Multivariate Analysis Of The Effectiveness Of School-Base Reproductive Health Promotion Programs For Early Adolescents

Lidia Hastuti¹, Lilis Lestari¹, Wuriani¹, Lestari Makmuriana¹, Kharisma Pratama², Tisa Gusmiah³
¹Lecturer, Department of Maternal and Pediatric Nursing, STIK Muhammadiyah Pontianak
²Lecturer, Department of Basic and Nursing Science, STIK Muhammadiyah Pontianak
³Lecturer, Department of Medical and Surgical Nursing, STIK Muhammadiyah Pontianak

Abstract. Religiosity is one of protective factor toward adolescents’ risked behavior. It is so important to teach them the religious value to family. The understanding of reproductive health will be easier to be received by adolescents and society if the process of delivering the content always consider the values and norm held by society. The previous research finding has been developed to a school-based reproductive health promotion for younger adolescents who have not faced akhil baliq (menarche or semenarche) with religious values approach known as Program Remaja Religi Sadar Reproduksi (Religious adolescents aware reproductive issue) or simply called as “Perisai Khatulistiwa (Borneo Shield)”. This program is one of school-based reproductive health promotion that promote reproductive health with Islamic values approach. This study was aimed to know the effectiveness of this program toward adolescents’ knowledge of reproductive health. Quantitative studies with quasi-experimental research design, non-equivalent control group design. Data collection techniques used is purposive sampling, n = 60, at four schools, n = 30 in the two schools as the intervention group and n = 30 in the two schools as a control group. Quantitative analysis used multiple linear regression. Multivariate analysis found that the program is effective on increasing adolescents’ knowledge of reproductive health p = 0.000 (p <0.05) coefficients B 21.56 (95% CI 19.38 to 23.75). Another factor influencing the knowledge of reproductive health are siblings p = 0.03 (p <0.05) coefficients B -1.35 (95% CI -2.55-0,12) and extracurricular activities at school p = 0.04 (p <0.05) coefficients B 0.41 (95% CI 0.01 to 0.80). The study recommended model of school-based reproductive health promotion approach to Islam named “Program Remaja Religi Sadar Reproduksi” (Religious adolescents aware reproductive issue) with abbreviated “PerisaiKhatulistiwa (Borneo Shield)”. This program has affected the knowledge about reproductive health, among adolescents.

1. Introduction

Almost one fifth (17.5%) of the world's population are adolescents (ages 10-19 years). The number of adolescents aged 10-24 years in Indonesia reaches around 64 million or 26.67% of the total population of Indonesia (¹). Almost 69.6% of adolescents admit that they have had sex. Adolescents have a tendency to carry out risky behaviors that can increase morbidity and mortality (²). A good understanding of puberty needs to be given to adolescents (³) and providing correct and proper information about reproductive health can prevent girls from unwanted pregnancy and sexually transmitted diseases (⁴). It is includes as a very important policy and has become a multi-party agreement (⁵).

Content from this work may be used under the terms of the CreativeCommons Attribution 3.0 licence. Any further distribution of this work must maintain attribution to the author(s) and the title of the work, journal citation and DOI.
PUBLICATION DATE: 2019-01-21
Adolescents really need sexual education since the beginning whether it was given by using the media or personally (6). The strategy in this research identifies and seeks the best steps in accompanying and escorting the teenager transition process (7). It should not be a taboo to talk about sex in the family, because adolescents need to get the right information from their parents or competent teachers (8). Religiosity is one of the protective factors for adolescents' risked behavior (9). Parents play an important role in adolescents' understanding of reproductive health, but parents mostly hesitate to explain about reproductive health problems. Parents have the role of creating a religious atmosphere in the family by cultivating good values and morals, becoming a source of information and a place to find solutions for problems experienced by adolescents, and finally it can protect adolescents from risky sexual behavior.

The religious approach is very important to cultivate religious values in families in Indonesia. An understanding of reproductive health will be more acceptable to adolescents and society if in their explanation they still pay attention to the values or norms that exist in society. The results of previous research findings have developed school-based reproductive health promotion programs for early adolescents who have not yet attained the religious values approach known as the Program Remaja Religi Sadar Reproduksi (Religious adolescents aware reproductive issue program) or known as “Perisai Khatulistiwa” ("Equator Shield"). Providing information about reproductive health by including Islamic religion studies in its explanation specifically targeted to early adolescents who have not experienced akhil baliq (menarche or semenarche).

