



The Influence of Biological Literacy and Adolescents' Attitudes Regarding Reproductive Health on Healthy Reproductive Behavior in the 2024 PIK-KRR Program

Nur Sitiyaroh^{1*}, Iim Rohimah¹, Lia Lisaadah Hidayati¹, Siti Marwiyah¹, Sulistiyarini¹, Elis Mustika¹

¹Sekolah Tinggi Ilmu Kesehatan Abdi Nusantara, Jakarta, Indonesia.

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Corresponding Author:

Nur Sitiyaroh

nursy_01@yahoo.com

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Abstract: Adolescent reproductive health includes physical, mental and social aspects. Apart from being related to physical conditions such as diseases or disorders of the reproductive organs, reproductive health also involves psychological and social well-being which has an impact on the quality of life of teenagers. Factors that influence adolescent reproductive health include individual knowledge and attitudes as internal factors, as well as the family environment, the role of teachers, peers, and access to information as external factors. This research aims to analyze the influence of biological literacy and attitudes of adolescents regarding reproductive health in the PIK-KRR (Adolescent Reproductive Health Information and Counseling Center) program on healthy reproductive behavior in adolescents. This research uses an analytical observational design with a case-control method. The sample was taken proportionally with a 1:1 ratio, consisting of 250 teenagers with non-risky reproductive behavior and 250 teenagers with risky reproductive behavior. Data analysis was carried out using the Chi-square test. The results showed that biological literacy ($p=0.000$) and attitudes ($p=0.000$) had a significant effect on healthy reproductive behavior in adolescents. These findings emphasize the importance of knowledge and attitudes obtained from the PIK-KRR program in shaping healthy reproductive behavior.

Keywords: Adolescent attitudes; Adolescent reproductive health; Biological literacy; Healthy reproductive behavior; PIK-KRR program

Introduction

Adolescence is a transition period from childhood to adulthood that involves major changes in various aspects, such as physical, psychological and socio-cultural (Fatimah et al., 2021; Vongxay et al., 2020; Wilson et al., 2020). At this time, a person begins to show signs of secondary sexual development and reaches sexual and reproductive maturity. In addition, adolescence also includes the achievement of mental maturity and adult identity, as well as a transition from economic dependence to independence (World Health Organization, 2021). Teenagers are a very large age

group, with about a third of the world's population aged 10 to 19 years. Today, more than one billion teenagers live worldwide, and about 70% of them live in developing countries. During adolescence, a person experiences many changes in physical, social, emotional and hormonal aspects (Fatimah et al., 2021).

Indonesia is one of the countries in the world that has experienced an increase in its teenage population in the last few decades. Based on the results of the 2020 population census, the population aged 10–19 years reached 44 million people ($\pm 18\%$), while in Banten Province the population aged 10–19 years was 2,011,699 people (BKKBN, 2013, 2019). The population of

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teenagers will influence development from social, economic and demographic aspects, both now and in the future. The youth population aged 10–24 years requires serious attention because they are in the school and working age range. This age group is very at risk of reproductive health problems, such as premarital sexual behavior, drug abuse and other addictive substances (NAPZA), as well as the risk of HIV/AIDS (Anjarwati et al., 2019; Ariska & Yuliana, 2021).

Based on the results of the 2021 Indonesian Demographic and Health Survey (SDKI), data shows that 41% of male adolescents and 1% of female adolescents smoke. In addition, around 12% of male adolescents and 1% of female adolescents use illegal drugs, while 7% of male adolescents consume alcoholic beverages. For sexual activity, around 10% of male adolescents and 3% of female adolescents reported having had sexual relations while dating. The main reasons why teenagers had sexual intercourse for the first time included curiosity (10.2%), being forced by their partner (10.8%), it just happened (35.0%), wanting to get married (2.1%), the influence of friends (2.0%), and other factors (29.9%) (Aryani et al., 2022). Cases of sexually transmitted diseases, especially HIV/AIDS, are also a serious problem among teenagers. The two main factors that contribute to the spread of HIV/AIDS among adolescents are risky sexual behavior and the use of illegal drugs, especially injectable ones. Data regarding the development of HIV/AIDS cases in Indonesia until March 2016 shows that almost 3% of teenagers aged 15–18 years are infected with HIV/AIDS. Data from 2018 recorded that the number of HIV/AIDS sufferers among those aged under 19 years reached 2,881 cases. It is estimated that the number of people living with HIV/AIDS (PLWHA) in the adolescent age group will experience a significant increase in the future, indicating an increasingly worrying situation (Fathona, 2021; Iskandar et al., 2022).

