RELATION BETWEEN KNOWLEDGE ABOUT REPRODUCTIVE HEALTH WITH RISK BEHAVIOR OF STUDENTS AT ISLAMIC BOARDING SCHOOLS IN SEMARANG CITY

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Abstract. Research studies related to the reproductive health of adolescent students are still very minimal. Therefore, it is necessary to conduct studies related to health promotion for the short, medium, and long term. This study analyzed knowledge relating to reproductive health and risk behavior of students. Observational research with a cross-sectional approach was conducted at 11 Islamic boarding schools in Tembalang District. The inclusion criteria were students who reached puberty, aged 10-24 years and had lived for at least one year in Islamic boarding school. Data were collected through a questionnaire survey. Of 509 students, 44.6% aged 15-19 years, 58.5% lived in rural areas, and 55.4% currently attending junior high school. Most students have low knowledge on family planning (88.2%) and low risky behavior (73.3%). Most students have moderate knowledge on reproductive health (68.2%), HIV/AIDS and STIs (74.0%), and Marriage and Desire to Have Children (57.8%). Fifty-eight percent of the students have good practices in regard to smoking, drinking alcoholic beverages and using illegal drugs. The logistic regression analysis revealed that knowledge on HIV/AIDS and STIs (p<0.001), Marriage and Desire to Have Children (p=0.009), and practices of smoking, drinking alcoholic beverages and using illegal drugs (p=0.012) were related to risky behavior of students. Knowledge about HIV/AIDS and STIs was the most influential variable (adjusted odds ratio (aOR) = 2.66; 95% confidence interval (CI): 1.62-4.37, p<0.001). In summary, knowledge on reproductive

health of students is the important. Appropriate and sustainable education efforts are needed to increase students' awareness of their reproductive health.

Keywords: knowledge, reproductive health, family planning, HIV/AIDS, STIs, marriage, desire to have children, drugs, risky behavior, Islamic boarding schoolpublic health system

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INTRODUCTION

Research studies related to the reproductive health of adolescent students are still very minimal, especially in Islamic boarding schools, thus, making this group less responsible for their own health. In the Big Indonesian Dictionary, pesantren or Islamic boarding school is defined as dormitories, places for students, or places for students to study the Koran (Indonesian Ministry of Education, Culture, Research, and Technology, 2016). The students usually live in huts (dormitories) with teaching material books classics and general books, aims to master Islamic religious knowledge in detail, and practice it as a guide to daily life by emphasizing the importance of morality in social life. The leader in Islamic boarding school is known as kyai.

Katz *et al* (2001) explained that health matters should be everyone's business, therefore, the active participation of Islamic boarding schools is needed. So that students in Islamic boarding schools can be independently

in the health sector particularly in the field of reproductive health. Basic reproductive health concepts include reproductive physiology, menstruation, wet dreams, fertile period, pregnancy, sexually transmitted infections, family planning (Lukman *et al*, 2004; Eridani *et al*, 2010), and Marriage and Desire to Have Children (Statistics Indonesia and Macro International, 2007).

Indonesia is home to a total of 26,975 Islamic boarding schools (Annur, 2022). Central Java is among the top four provinces with the highest number of Islamic boarding schools, totaling 3,787 Islamic boarding schools (Annur, 2022). The number of its students is 298,874, making it the third province with the highest number of students in Indonesia (Rizaty, 2022).

Semarang City in Central Java Province has 183 Islamic boarding schools. The highest number of Islamic boarding schools (25 schools) is located in the working area of Tlogosari Wetan Community Health Center, followed by the working area of Rowosari Community Health Center with 19 Islamic boarding schools (Religious Affairs Office of Semarang City, 2020). Tembalang District was chosen as the study site because it has several Islamic boarding schools where various health problems including reproductive health problems existed. Selection was also based on community empowerment activities that have done at Islamic boarding schools in this sub-district before.

Among students, diseases or health problems that are often faced are those related to skin disease (scabies), malnutrition, and reproductive health including menstrual personal hygiene, homosexuality, the risk of contracting HIV/AIDS, sexual behavior, and smoking (Kamilah and Mahmudah, 2012; Wong, 2012; Maslahah, 2012; Pranata *et al*, 2013; Fitriyah *et al*, 2014; Mairo and Islami, 2014; St Halima *et al*, 2014; Fatmawati and

Istiqomah, 2017; Fatmawati *et al*, 2017; Kamiasari *et al*, 2014; Mairo *et al*, 2015; Mawardi, 2015).

