultural factors (19, 20). This framework further integrates the role of parental influence (21), educational interventions (22), and the prevention of risky sexual behaviors by incorporating individual, family, peer, and mediating factors (23).

Tabel 1: Conceptual frameworks for analyzing predictors of sexual intercourse behavior among adolescent girls

Name of Conceptual Model	Description of Conceptual Model and Factors
Theory of Planned Behavior (TPB) (Ajzen I; 1991)	This framework predicts adolescents' intentions to engage in risky sexual behaviors through their evaluations, social pressures, and perceived ability to control actions. It offers insights into motivations behind risky decisions and supports tailored intervention strategies. Key factors: attitude toward the behavior (positive/negative evaluation), social influences (norms from peers or family), perceived behavioral control (confidence in ability), and behavioral intention (motivation to act).
Parent-Based Expansion of the Theory of Planned Behavior (Hutchinson MK, et al; 2007)	This extension of TPB emphasizes parental roles in shaping adolescent sexual decisions through communication and oversight. It enriches the model by integrating family dynamics to prevent risky behaviors. Key factors: attitude, subjective norms, perceived behavioral control, intention, plus parental influences (parent-teen communication, monitoring, family values, and emotional closeness).
Extended Theory of Planned Behavior for Sub-Saharan African Youth (Protogerou C, et al; 2012)	This model adapts TPB for the cultural context of Sub-Saharan Africa, incorporating local factors like community norms and limited resource access. It provides a tailored framework for understanding risky sexual behaviors in unique, high-risk settings. Key factors: attitude, subjective norms, perceived behavioral control, intention, plus contextual elements (cultural norms, peer influence, STI knowledge, and environmental barriers).
TPB-Based Educational Model for Adolescent Girls (Darabi F, et al; 2017)	This approach extends TPB to design educational programs that reduce sexual risks among adolescent girls by enhancing knowledge and managing romantic relationships. It customizes interventions to cultural needs. Key factors: attitude, subjective norms, perceived behavioral control, intention, plus sexual health knowledge, dating dynamics, and socio-cultural pressures.
TPB for Preventing Risky Sexual Behavior in Adolescents (Putri YHS, et al; 2025)	This model adapts TPB to develop health education that alters adolescents' intentions and sexual behaviors through a focus on external and internal influences. It offers innovative strategies for community-based interventions. Key factors: attitude, subjective norms, perceived behavioral control, intention, plus exogenous variables (individual characteristics, family and peer influences), mediators (knowledge, dating behavior), and outcome (sexual behavior).