Reproductive health in adolescents includes more than just physical conditions such as diseases or abnormalities in the system and function of the reproductive organs. This aspect also involves mental and social health related to reproductive organs. Various factors influence adolescent reproductive health, both internal and external factors. Internal factors include individual knowledge and attitudes, while external factors include the family environment, the role of teachers, peers, and access to information about reproductive health (Aji, 2013). The government, through the National Population and Family Planning Agency (BKKBN), is trying to overcome various problems faced by teenagers by providing information and counseling and increasing awareness in all regions, both for teenage girls and boys. One important initiative

is the Adolescent Health Information Center (PIK-R), which was established in 2019. PIK-R aims to address the lack of access for adolescents to the information and support they need (Khotimah et al., 2017). This organization provides technology-based educational services that can be accessed by all young people, with the aim of improving the quality of life for teenagers throughout Indonesia, providing the necessary information and support, as well as building a more civilized society and enabling teenagers to reach their full potential (BKKBN, 2019).

Based on the latest data from the National Population and Family Planning Agency (BKKBN), there are around 10,892 Adolescent Health Information Centers (PIK-R) in all provinces in Indonesia. However, only around 331 PIK-R (around 3%) regularly update their data to BKKBN. In Banten Province, in 2023, there will be 566 PIK-R serving educational and community channels. PIK-R was formed to provide a forum for teenagers to obtain accurate information and services regarding reproductive health. Wulandari (2015) research regarding the relationship between knowledge, attitudes and behavior in preventing sexually transmitted diseases (STDs) and HIV/AIDS with the use of youth information and counseling centers (PIK-R) shows that respondents with high knowledge and positive attitudes tend to use more PIK-R. In addition, research by Kumalasari et al. (2020) at the Banda Aceh City State High School showed that analysis of sexual behavior variables revealed that students who were not members of PIK-Remaja had a higher proportion of sexual behavior in the severe category compared to students who were members of PIK-Remaja (17.91% compared to 8.21%). The same thing was also seen in light sexual behavior, where 45.52% of students who were not members of PIK-Remaja reported having committed light sexual behavior, while 44.78% of students who were members of PIK-Remaja reported the same thing.

This study aims to determine the influence of adolescent knowledge and attitudes about reproductive health in the Pik-KRR (Adolescent Reproductive Health Information and Counseling Center) program on adolescent reproductive health behavior in the Serang Regency State Middle School Area, by reviewing biological literacy as an aspect that influences understanding and behavior reproductive health among adolescents. Biological literacy in adolescents is an important aspect in increasing their understanding of reproductive health (Koenig et al., 2020; Liu et al., 2020; Mwaisaka et al., 2020; Pinchoff et al., 2016). This literacy includes the ability to understand biological concepts and information related to the human body, the reproductive process, and its impact on health. Through

biological literacy, teenagers can develop deeper knowledge about the function of reproductive organs, hormones and life cycles, which can ultimately influence their attitudes and behavior towards reproductive health. In addition, biological literacy helps teenagers make wise decisions regarding sexual behavior and health, and encourages them to seek valid and reliable information. With good biological literacy, teenagers are also better able to identify health risks that can arise due to risky behavior, so that they can take appropriate preventive measures (Bolarinwa et al., 2021; Fowler et al., 2023; Shinde et al., 2017).

Method

This research is an analytical observational study with a case control research design which aims to analyze the relationship between knowledge and attitudes of adolescents towards reproductive health behavior (Kusmiran, 2016). The case control design was chosen because it allows researchers to compare two different groups of teenagers, namely teenagers with risky behavior and teenagers with non-risky behavior, in order to find out the factors that contribute to differences in behavior. Sampling was carried out purposively with a ratio of 1:1, where each group consisted of 250 teenagers, so the total sample in this study was 500 respondents. The group of teenagers with risky behavior includes those involved in activities such as smoking, alcohol consumption, drug use, and unsafe sexual behavior. Meanwhile, the group of teenagers with non-risky behavior includes those who are not involved in these activities. Data regarding adolescent knowledge, attitudes and behavior were collected through previously validated questionnaires. To analyze the data, this study used the Chi-square statistical test (Arikunto, 2017). This test is used to determine whether there is a significant relationship between knowledge and attitudes towards adolescent reproductive health behavior. The results of the analysis will provide an idea of the extent.

Result and Discussion

Results

Table 1. Frequency distribution of knowledge about biological literacy and reproductive health in Serang Regency Public Middle Schools in 2024

Knowledge	F	%
Good	303	60.60
Not enough	197	39.40
Total	500	100

Based on the data in Table 1, looking at the frequency distribution, it is clear that the majority of respondents have good knowledge, 303 people (53.30%). Based on the data in Table 2, looking at the frequency distribution, it is clear that the majority of respondents have a positive attitude, 308 people (61.60%).

