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Critical thinking and decision-making skills regarding reproductive health among pupils in Central Java

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ABSTRACT

Many teenagers are entangled in promiscuity which results in unwanted pregnancies, early marriages, or abortions. How a teenager decides something in their life is influenced by their previous experience and environment. This study aims to determine the critical thinking and decision-making skills of pre-adolescence children in terms of reproductive health. This research is a cross-sectional study conducted on 12,689 pupils in Semarang, Central Java Province, Indonesia. The proportion of respondents based on sex and grade is quite balanced. As many as 49% of the pupils lack knowledge and a permissive attitude (52.5%) about reproductive health. Of 50% of pupils have low critical thinking skills and only 61.4% have good decision-making skills. Girls have better critical thinking skills than boys (p=0.004). Knowledge affects critical thinking and decision-making skills in pupils (OR=1.2). Pupils who can think critically tend to have good decision-making skills (p<0.001, OR=5.1). Decision-making skills in children are influenced by critical thinking skills. Both are influenced by knowledge. The health and education offices need to collaborate to increase pupils' health and reproductive knowledge.

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1. INTRODUCTION

Unwanted pregnancy becomes one of the health risks of sexual behavior. Sexual behavior in adolescents is often based on attraction to the opposite sex. As many as 54% of teenage girls and 46% of teenage boys in Indonesia admit to doing it with their boyfriends because they love each other [1].

The practice of sexual intercourse should not be carried out, although attraction to the opposite sex is a normal thing experienced by teenagers after entering puberty. The Centers for Disease Control and Prevention (CDC) states that 5.3% of Indonesian high school children have actively engaged in sexual intercourse before they turn 14 years old [2]. This is in accordance with data from the National Family Planning Coordinating Board which reported that 6% of adolescents start their sexual debut at the age of 11-14 years, where this age is the average age of early puberty which is the transition from childhood to adolescence [1].

Adolescents with sexual behavior at risk of unwanted pregnancy have less knowledge about reproductive health and a more permissive attitude [3]. Elementary school graduates are said to be 2 times more permissive than junior high school graduates regarding attitudes toward premarital sex [4]. Low self-concept is also able to influence adolescents' decisions to have sexual intercourse [3]. Adolescents with low self-esteem is likely to engage in premarital sexual behavior [5]. Premarital sex behavior in adolescents is also influenced by self-efficacy [6] and locus of control [7]. Adolescents' access to magazines, books, pornographic films, and pornographic films that describe the pleasures of sex causes adolescents to be able to have sex at an early age (13-15 years) [8]. Unfortunately, as many as 60.6% of teenagers access pornography at least 1 time per day with the majority using personal cellphone media (59.2%) and accessing it at home. In fact, 1.2% of teens began to be exposed to pornography at the age of 5-8 years [9]. Previous research found that parents have poor communication with their children, especially in discussing sexual health matters [10].

Unwanted pregnancy cases in children aged 10-14 years often become a talking point and news at the regional level even though they are not reported. In Semarang, in 2022, there were 13 cases of unwanted pregnancy for adolescents aged <14 years out of a total of 246 cases of unwanted pregnancy for adolescents aged <19 years [11]. Unwanted pregnancy data is not one of the indicators in the Strategic Plan and Regional Medium-Term Development Plan so no more detailed data is found regarding the number of cases and the age of adolescents with unwanted pregnancies. Data from the Semarang City Health Office in 2022 reported that there were almost 250 cases of unwanted pregnancy among adolescents [11].

Teenagers who have risky sex with unwanted pregnancies have made unhealthy decisions for themselves. Teenagers have a high curiosity and tend to dare to try new things to know and feel something that has never been done. Often this is not accompanied by proper understanding, causing them to make careless decisions without considering the long-term consequences [12]. Every individual always goes through a decision-making process in their life, whether consciously or not. These cognitive life skills are processes that occur in every human brain and are influenced by the psychosocial competencies they already have, so they will help when a person has to think about deciding something in his/her life, including the decision to have sexual intercourse or remain abstinent. Adolescents with healthy cognitive skills will be able to think critically and make the right decisions regarding their health [13]–[16].