TPB: Theory of Planned Behavior

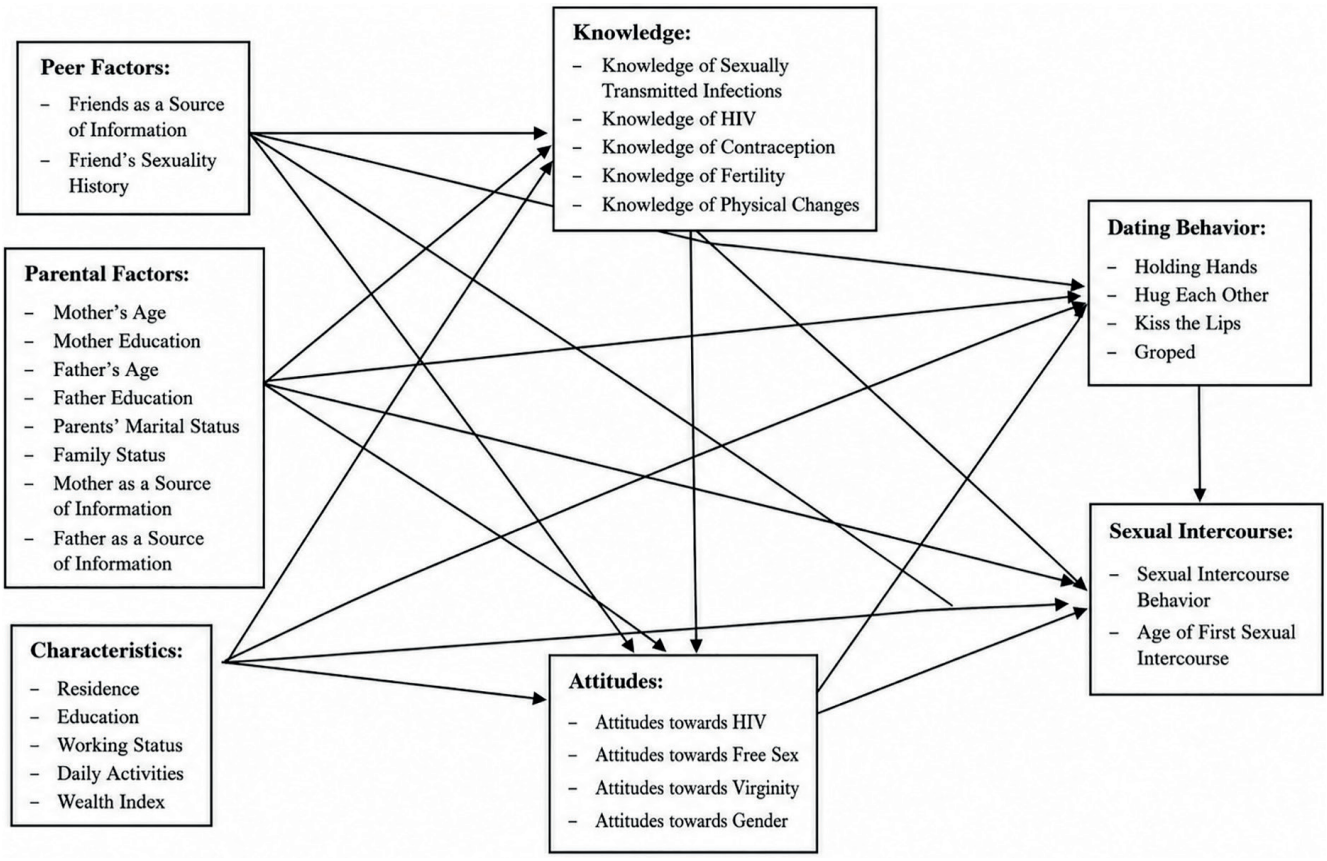

Figure 1: The figure shows the conceptual model of peer and parental factors.

In this research model, "characteristics," "parental factors," and "peer factors" were designated as exogenous variables (termed as such in PLS-SEM rather than independent variables). The first-level endogenous variables (mediators) included "attitude," "knowledge," and "dating behavior." The second-level endogenous variable (mediator) was "intention to engage in sexual intercourse (IC)," with "sexual intercourse behavior" as the primary outcome, though the focus remained on pathways to IC. The latent variable "characteristics" incorporated measurable variables such as age, education, residence, wealth index, and additional demographic factors. "Attitude" and "IC" was a single measured variable. "Parental factors" was a latent variable with measurable indicators including parental age, education, marital status, family composition, and role as information source. "Peer factors" was a latent variable with indicators such as friends as information sources and friends' sexual history impact. "Knowledge" was a latent variable that includes knowledge about sexually transmitted infections (STI), HIV, contraception, fertility, and physical changesd. "Dating behavior" was single measured variable.

2.6.2. Model Fitting Assessment

The model was assessed in two distinct phases: 1) Measurement model assessment to ensure the reliability and validity of constructs. Reliability was assessed using composite reliability, with a minimum threshold of 0.70. Indicators with the lowest values were removed one by one from the modeling until all indicators reached the minimum threshold. Convergent validity was established by confirming that each construct explained a significant portion of the variance in its indicators, as measured by the Average Variance Extracted (AVE), with a minimum value of 0.50 required; 2) Structural model evaluation to confirm the relationships and predictive performance of the model. The structural model tested the hypothesized relationships between latent variables, beginning with a preliminary check for collinearity using Variance Inflation Factors (VIF), with a maximum threshold of 5.0 considered as acceptable to ensure the independence of predictor variables. The fitness of the structural model was evaluated using R^2 to assess the proportion of variance explained in the endogenous constructs, with thresholds of 0.25, 0.50, and 0.75 indicating weak, moderate, and substantial explanatory power, respectively.

Bootstrapping (500 resamples, two-tailed, α=0.05) was applied for significance testing of path coefficients. The size and significance of the path coefficients were examined using the effect size (f^2), with minimum thresholds of 0.02, 0.15, and 0.35 representing small, medium, and large effects, respectively. Predictive relevance was assessed through a cross-validation procedure, with a positive Q^2 value indicating acceptable predictive power.