Table 2. Frequency distribution of attitudes regarding biological literacy and reproductive health in the State Middle School Area of Serang Regency in 2024

Attitude	F	%
Positive	308	61.60
Negative	192	38.40
Total	500	100

Table 3. Frequency distribution of biological literacy and reproductive health behavior in the State Middle School Area of Serang Regency in 2024

Behavior	F	%
No risk	250	50
Risky	250	50
Total	500	100

Based on the data in Table 3, looking at the frequency distribution, we get a picture of 250 respondents with non-risky behavior (50%) and 250 people with risky behavior (50%).

Table 4. The influence of knowledge on biological literacy and reproductive health behavior in the State Middle School Area of Serang Regency in 2024

Reproductive Health Behavior								
Knowledge	No Risk		Risky		Total		P Value	OR
	f	%	f	%	f	%		
Good	220	88	83	33.20	303	60.60	0.000	14.75
Not enough	30	12	167	66.80	197	39.40		
Total	250	100	250	100	500	100		

Based on Table 4, it shows that there were more respondents who had good knowledge in the non-risk behavior group, namely 220 people (88%) than those who were at risk, namely 83 people (33.2%). Meanwhile, there were more respondents who had more or less knowledge in the risk behavior group, namely 167 people (66.8%) than those who were not at risk, namely 30 people (12%). Test results chi square shows that there is an influence of knowledge on reproductive health behavior (p-value 0.000), the OR calculation results show that respondents who have good knowledge are 14.755 times more likely to carry out risk-free reproductive health behavior than those who have less knowledge.

Based on Table 5, it shows that there were more respondents who had a positive attitude in the non-risk behavior group, namely 242 people (96.8%) than those who had a positive attitude, namely 66 people (26.4%). Meanwhile, there were more respondents who had negative attitudes in the risk behavior group, namely 184 people (73.6%) than those who were not at risk, namely 8 people (12%). Test results chi square shows that there is an influence of attitudes on reproductive health behavior (p -value 0.000), the OR calculation results show that respondents who have a positive attitude are 84.333 times more likely to carry out risk-free reproductive health behavior than those who have a negative attitude (Soetjiningsih & Ranuh, 2017; Usnal, 2019, Wahyuni et al., 2018).

Table 5. The influence of attitudes on reproductive health behavior in the State Middle School Area of Serang Regency in 2024

Attitude	Reproductive Health Behavior						P Value	OR
	No Risk		Risky		Total			
	f	%	f	%	f	%		
Positive	242	96.8	66	26.4	308	61.6	0.000	84.33
Negative	8	12	184	73.6	192	38.4		
Total	250	100	250	100	500	100		

Discussion

This research looks at the relationship between knowledge of biological literacy and attitudes of adolescents in the PIK-KRR (Adolescent Reproductive Health Information and Counseling Center) Program towards adolescent reproductive health behavior. Biological literacy, which includes an understanding of the anatomy and physiology of the human body, including the reproductive system, is key in increasing awareness about reproductive health. This knowledge helps teens understand how their bodies function and the impact of various actions on their health. Knowledge about reproductive health is an important factor that can prevent teenagers from engaging in risky actions and behaviors that are detrimental to themselves, their families and society, such as irresponsible sexual behavior (Najallaili, 2018; Kusumastuti & Lismidiati, 2018). Research in Sambas Regency shows that teenagers with poor reproductive health knowledge have a risk of engaging in pre-marital sexual behavior 2.8 times greater than teenagers who have adequate knowledge. This shows the importance of providing sufficient information about reproductive health to prevent pre-marital sexual behavior in adolescents.

PIK-KRR aims to provide information and education to teenagers about reproductive health, preparation for the next phase of life, as well as other

aspects that support adolescent growth and development. Research shows that students who take this program have better knowledge by 53.3%. The results of statistical tests show that there is a significant influence of knowledge on adolescent reproductive health behavior ($p = 0.000$). High knowledge about reproductive health, which includes biological literacy, is in line with the general goal of PIK-KRR to increase teenagers' understanding of reproductive health. This shows that the program has succeeded in achieving one of its goals. WHO recommends school-based reproductive health to increase adolescent knowledge, and this finding is consistent with previous research showing that reproductive health services are more effective if they involve schools. In addition, the results of this study support other findings which show that the majority of teenagers have a high level of knowledge about reproductive health (Lawrence, 1980; Liana, 2018; Marmi, 2014).