Lack of knowledge make students at Islamic Boarding schools less responsible of their own health. Green's theory (Green and Kreuter, 2004) is used to analyze the findings of the knowledge variable, so that we can do something positive.

Therefore, it is necessary to conduct studies related to health promotion for the short, medium, and long term. This study analyzed knowledge related to reproductive health and risk behavior of students.

MATERIALS AND METHODS

Study site

Observational research design with a cross sectional approach was conducted at 11 Islamic boarding schools in Tembalang District. We conducted this study from March to May 2022. The 11 Islamic boarding schools selected for this study were those located in Tembalang District with recent scabies, malnutrition, and reproductive health problems including menstrual personal hygiene, homosexuality, the risk of contracting HIV/AIDS, sexual behavior and smoking.

Study subjects

The inclusion criteria were the students who have reached puberty, aged 10-24 years and had lived for at least one year in Islamic boarding school. The students were purposively selected and asked to participate in the program. When potential subjects refused to participate, if possible other subjects were selected.

The total population of students in the 11 Islamic boarding schools is 1,424 students. The sample size was calculated using the Lemeshow's proportion estimation formula (Lemeshow *et al*, 1990) with 50% anticipated population proportion, 95% confidence interval and 10% absolute precision.

$$n = Z^2 \times P(1-P) \times N / (d^2 (N-1) + Z^2 \times P(1-P))$$

Where
- n = sample size
- Z = the statistic corresponding to level of confidence (equal to 1.96)
- P = anticipated population proportion (equal to 50% or 0.50)
- N = population size (equal to 1,424)
- d = absolute precision (equal to 10% or 0.10)

Calculation based on the formula above resulted in $n = 89$.

Questionnaires

The questionnaire used in this study was developed from the 2007 Indonesian adolescent reproductive health survey report (Statistics Indonesia and Macro International, 2008). It contained questions asking about general knowledge on reproductive health, family planning, HIV/AIDS and other STIs, and Marriage and Desire to Have Children. It also assessed the behaviors of smoking, drinking alcoholic beverages and using illegal drug and the risk behavior of adolescent.

Each questionnaire item has the correct (ideal) answer or the expected answer. So that if the answer given by the respondent is not

appropriate, then the respondent is considered not having desired knowledge.

A self-administered questionnaire was distributed to each study subject. The questionnaire asked about socio-demographic data (age, place of residence, educational level); knowledge regarding reproductive health, family planning, HIV/AIDS and other STIs; Marriage and Desire to Have Children, behavior of smoking, drinking alcoholic beverages and using illegal drug as well as risk behaviors of students. The questionnaire has been tested in one of the boarding schools outside the target.

The independent variables of this research were knowledge about reproductive health, family planning, HIV/AIDS and other STIs, and Marriage and Desire to Have Children and behaviors of smoking, drinking alcoholic beverages and using illegal drug. Dependent variable of this research was the risk behavior of students.

Definitions of variables in the study

Knowledge about reproductive health: The questionnaire consisted of questions about the signs of puberty for both boys and girls, reproductive health information media, about menstruation, fertile period, how to avoid pregnancy and premarital sexual relations.

Knowledge about family planning, HIV/AIDS and other STIs: The questionnaire consisted of questions about contraceptives, intentions to use contraceptives with a partner, services that need to be provided for adolescents and opinions about condoms can prevent pregnancy, prevent HIV/AIDS infection.

Knowledge about Marriage and Desire to Have Children: The questionnaire consists of questions about the ideal marriageable age for men and women, the decision with whom to marry, the ideal age for men

and women to have their first child, the ideal number of children in the household and the determinant of the number of children.

Smoking drinking alcoholic beverages, and using illegal drug: The questionnaire consisted of questions about the status of students related to smoking habits, age at first smoking, the number of cigarettes smoked per day, respondent status related to drinking alcohol, age at first drinking, and respondent status as a user or not a drug user.