3. Results

3.1. Descriptive Statistics

The study included 7,206 adolescents, with the results of the frequency distribution of each variable being shown in Table 2. The majority of whom (98.7%, n=7,112) reported no history of sexual intercourse. Among those who had engaged in sexual intercourse (1.3%, n=94), the age of first intercourse was predominantly between 15-17 years (0.9%, n=63), followed by 18-19 years (0.2%, n=18) and 12-14 years (0.2%, n=13). Regarding sources of information on sexuality, friends were cited by 11.2% (n=810) as a primary source, while mothers and fathers were sources for 43.4% (n=3,127) and 0.1% (n=5) of respondents, respectively. A significant portion (53.9%, n=3,883) reported that none of their friends had a history of sexual activity, which may influence their own sexual behavior.

Parental demographics showed that mothers' ages were most commonly in late adulthood (43.2%, n=3,116) and had a high school education (24.0%, n=1,729). Similarly, fathers' ages were predominantly in early elderly (35.3%, n=2,543), and education levels were led by high school completion (20.5%, n=1,477). Parental marital status was intact marriage for 83.8% (n=6,036), with 11.7% (n=842) experiencing divorce while alive; family status was complete (having both parents) for 83.8% (n=6,041), with 9.4% (n=677) having no parents. Place of residence was urban for 72.4% (n=5,359) and rural for 25.6% (n=1,847). The majority of respondents had incomplete senior high school education (54.9%, n=3,955). Employment status indicated that 72.6% (n=5,230) were not working, with school attendance being the primary daily activity (55.3%, n=3,982). Regarding the wealth index, the majority of respondents were in the middle category (18.0%, n=1,296).

Tabel 2: Distribution of predictors of sexual intercourse behavior among adolescent girls

Variable	Category	n (%)
Sexual Intercourse Behavior	Yes	94 (1.3)
	No	7,112 (98.7)
Age of First Sexual Intercourse	12–14 years	13 (0.2)
	15–17 years	63 (0.9)
	18–19 years	18 (0.2)
Residence	Urban	5,359 (74.4)
	Rural	1,847 (25.6)
Education	Senior High School or Higher	4,127 (57.3)
	Junior High School	1,137 (15.8)
	Elementary School or Lower	1,942 (26.9)
Employment Status	Working	1,976 (27.4)
	Not working	5,230 (72.6)
Wealth Index	Poor	3,212 (44.6)
	Middle	1,296 (18.0)
	Rich	2,698 (37.4)
Family Status	Complete (both parents)	6,036 (83.8)
	Not Complete	1,170 (16.2)
Attitude Towards Free Sex	Positive	345 (4.8)
	Negative	6,861 (95.2)
Knowledge of HIV	Good	159 (2.2)
	Poor/ No Knowledge	7,047 (97.8)
Dating Behavior (Kiss on the lips)	Yes	257 (3.6)
	No	6,949 (96.4)

HIV: Human Immunodeficiency Viruses; percentages may not add up to 100% due to rounding; some categories were collapsed for presentation purposes; the original detailed categories were used in all statistical analyses.

Table 3: Validity and reliability metrics of the structural model

Variables	Composite Reliability	Average Variance Extracted (AVE)	R Square
Intercourse (IC)	0.990	0.979	0.040
Attitude	1.000	1.000	0.262
Characteristics	0.802	0.674	-
Dating Behavior	0.969	0.885	0.030
Knowledge	0.791	0.659	0.190
Parental Factors	0.758	0.511	-
Peer Factors	1.000	1.000	-

Attitudes toward key sexual and reproductive health topics were generally positive. The majority of respondents showed favorable attitudes toward HIV prevention (95.1%, n=6,854), maintaining virginity (96.4%, n=6,949), and gender equality (most respondents were positive or neutral, with only 0.01%, n=3, reporting negative attitudes). However, attitudes toward premarital sex were more varied, with 79.5% (n=5,732) expressing positive attitudes and 20.5% (n=1,474) reporting negative attitudes.

Knowledge levels regarding sexual and reproductive health were relatively low. Only 34.2% (n=2,468) of respondents had good knowledge of sexually transmitted infections, followed by 25.4% (n=1,832) for physical changes during puberty. Knowledge was particularly limited in other areas: HIV (4.8%, n=345), contraception (2.2%, n=159), and fertility (1.6%, n=113).

Regarding dating behaviors, 25.4% (n=1,832) of adolescent girls reported having no boyfriend. Among those who had a partner, the prevalence of intimate behaviors was as follows: holding hands (54.5%, n=3,927), hugging (21.2%, n=1,531), kissing on the lips (10.7%, n=768), and groping (3.6%, n=257).

3.2. Construct Validity and Reliability

The internal validity of the causal model was confirmed, as shown in Table 3. The composite reliability (CR) of the final model exceeded 0.7, indicating that the model's constructs are satisfactory.