The ability to think critically and make decisions are cognitive life skills that are not spontaneously possessed by adolescents. Adolescence is one of the stages in the developmental cycle of human life. Much of the development of cognition and experience occurs before a person reaches adolescence. No boy or girl enters adolescence with only a genetic blueprint so that they are able to shape their thoughts, feelings, and behavior. It is precisely the combination of various experiences and knowledge gained in previous periods, namely middle and late childhood, which will then continuously determine the course of adolescent development [16], [17].

The reproductive health program organized by the government still makes youth a top priority and neglects prevention efforts during the preadolescence period. Likewise, research on critical thinking and decision-making skills related to reproductive health in preadolescence children has never really been found in Indonesia. Reproductive health education for pupils can be designed according to the needs of the children if the information on understanding children's knowledge of reproductive health, the attitudes, critical thinking, and decision-making skills in middle age children are known. Thus, educational content will be designed to be aimed not only to improve knowledge and attitudes but also at children's cognitive life skills, so children will have the ability to think critically and make healthy decisions later in life. Information about the relationship between these factors in terms of reproductive health has never been investigated before. This study aims to investigate the relationship between knowledge, attitudes, critical thinking skills, and decision-making skills regarding reproductive health in pupils in Central Java Province, Indonesia.

2. RESEARCH METHOD

This research is a cross-sectional study conducted on 12,689 grade 4-6 elementary school pupils in Semarang, the capital city of Central Java Province, Indonesia. The independent variables were the pupil's characteristics (sex and grade), knowledge, and attitudes about reproductive health. The dependent variable was the pupil's critical thinking skill and decision-making skills. The instrument for measuring the variables of critical thinking [18] and decision-making skills [19] uses a questionnaire from Perkins and Mincemoyer, each consisting of 20 questions on a Likert scale. The data were analyzed univariate to obtain a description of the pupil's knowledge and attitude, bivariate to analyze the relationship between independent and dependent variables, and multivariate to investigate the determinant of the pupil's critical thinking and decision-making skill. This research has received the approval of the ethics committee of the Faculty of Public Health–Universitas Diponegoro through letter no 158/EA/KEPK-FKM/2021.

3. RESULTS AND DISCUSSION

Respondents in this study were elementary school children in grades 4-6 between the ages of 9-11 years. Based on Table 1, the number of boys and girls is almost equal, namely 49.1% boys and 50.9% girls. The number of pupils from each class is also almost evenly distributed, namely grade 4th (31%), grade 5th (32.5%), and grade 6th (36.5%). Children in late childhood have entered the stage of concrete operational thinking and are able to do inductive reasoning. At this time, children have understood the rules and behavior that are socially acceptable to their environment, and are aware of the causal relationship and the impact of their behavior on others [20], [21]. Thus, life skills education such as critical thinking and decision-making skills is actually very appropriate to be given in late childhood. Healthy cognitive life skills will help children to be ready to face every challenge in adolescence, one of which is avoiding the risky sexual behavior of unwanted pregnancy.

Table 1. Respondent characteristic

Characteristic	n	%
Sex		
Male	6,228	49.1
Female	6,461	50.9
Grade		
4	3,937	31.0
5	4,125	32.5
6	4,627	36.5
Critical thinking skill		
Low	4,895	38.6
High	7,794	61.4
Decision making skill		
Low	6,343	50.0
High	6,346	50.0
Knowledge		
Low	6,221	49.0
High	6,468	51.0
Attitude		
Permissive	6,656	52.5
Not permissive	6,033	47.5
Total	12,689	100.0