Risk behavior of students: The questionnaire consisted of questions about courtship and sexual experiences such as do they already have a boyfriend or girlfriend, age when they first dated, and the activities they did when they were dating, opinions regarding whether or not it is permissible to have sex before marriage, the reason for having premarital sexual relations for the first time, the age at first having premarital sexual relations and the use of condoms during sexual intercourse and unwanted pregnancy.

Data analyses

Data were analyzed by univariate, bivariate and multivariate. The results of each questionnaire were quantified and entered into Statistical Package for Social Science (SPSS) version 25.0 (IBM Corp, Armonk, NY). Descriptive statistics were used for all variables. Continuous variables were described using means, standard deviations and ranges. Categorical and dichotomous variables were described using frequencies and percentages.

Bivariate and multivariate analyses were used to examine the relationship between knowledge as independent variables and risk behavior as the dependent variable. Adjusted odds ratios (aOR) and their 95% confidence intervals (CIs) were used to determine the strength of

associations. For all statistical analyses, a *p*-value <0.05 was considered statistically significant

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Ethical considerations

This research has passed the ethical review of the Health Research Ethics Commission of Faculty of Public Health Universitas Diponegoro No.299/E.A/KEPK-FKM/2021 dated 27 September 2021. This research has obtained permission from the leaders of the Islamic boarding school, and all participants gave written informed consent prior to participating in the study.

RESULTS

Categorization of students' knowledge and behavior

The students' responses to the questionnaire in regards to their knowledge and behavior were scored. If the data were normally distributed, the categorization was based on the following criteria: Low/Bad when the score was less than (mean – 1SD), moderate when the score ranged between (mean – 1SD) to less than (mean + 1SD) and high/good when the score was equal to or higher than (mean + 1SD). However, if the data were not normally distributed, low referred to the score of less than a median score or 0 if the median was 0, and high when the score was higher than or the same as the median score or more than 0 if the median was 0 (Table 1). For multivariate analysis, we grouped the knowledge and behavior variables with 3 categories (high/good, moderate, low/bad) into only 2 categories (high/good and moderate were combined into high/good, while low/bad remained unchanged).

Table 1
Distribution and categorization of students' knowledge and behavior

Variable	Distribution	Mean score	SD	Median	Categorization#
Knowledge about health reproductive	Normal	22.79	11.016	-	Low: X<11.774 Moderate: 11.774≤X< 33.806 High: X≥33.806
Knowledge on family planning	Not normal	-	-	4.00	Low: X<4 High: X>4
Knowledge about HIV/AIDS and other STIs	Normal	10.77	7.338	-	Low: X<3.382 Moderate: 3.382≤X<18.158 High: X>18.158
Knowledge of Marriage and the Desire to Have Children	Normal	2.88	1.642	-	Low: X<1.238 Moderate: 1.238≤X<4.522 High: X>4.522

Table 1 (cont)

Variable	Distribution	Mean score	SD	Median	Categorization#
Practice of smoking, drinking, alcoholic beverages, and using illegal drugs	Normal	2.39	0.85	-	Good: X<1.54 Moderate: 1.54≤X<3.24 Bad: X>3.24
Risky behavior	Not normal	-	-	0.0	Low: X=0 High: X>0

Note: (1) Distribution was determined using Kolmogorov-Smirnov test. Data were normally distributed if $p>0.05$, and not normally distributed if $p\leq0.05$.

(2) If the data were normally distributed, the categorization was based on the following criteria: Low/Bad when the score was less than (mean – 1SD), moderate when the score ranged between (mean – 1SD) to less than (mean + 1SD) and high/good when the score was equal to higher than (mean + 1SD). However, if the data were not normally distributed, low referred to the score of less than a median score or 0 if the median was 0, and high when the score was higher than or the same as the median score or more than 0 if the median was 0.