The Average Variance Extracted (AVE) surpassed the 0.5 threshold, indicating satisfactory construct reliability and validity (24-26).

3.3. Structural Model and Hypothesis Testing

The PLS-SEM results are summarized in Table 4 and visualized in Figure 2, which illustrates the path coefficients and significance levels of the inner model. Table 2 shows the measurement model, illustrating the associations between indicators and their underlying latent constructs. It also highlights the coefficient of determination (R^2) and the path coefficients linking the latent variables. The coefficient of determination (R^2) reflects the ability of the structural model to explain variance and is used in this study to assess the model's fit quality. As indicated in Table 3, 19% of the variation in the model is explained by knowledge, 26.2% by attitude, 3% by dating behavior, and 4% by sexual intercourse. Peer influence, parental influence, and characteristics have weak power to explain variation in the knowledge variable. Peer influence, characteristics, and knowledge have moderate power to explain variation in the attitude variable. Peer and parental influence, characteristics, and

Table 4: Path coefficients and statistical significance of the structural model

Variables	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P values
Characteristics -> Intercourse (IC)	0.015	5.235	<0.001
Characteristics -> Attitude	0.011	12.898	<0.001
Characteristics -> Dating Behavior	0.014	3.009	0.003
Characteristics -> Knowledge	0.010	37.279	<0.001
Dating Behavior -> Intercourse (IC)	0.014	13.280	<0.001
Knowledge -> Attitude	0.012	37.190	<0.001
Knowledge -> Dating Behavior	0.014	8.344	<0.001
Parental Factors -> Intercourse (IC)	0.011	2.409	0.016
Parental Factors -> Dating Behavior	0.012	3.572	<0.001
Parental Factors -> Knowledge	0.011	10.701	<0.001
Peer Factors -> Attitude	0.010	2.720	0.007
Peer Factors -> Dating Behavior	0.012	8.039	<0.001
Peer Factors -> Knowledge	0.011	10.805	<0.001