Source: Primary data, 2021

Pupils' health and well-being required special considerations to understand what they need to encounter the puberty phase and enter adolescence. The major obstacles in designing age-appropriate intervention is an inadequate understanding of what pupils already know about reproductive health, their attitudes, and life skill to be able to withstand the storms of adolescence. This study found only 51% of pupils have good knowledge about reproductive health and 52.5% had a permissive attitude. This proportion is very large and able to have an impact on following reproductive health problems because knowledge is the basis of human behavior. This finding is similar to another study that found a very low level of knowledge related to reproductive physiology among students [22]. Previous research reported that 68.6% of female students did not have low knowledge of menarche and menstruation. For the majority of girls (65%), mothers are the main source of information about reproductive health [23]. However, Javanese mothers are hesitant in discussing reproductive health with their children and do not provide information honestly due to the feeling of an unnecessary, awkward, and taboo issue [24]. This shows the importance of providing reproductive health education to increase pupils' knowledge and attitudes regarding reproductive health so they are able to obtain adequate and valid information.

Table 2 showed sex, grade, and attitude of pupils have no significant relationship with skills, but sex is significantly related to critical thinking skills (p-value=0.004). Female pupils have slightly better skills than males. From all independent variables, only knowledge has a significant relationship with both critical thinking skills (p-value<0.001) and decision-making skills (p-value<0.001) among pupils. It means that pupils' knowledge should be increased at the first chance if we would like to improve their cognitive life skills.

Based on Table 3, knowledge is proven to affect critical thinking skills. Individuals with good knowledge tend to be 1,195 times more likely to have good critical thinking skills as well. Meanwhile, decision-making skills are influenced not only by knowledge but also by critical thinking skill variables. Individuals with good knowledge tend to be 1,182 times more likely to have good decision-making skills. Individuals who are able to think critically are also 5,144 times more likely to have good decision-making skills see Table 4.

Table 2. Crosstab between sex, grade, knowledge, and attitude toward critical thinking and decision-making skill

Variable	Critical thinking skill			Decision-making skill		
	Low	High	p-value	Low	High	p-value
Sex						
Male	2,482 (39.9)	3,746 (60.1)	0.004*	3,134 (50.3)	3,094 (49.7)	0.461
Female	2,413 (37.3)	4,048 (62.7)		3,209 (49.7)	3,252 (50.3)	
Grade						
4	1,518 (38.6)	2,419 (61.4)	0.292	1,941 (49.3)	1,996 (50.7)	0.158
5	1,556 (37.7)	2,569 (62.3)		2,037 (49.4)	2,088 (50.6)	
6	1,821 (39.4)	2,806 (60.6)		2,365 (51.1)	2,262 (48.9)	
Knowledge						
Low	2,505 (40.3)	3,716 (59.7)	<0.001*	3,225 (51.8)	2,996 (48.2)	<0.001*
High	2,390 (37.0)	4,078 (63.0)		3,118 (48.2)	3,350 (51.8)	
Attitude						
Permissive	2,574 (38.7)	4,082 (61.3)	0.817	3,283 (49.3)	3,373 (50.7)	0.116
Not Permissive	2,321 (38.5)	3,712 (61.5)		3,060 (50.7)	2,973 (49.3)	

Note: * Significant
Source: Primary data, 2021

Table 3. The result of multivariate analysis on the variable of critical thinking skill

Variable	B	SE	Wald	p-value	OR (95% CI)
Knowledge (high)*	0.178	0.041	19.032	<0.001	1.195 (1.103, 1.295)
Attitude (not permissive)	0.071	0.040	3.155	0.076	1.074 (0.993, 1.161)

Note: * Significant
Source: Primary data, 2021

Table 4. The result of multivariate analysis on the variable of decision-making skill

Variable	B	SE	Wald	p-value	OR (95% CI)
Knowledge (high)*	0.167	0.040	17.716	<0.001	1.182 (1.094, 1.278)
Attitude (not permissive)	0.003	0.039	0.006	0.941	1.003 (0.929, 1.082)
Critical thinking skill (high)*	1.638	0.040	1662.568	<0.001	5.144 (4.754, 5.565)