HIV: human immunodeficiency virus; AIDS: acquired immunodeficiency syndrome; SD: standard deviation; STIs: sexually transmitted infections; X: total score of the respondent

Characteristic, knowledge of students and risky behavior

Table 2 shows that of 509 students recruited to the present study, majority aged 15-19 years (44.6 %), live in rural areas (58.2%) and currently attending junior high school (55.4 %). The majority of students (68.2%) had medium knowledge on reproductive health, low knowledge on family planning (88.2%), medium knowledge on HIV/AIDS and other STIs (74.0%), medium knowledge on Marriage and Desire to Have Children (57.8%), good practices in regard to smoking, drinking alcoholic beverages and using illegal drugs (58.0%), while 73.3% has low risk behavior.

Table 2
Characteristic and knowledge of students (N = 509)

Variable	Frequency *n* (%)
Age	
10-14 years	224 (44.0)
15-19 years	227 (44.6)
≥19 years	58 (11.4)
Live in	
Rural area	298 (58.5)
Urban area	211 (41.5)
Education level	
Completed elementary school	8 (1.6)
Currently attending junior high school	282 (55.4)
Completed junior high School	4 (0.8)
Currently attending senior high school	130 (25.5)
Completed senior high school	59 (11.6)
College student	26 (5.1)

Table 2 (cont)

Variable	Frequency *n* (%)
Knowledge about health reproductive	
High (total score >33.806)	83 (16.3)
Moderate (11.774 ≤ total score < 33.806)	347 (68.2)
Low (total score < 11.774)	79 (15.5)
Knowledge about family planning	
High (total score > 4)	60 (11.8)
Low (total score < 4)	449 (88.2)
Knowledge about HIV/AIDS and STIs	
High (total score > 18.158)	71 (14.0)
Moderate (3.382 ≤ total score < 18.158)	376 (74.0)
Low (total score < 3.382)	61 (12.0)
Knowledge on Marriage and Desire to Have Children	
High (total score > 4.522)	93 (18.2)
Moderate (1.238 ≤ total score < 4.522)	294 (57.8)
Low (total score < 1.238)	122 (24.0)
Practice of smoking, drinking alcoholic beverages, and using illegal drugs	
Bad (total score > 3.24)	71 (13.9)
Moderate (1.54 ≤ total score < 3.24)	143 (28.1)
Good (total score < 1.54)	295 (58.0)
Risky behavior	
High (total score > 0)	136 (26.7)
Low (total score = 0)	373 (73.3)

HIV: human immunodeficiency virus; AIDS: acquired immunodeficiency syndrome; STIs: sexually transmitted infections

Table 3 shows the relationship between independent and dependent variable using bivariate analysis. The results show that knowledge about family planning (p=0.049), knowledge about HIV/AIDS and STIs (p=0.001), and variables smoking, drinking alcoholic beverages and using illegal drugs (p=0.033), are related to risky behavior of students.

Multivariate analysis

Table 4, results of multivariate analysis, shows that knowledge about HIV/AIDS and STIs (p<0.001), knowledge of Marriage and Desire to Have Children (p=0.009), and smoking, drinking alcoholic beverages and using illegal drugs (p=0.012) were related to risky behavior of students. Knowledge about HIV/AIDS and STIs is the most influential variable on the risk behavior of students (aOR =2.66; 95% CI: 1.62-4.37, p<0.001). Respondents who have knowledge about HIV/AIDS and STIs in the high category have the opportunity not to behave at high risk by 2.66 times

Table 3
Relationship between independent variables and students' risk behavior (using bivariate analysis)

Independent variable	p-value*
Knowledge about reproductive health	0.067
Knowledge about family planning	0.049
Knowledge about HIV/AIDS and STIs	0.001
Knowledge of Marriage and Desire to Have Children	0.111
Practice of smoking, drinking alcoholic beverages, and using illegal drugs	0.033

HIV: human immunodeficiency virus; AIDS: acquired immunodeficiency syndrome; STIs: sexually transmitted infections
*Significantly different when p-value <0.05

Table 4
Results of logistic regression showing the relationship between various independent variables and risk of Students at Islamic Boarding Schools in Semarang City

Independent variable	Risk information
Knowledge about reproductive health	aOR = 1.425; 95% CI: 0.922-2.201, *p*=0.111
Knowledge about HIV/AIDS and STIs	aOR = 2.66; 95% CI: 1.62-4.37, *p*<0.001
Knowledge of Marriage and Desire to Have Children	aOR = 1.586; 95% CI: 1.120-2.248, *p*=0.009
Practice of smoking, drinking alcoholic beverages, and using illegal drugs	aOR = 1.428; 95% CI: 1.081-1.886, *p*=0.012
Knowledge about family planning	aOR = 1.582; 95% CI: 0.992-2.523, *p*=0.054

Note: Significantly different when *p*-value <0.05
aOR: adjusted odds ratio; CI: confidence interval; HIV: human immunodeficiency virus; AIDS: acquired immunodeficiency syndrome; STIs: sexually transmitted infections

greater than respondents who have knowledge about HIV/AIDS and STIs in the low category.