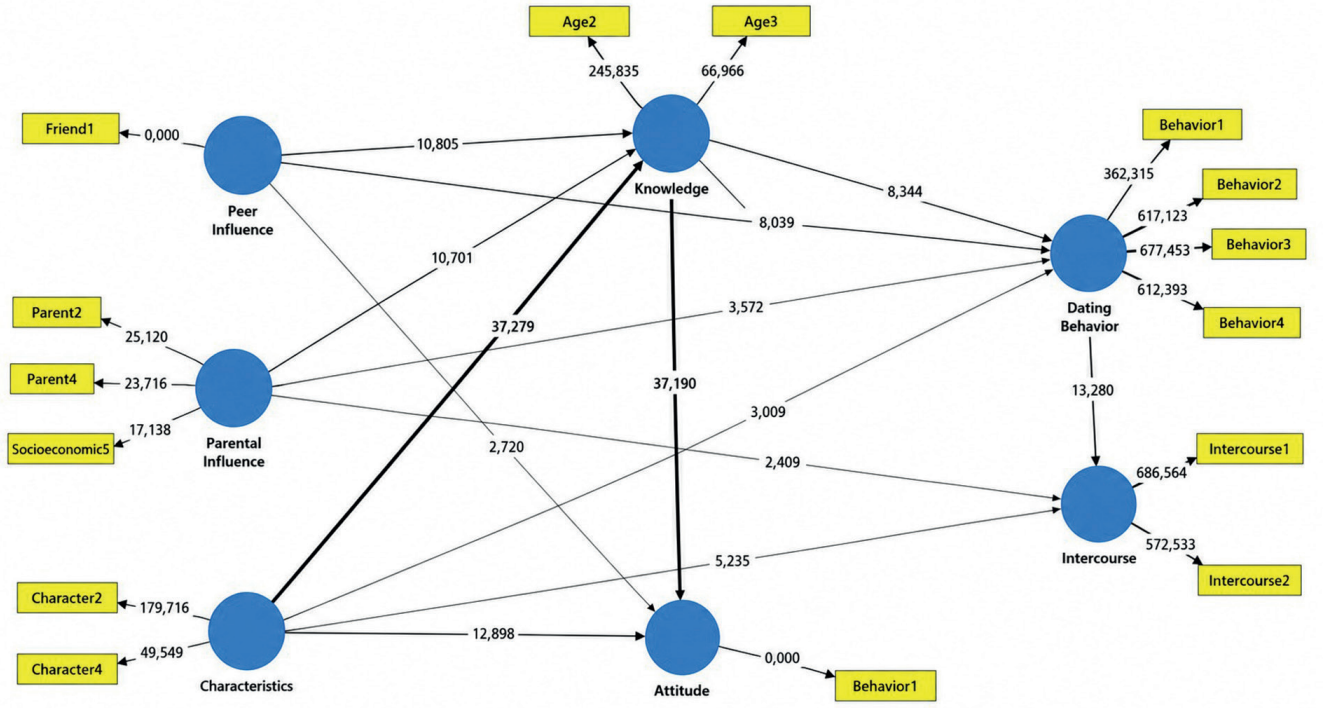

Figure 2: The figure shows the pathway model of peer and parental Factors; Teman 1: Friends as sources of information; Parent 2: Mother's education; Parent 4: Father's education; SI5: Parents as sources of information; Karakter 2: Education level; Karakter 4: Daily activities; Tahu 2: Knowledge for HIV; Tahu 3: Knowledge for contraception; SK1: Attitude toward HIV; PS1: Holding hands; PS2: Hugging; PS3: Kissing lips; PS4: Groping; IC1: Sexual intercourse; IC2: Age of first intercourse

knowledge have weak power to explain variation in the dating behavior variable. Overall, the model demonstrated weak explanatory power in explaining premarital sexual intercourse among Indonesian adolescent girls.

All hypothesized paths were statistically significant (P<0.05). Adolescent characteristics positively associated with intention to engage in sexual intercourse (IC) (β=0.015, t=5.235, P<0.001), attitude (β=0.011, t=12.898, P<0.001), dating behavior (β=0.014, t=3.009, P=0.003), and knowledge (β=0.010, t=37.279, P<0.001). Dating behavior positively associated with IC (β=0.014, t=13.280, P<0.001). Knowledge positively associated with attitude (β=0.012, t=37.190, P<0.001) and dating behavior (β=0.014, t=8.344, P<0.001). Parental factors were positively associated with IC (β=0.011, t=2.409, P=0.016), dating behavior (β=0.012, t=3.572, P<0.001), and knowledge (β=0.011, t=10.701, P<0.001). Peer factors were positively associated with attitude (β=0.010, t=2.720, P=0.007), dating behavior (β=0.012, t=8.039, P<0.001), and knowledge (β=0.011, t=10.805, P<0.001).

Figure 1 depicts the significant paths (solid lines) and their coefficients, confirming the model's robustness in explaining the relationships among characteristics, parental and peer factors, knowledge, attitude, dating behavior, and IC. The model demonstrated strong predictive relevance, with low standard deviations indicating precise estimates.

4. Discussion

Consistent with the Theory of Planned Behavior (TPB) framework (19), the present study found that adolescent characteristics, parental factors, and peer factors are significant exogenous variables positively associated with knowledge, attitude, dating behavior, and ultimately the intention to engage in sexual intercourse (IC). These findings underscored the complex determinants of adolescent reproductive health in Indonesia, where only 1.3% of respondents reported having engaged in sexual intercourse, primarily initiating between ages 15-17, while the majority exhibited positive attitudes toward virginity (96.4%) and HIV (95.1%), yet displayed varying levels of knowledge across reproductive health domains.

Adolescent characteristics, including age, education, residence, wealth index, and family structure, were significantly related to IC, dating behavior, and knowledge. Previous research in Indonesia indicated that lower education levels are positively correlated with premarital sexual behavior (27). These findings indicated that demographic and socioeconomic factors increase adolescents' vulnerability to risky sexual behaviors, with urban residence and incomplete senior high school education correlating with higher engagement in dating activities such as holding hands. Similar patterns have been observed in recent studies in Indonesia, where socioeconomic status and educational attainment modulate sexual intentions, often heightening risks during the transitional adolescent phase (27, 28). Knowledge acts as a mediator, where a better understanding of sexually transmitted infections (STIs), HIV, contraception, fertility, and physical changes can mitigate negative outcomes. However, significant knowledge gaps were evident, particularly regarding HIV (only 4.8% had good knowledge), which aligns with findings from other Indonesia regions (17, 29).