The program contains material competencies that must be mastered by adolescents which include self-development, social development, physical development, prevention of sexual violence and sexually transmitted infections. In the explanation of reproductive health, the material is accompanied by explanations based on Islamic values and in line with the standard competence that has been set on the syllabus. Islamic religious studies integrated in the program are about akhil baliq and its responsibilities in Islam, the attitude when they make a friendship with the opposite sex, orders to cover all part of their body (except face and palm), the worship of thaharah, purifying practices or bathing in janabah, and the importance of maintaining the cleanliness of reproductive organs such as doing circumcision for boys.

The program was hold in form of 2 days of training with 14 sessions, with the duration of 50 minutes per session. The program was begun by carrying out a pre-test and doing a post-test 3 months after the intervention was done. The media used were guidebooks for students and facilitators. The methods used in the program were lectures, question and answer, role play, games, discussion, practice, group work and take home. The program involved science and fiqh teachers, health workers and parents as facilitators. The researcher intends to assess the effectiveness of the "Perisai Khatulistiwa" program on enhance adolescents' knowledge about reproductive health in early adolescents (12-14) in junior high school students.

2. Methods

This research applies quantitative research with a quasi-experimental non-equivalent control group design. The group in this research is a natural condition of the sample that given intervention by control (10). The treatment was carried out in the intervention group while the control group was not given any treatment. Both groups were given a pre-test before the implementation of the program and a post test was given three months after the program was implemented to intervention group. The selection of school samples is based on purposive sampling in 4 Islamic school in Pontianak. Then, there are 2 selected schools as the intervention group and 2 schools as the control group. The intervention group was given treatment of the "Perisai Khatulistiwa" program, while the control group was not given any treatment. The number of samples in this research were 60 people consisting of 30 people in intervention groups and 30 people in control groups. The technique used in choosing sample for this research is by using random sampling technique. The inclusion criteria for research in the study were (having willingness to take part in the study, seventh grade students and have not akhil baliq (12-14 years old).

The research instrument has been tested with the validity score is around 0.712-0.896 and the reliability score is 0.89. Researchers get ethical clearances with No.Ref: KE/FK/62/EC. This research is conducted by maintaining the principles of ethical beneficence, justice, and informed consent (11). Informed consent as the subject of research was given to the parents of research sampling and then followed by signing
of the consent letter by parents and adolescents. Bivariate analysis is by using independent t-test and paired t-test. Multivariate analysis is by using multiple regression linear analysis.

3. Results
The results of the study showed bivariate analysis which analyzed the differences of mean score in pre-test and post-test about adolescents’ knowledge and the differences of mean score of two groups. While the multivariate analysis aimed to analyze the effectiveness of program interventions by controlling confounding variables.

3.1. Bivariate analysis
3.1.1. The difference mean score of pre-test and post-test about the variables of reproductive health knowledge in both groups.
The difference mean score of pre-test and post-test about the variables of reproductive health knowledge in intervention and control group can be seen in the following Table 1.

| Variabel | n  | Mean ±SD     | The difference of mean score | 95%CI     | t     | p     |
|----------|----|--------------|-------------------------------|-----------|-------|-------|
|          |    |              |                               |           |       |       |
| Intervention group |    |              |                               |           |       |       |
| Pre test | 30 | 9.67±5.73    | 25.63                         | 23.36-27.90 | 23.12 | 0.000** |
| Post test| 30 | 35.30±2.23   |                               |           |       |       |
| Control group |    |              |                               |           |       |       |
| Pre test | 30 | 10.57±4.45   | 1.43                          | -1.20-4.07 | 1.11  | 0.28  |
| Post test| 30 | 12.00±5.87   |                               |           |       |       |

**Significant p < 0.01

The results of statistical tests showed that there is significant differences between pre-test and post-test in the intervention group with p = 0.000 (p <0.05). The mean score of pre-test is 9.67 ± 5.73 and post-test, 35.30 ± 2.23, the difference mean score is 25.63 (95% CI 23.36-27.90). It is different from the control group, where the results of the statistical test showed that there is no significant difference between the pre-test and post-test with the score of p = 0.28 (p > 0.05). The mean for the pre-test is 10.57 ± 4.45 and post-test1 is 12.00 ± 5.87, with difference of mean score is 1.43 (95% CI -1.20-4.07). Research shows that the intervention influences adolescents’ knowledge about reproductive health.