DISCUSSION

The age of students 15-19 years is the age of early adolescence (youth). At the age at which they enter the transition phase of life, starting to be difficult to manage, wanting to be independent but still not able to (Sarwono, 2005). This age is a good age to provide them with a good understanding of reproductive rights and health in the Islamic boarding

school community (Santrock, 2007; Eridani *et al*, 2010). However, many students come from rural areas with limited access to information which can result in a lack of understanding regarding reproductive health.

The results of the multivariate analysis indicate that knowledge about HIV/AIDS and STIs, knowledge of Marriage and Desire to Have Children, and the behaviors of smoking, drinking alcoholic beverages, and using illegal drugs are associated with risky behaviors. However, for educational purposes among students, we need to provide holistic reproductive health knowledge (Lukman *et al*, 2004; Indonesian Red Cross, 2008; Eridani *et al*, 2010), not just focusing on the topics mentioned above.

In Islamic boarding schools, subjects related to reproductive health are taught; these include menstruation, the prohibition of drinking alcohol and using drugs, and the discouragement of engaging in acts of adultery (such as kissing, necking, and petting). Reproductive health knowledge is given through the books of Risalatul Mahid, Qurroatul Uyun, Uqud Al Lujain (Sanusi, 2015), but not all Islamic boarding schools teach it.

Knowledge about HIV/AIDS and STIs is the most influential variable on the risk behavior of students. It needs to be followed up continuously as did Puspikawati and Megatsari (2018) who provided peer education to youth groups. Adolescent students can also access the Adolescent Reproductive Health Information and Counseling Center to increase adolescent reproductive health knowledge (Rohaeni, 2017). It is also necessary to establish and develop Healthy Youth Classes at Islamic Boarding Schools (Dewi *et al*, 2018; Fatmawati *et al*, 2017) and develop a Health Post in Islamic Boarding Schools called *poskestren*.

Poskestren is one form of community-based health efforts in Islamic boarding schools with the principle of, by, and for residents of Islamic

boarding schools, which prioritizes promotive, preventive services, without neglecting the curative and rehabilitative aspects which are carried out under the guidance of the local health services (Sampang District Health Office, 2020). The location of the *Poskestren* is in boarding school environment and does not require a specific building but should have a special room and can use a multi-purpose room.

Awareness to seek knowledge, plan and form a better family in the future with family support is a priority for young students. Through education with the right materials and information media, this group of adolescent students will have better knowledge and understanding in efforts to prevent risky behavior (Soetjiningsih, 2018; Sasono, 2016; Tiara *et al*, 2016; Rini and Tjadikijanto, 2018).

In summary knowledge on reproductive health of students is the important things. By knowing the knowledge of the students about their reproductive health, decision makers in Islamic boarding schools, and other institutions related to the health of the students can take a role to jointly improve this situation. Appropriate integrated and sustainable education efforts are needed to achieve students' awareness of their reproductive health and that of the next generation. Islamic boarding schools can continue to provide reproductive health education to students through their religious books and collaborate with nearby health institutions such as health center and non-governmental organizations that pay attention to efforts to improve adolescent reproductive health.

ACKNOWLEDGEMENTS

The author would like to thank the Dean of the Faculty of Public Health, Diponegoro University, Semarang for the moral and material support for the smooth running of research and writing research articles. The author would also like to thank Nissa Atul Asfiya (student of the Kyai

Galang Sewu Islamic boarding school) who helped with field research and preparation of reports. This research was funded by the Faculty of Public Health, Diponegoro University, Semarang, Indonesia.

CONFLICT OF INTEREST DISCLOSURE

There is no conflict of interest.

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