Attitudes, which are reactions to stimuli, are influenced by various factors, including knowledge and access to information (Sutarno, 2022; Muflih, 2018). The results of this study show that there is a significant influence of attitude on reproductive health behavior (p -value 0.000). The high level of positive attitudes about reproductive health is in line with PIK-KRR's aim to improve adolescent attitudes. This shows that State Middle Schools in Serang Regency have succeeded in achieving one of the PIK-KRR goals. Schools play an important role in forming attitudes by providing a basis for understanding and moral concepts and supporting the formation of attitudes and practices of reproductive health behavior. The more negative adolescents' attitudes toward premarital sexual behavior, the greater their efforts to avoid such activities. Adolescents with positive attitudes towards pre-marital sexual behavior tend to avoid risky actions because they consider this behavior unacceptable (Notoatmodjo., 2018; Bawental et al., 2019; Emilia et al., 2018). The attitude of rejecting pre-marital sexual behavior was formed because PIK-KRR members had access to adequate and accurate reproductive health information through various programs, as well as better knowledge about reproductive health. These two factors drive teenagers' attitudes towards pre-marital sexual behavior.

Overall, this research is consistent with theory and previous research which shows that good knowledge and attitudes regarding reproductive health are very important in avoiding risky behavior. Risky behavior related to reproductive health is considered taboo in Indonesian culture and is viewed negatively because it can have negative impacts on teenagers, families and society. Research by Purwoastuti & Walyani (2015) shows that a lack of knowledge and adequate access to

information can increase the risk of risky sexual behavior among adolescents. The results of this study also revealed that teenagers tend to engage in light sexual behavior such as kissing, hugging and holding hands. Good counseling can increase teenagers' knowledge and attitudes about risky sexual behavior, as proven by research by Gustiawan et al. (2021) which shows an average increase in knowledge of 5.94 and an attitude change of 8.22 before and after counseling. Kumalasari et al. (2020) research also shows that teenagers with good knowledge and attitudes regarding premarital sexual behavior are less likely to engage in sexual behavior than those with less good knowledge and attitudes. Therefore, counseling by PIK-KRR to students who have not participated in this program can influence these students' sexual behavior (Romulo et al., 2014; Sapitri et al., 2019). Sexuality education is very necessary for teenagers since puberty, both for girls and boys, including learning about reproductive organs, preventing sexual violence, preventing young marriages, preventing unsafe sexual behavior, understanding gender, and developing respect for women, yourself and others. This research has limitations, including that it was only conducted in public junior high schools in Serang Regency, so it did not reach private junior high school students and state secondary schools and private secondary schools in Serang Regency (Sarwono, 2016; Setiawan & Hafil, 2019). In addition, this research only took a sample of class VIII students, so the representativeness of the sample from all classes was not fulfilled.

Conclusion

This research shows that the majority of State Middle School teenagers in Serang Regency have a good level of knowledge and positive attitudes towards reproductive health, with behavior that is classified as not risky. Through analysis of the PIK-KRR (Adolescent Reproductive Health Information and Counseling Center) Program, a significant relationship was found between knowledge and attitudes about reproductive health and adolescent reproductive health behavior. Adolescent reproductive health includes physical, mental and social aspects, which include not only physical conditions such as diseases or disorders of the reproductive organs but also psychological and social well-being that affect the quality of life. Internal factors such as individual knowledge and attitudes, as well as external factors such as family environment, the role of teachers, peers, and access to information, play an important role in adolescent reproductive health. This research uses an analytical observational design with a case-control method to analyze the influence of

biological literacy and teenagers' attitudes about reproductive health on healthy reproductive behavior. The sample was taken proportionally with a 1:1 ratio, consisting of 250 teenagers with non-risky reproductive behavior and 250 teenagers with risky reproductive behavior. Data were analyzed using the Chi-square test. The results showed that biological literacy ($p = 0.000$) and attitudes ($p = 0.000$) had a significant influence on healthy reproductive behavior in adolescents. These findings underscore the importance of knowledge and attitudes gained from the PIK-KRR program in shaping healthy reproductive behavior. Adequate knowledge about reproductive health helps adolescents understand the risks and impacts of certain behaviors, while a positive attitude tends to motivate adolescents to avoid risky actions. The PIK-KRR program, by providing relevant information and education, plays an important role in shaping teenagers' attitudes and knowledge, which ultimately influences their reproductive behavior. It is hoped that the results of this research can become a reference for increasing the effectiveness of reproductive health education programs in schools, by strengthening the components of biological literacy and positive attitudes as part of the curriculum. Thus, this program can better prepare adolescents to maintain their reproductive health holistically, taking into account the physical, mental and social aspects of their well-being. Continuous evaluation and development of the PIK-KRR program can help ensure that adolescents receive the appropriate information and support needed to avoid risky behaviors and better maintain their reproductive health.

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Author Contributions

N.S., I.R., L.L.H., S.M., S., and E.M. contributed to the conceptualization, data collection process, data processing, and article writing.

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Conflicts of Interest

The authors declare no conflict of interest.

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