Note: * Significant
Source: Primary data, 2021

The study found no significant association between attitudes and critical thinking and decision-making skills among pupils in Central Java. This is a new finding because a previous study in Ethiopia stated that values and attitudes influence a person in deciding things. The reproductive health education program is ideally integrated into the school curriculum from primary school onwards thus allowing the gradual acquisition of information and knowledge necessary to develop the appropriate skills and favorable attitudes necessary for a healthy reproductive life. Children need to understand the important factors capable of making them have comprehensive knowledge, favorable attitudes, and appropriate practices and to develop and apply adapted approaches that improve the current and critical situation [25].

It is very necessary to provide life skills education to children before entering adolescence so that they are ready to make healthy decisions in their next life phase. Several studies on adolescent health recommend the need for intervention in the form of providing life skills at an early age [12], [26]–[29]. However, at present, primary schools in Indonesia are not obligated to involve life skills education for healthy living, especially in reproductive health matters.

Life skills are psychosocial competencies that involve interpersonal skills. Adolescents who have these skills will be able to help make informed decisions, solve problems, think critically and creatively, empathize with others, communicate effectively, build healthy relationships, and manage their lives healthily and productively [14], [30]. Life skill education programs for Korean pupils reported that there was a slight increase in student scores in life skills, whereas there was an increasing decision-making and critical thinking skills after the education program was completed. However, these decreases did not reach statistical significance [31]. In Malaysia, the Family Health Education program is provided by the Ministry of Education. Knowledge about adolescent reproductive and sexual health is one of the main materials in it. The curriculum was not only introduced to secondary school students but also introduced to primary school children through Physical and Health Education. In Uganda, the reproductive Health Education program targeted primary school students reporting surprising results. There was no change whatsoever in the students in the control group, but significant and desirable improvements in the report of sexual initiation in intervention group students, where sexual initiation was reduced from 43% to 11% [32]. This is reasonable

and supports the results of this study, in which pupils' knowledge of reproductive health needs to be improved. Pupils should be able to shape their thoughts, feelings, and behavior. It is precisely the combination of various experiences and knowledge gained in the period of middle and late childhood, which will then continuously determine the course of adolescent development [16].

Critical thinking skills are individual abilities in analyzing information and experiences objectively. This skill will contribute to health by helping individuals identify and assess factors that influence attitudes and behavior, such as values, peer pressure, and the media [15]. To promote health through life skills, individuals need to understand information or knowledge correctly and have cognitive skills so that they are able to think critically in every phase of their lives [13]. Individuals with higher critical thinking skills reported fewer negative life experiences. There is ample evidence that critical thinking can be taught, so there is an expectation that improving critical thinking skills can prevent adolescents from trying risky behavior that is harmful to their health [33].

In addition, to be psychosocially competent, pupils also need to have correct reproductive health knowledge so that they are able to think critically in making decisions that have an impact on health [13]. Furthermore, the results of critical thinking skills may help adolescents in making healthy decisions in their lives [15]. Decision-making skills help individuals to make constructive decisions about their lives. This can have health consequences if children and young people actively make decisions about their actions, which actually affect health, through the assessment of various options that can influence different decision-making [15]. This is very important for teenagers to have, because later they will always make decisions during their lives. Skilled decision makers are not only able to prioritize personal and organizational needs, but also understand how to find information that is not available, and are able to work positively with others.

4. CONCLUSION

Knowledge is a factor that affects critical thinking skills and decision-making skills in children. The better the knowledge, the better the children's skills in critical thinking and making decisions. Besides knowledge, decision-making skills are also influenced by critical thinking skills. Children who able to think critically tend to be 5,144 times more skilled in making healthy decisions. The health office should start paying more attention to building life skills-based reproductive health education for pupils to prevent health risk behaviors. This provision requires strong cooperation between the health office and the education office to increase pupils' health and reproductive knowledge.

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