Parental factors were positively associated with IC intention, dating behavior, and knowledge, highlighting the protective role of family dynamics. Most respondents (83.8%) lived with both parents, with mothers being the primary source of information for 43.4% of participants. This highlights the important role of family structure and open parental communication in facilitating the transfer of knowledge on sexual and reproductive health to adolescent girls. This is consistent with evidence that supportive parental communication reduces premarital sexual risks (30, 31). Conversely, peer factors were significantly associated with attitude, dating behavior, and knowledge. Friends served as a source of information for 11.2% of respondents. Additionally, 1.8% of respondents reported being influenced by their friends' sexual history (32). The role of peers has both positive and negative impacts on adolescent behavior. It was shown that adolescents receive a significant amount of health information from peers, which can lead to positive behavioral changes (12). However, peer dating and risky behavior can also increase adolescents' desire and intention to engage in similar behavior, particularly in dormitory or urban environments.

Access to technology and social media, including pornography, may further be associated with these behaviors (33, 34).

Dating behavior was directly associated with the intention to engage in sexual intercourse (IC). Among the 74.6% of respondents who had a boyfriend, progressive levels of physical intimacy appeared to serve as a precursor to sexual intentions. These findings highlight the importance of implementing interventions at an earlier stage, before adolescents begin dating or engaging in physical intimacy (35). The perception among some adolescents that dating provides unrestricted freedom, coupled with inadequate reproductive health knowledge, makes female adolescents particularly vulnerable to persuasion. Social media may further normalize premarital sexual behavior and reducing associated stigma (36, 37).

Finally, these findings have significant implications for public health in Indonesia. Strengthening school-based reproductive health education, integrating peer-led programs, and promoting parental involvement can address knowledge deficits and reduce intentions toward risky behaviors (38). Policies should prioritize vulnerable groups, such as those in incomplete families (16.2%) or rural areas (25.6%), where access to accurate information is limited. Integrating digital media literacy is also crucial, given emerging evidence of the role of social media in shaping attitudes.

4.1. Limitations

This study had several limitations. First, it was based on 2017 secondary data, which may not reflect post-pandemic behavioral shifts. Second, its cross-sectional design precluded causal inferences. Third, self-reported measures may be subject to social desirability bias, especially in a conservative cultural context where premarital sex is stigmatized.

5. Conclusions

This study highlighted the critical role of both parents and peers in the adolescent girls' knowledge, attitudes, and intentions regarding premarital sex in Indonesia. The findings confirmed that adolescent characteristics, such as education and socioeconomic status, are significantly associated with reproductive health outcomes, with higher education levels linked to better knowledge and more cautious behaviors. Parental factors, particularly open communication within intact families, were linked to enhanced knowledge and reduced intentions to engage in premarital sex. Conversely, peer factors presented a dual role, shaping both positive attitudes through education and risky behaviors through exposure to sexual content or networks. Public health strategies should prioritize comprehensive school-based reproductive health education, promote parental engagement, and leverage peer-led programs to empower adolescents, especially those in rural and socioeconomically disadvantaged settings. Future research should adopt longitudinal designs to capture post-pandemic shifts and explore gender-specific effects to inform culturally sensitive interventions.

Acknowledgement

The author would like to thank the demographic health survey program for granting permission to use the 2017 Indonesian Demographic Health Survey data and Universitas of Muhammadiyah Ahmad Dahlan to support financial publication of this manuscript.

Authors' Contribution

Fika Nurul Hidayah: Contribution to the design of the work; drafting the work and reviewing the work critically for important intellectual content. Ayu Ashari: Contribution to the analysis and interpretation of data for the work; reviewing the work critically for important intellectual content. Ria Yulianti: Contribution to the design of the work; drafting the work and reviewing the work critically for important intellectual content. Sri Musfiroh: Contribution to the design of the work; interpretation of data for the work; drafting the work. Bayu Irianti: Contribution to the interpretation of data for the work; drafting the work. Dartiwen Dartiwen: Contribution to the analysis of the data for the work; drafting the work. Nur Aliah: Contribution to the interpretation of data for the work; drafting the work. All authors have read and approved the final manuscript and agree to be accountable for all aspects of the work, such as the questions related to the accuracy or integrity of any part of the work.

Declaration of AI

The authors acknowledge the use of AI-assisted tools (Perplexity and Elicit) for language translation. All content was manually reviewed and edited by the authors to ensure its accuracy and academic integrity; the authors take full responsibility for the final content of the manuscript.

Conflict of Interests: None declared.

Funding: None.

Ethical Approval

The 2017 IDHS was approved by the National Ethics Committee in Indonesia (The Ministry of Health of Republic Indonesia and Inner-City Fund (ICF) Macro Institutional Review Board (number 45 CFR 46). This study used secondary data sourced from the 2017 Indonesian Demographic Health Survey. Also, written informed consent was obtained from the participants.

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