3.1.2. The difference of mean score related to reproductive health knowledge in both groups
The difference of mean score related to reproductive health knowledge in the intervention and control groups can be seen in Table 2.

| Variabel | n  | mean ±SD   | Difference of mean score | 95%CI     | t     | p     |
|----------|----|------------|--------------------------|-----------|-------|-------|
|          |    |            |                          |           |       |       |
| Knowledge |    |            |                          |           |       |       |
| Intervention | 60 | 22.48±13.65 | 10.17                    | 6.48-13.85 | 5.47  | 0.000** |
| Control   | 60 | 12.32±4.68  |                          |           |       |       |

**Significant p < 0.01

The results of statistical tests showed that there is significant differences in knowledge about reproductive health between the two groups, with a value of p = 0.000 (p <0.05). The mean of the intervention group is 22.48 ± 13.65 and control group is 12.32 ± 4.68, the difference of mean score is 10.17 (95% CI 6.48-13.85). The results of the study prove that the intervention influences adolescents’ knowledge about reproductive health.

3.1.3. The difference of mean score of pre-test and post-test in both groups related to the knowledge about reproductive health.
The difference of mean score of pre-test and post-test in both groups related to the knowledge about reproductive health can be seen in the following Table 3.

| Variabel | n  | mean ±SD   | Difference of mean score | 95%CI     | t     | p     |
|----------|----|------------|--------------------------|-----------|-------|-------|
|          |    |            |                          |           |       |       |
| Knowledge |    |            |                          |           |       |       |
| Intervention | 60 | 22.48±13.65 | 10.17                    | 6.48-13.85 | 5.47  | 0.000** |
| Control   | 60 | 12.32±4.68  |                          |           |       |       |

**Significant p < 0.01

The difference of mean score of pre-test and post-test in both groups related to the knowledge about reproductive health in both groups
The difference of mean score CI 95% p

| Variable   | Intervention n=30 | The difference of mean score | CI 95% | P    |
|------------|-------------------|-------------------------------|-------|------|
| Knowlegde  |                   |                               |       |      |
| Pre test   | 9.67±5.73         | 10.57±4.45                   | 0.9   | -3.55-1.75 | 0.50 |
| Post test  | 35.30±2.23        | 1.47±3.14                    | 21.67 | 19.77-23.59 | 0.000**|

**Significant p < 0.01

The statistical test results show the difference between the mean score of pre-test and post-test related to the knowledge about reproductive health. The mean score of pre-test in the intervention group is 9.67 ± 5.73 and the mean score of pre-test in control group is 10.57 ± 4.45, the difference of mean score is -0.9 (95% CI -3.55-1.75). Mean while, the mean score of post-test in the intervention group is 35.30 ± 2.23, and in the control group is 11.47 ± 3.14, with the difference of mean score is 21.67 (95% CI 19.77-23.59). The results of the study prove that there are significant differences between the mean score of pre-test post-test in both groups.

3.2. Multivariate Analysis

Multivariate analysis is conducted to determine the effect of intervention programs towards adolescents’ knowledge about reproductive health by controlling confounding variables consisting of adolescents characteristics (number of siblings, school organization activities followed, academic achievement and self-efficacy) and parental characteristics (mother's age, mother’s latest education level and father's latest education level). The results of the analysis are provided in Table 4.

Table 4. Effect of intervention programs by controlling the characteristics of adolescents and parents towards knowledge about reproductive health

| Variable          | Model 1          | Model 2          | Model 3          |
|-------------------|------------------|------------------|------------------|
|                   | Coefficients B  | CI 95% p         | Coefficients B  | CI 95% p         | Coefficients B  | CI 95% p         |
| Intervention      | 20.80            | 118-25.59        | 0.00**           | 21.82            | 18.27-25.37      | 0.00**           | 21.85            | 18.76-24.94      | 0.00**           |
| Adolescents’      |                  |                  |                  |                  |                  |                  |                  |                  |                  |
| characteristic    |                  |                  |                  |                  |                  |                  |                  |                  |                  |
| Number of sibling | -1.34            | -2.55-0.12       | 0.03*            | -1.36--0.21      | -1.36            | 0.02*            |
| School activities | -0.61            | -0.53-0.74       | 0.04*            |                  |                  |                  |                  |                  |
| Academic achiever | 2.23             | -5.25-9.71       | 0.55             |                  |                  |                  |                  |                  |
| Self-efficacy     | 0.45             | -0.11-1.01       | 0.11             | 0.44             | -0.08-0.96       | 0.09             |
| Parents’ characteristic |          |                  |                  |                  |                  |                  |
| Mother’s age      | 0.16             | -0.09-0.41       | 0.22             | 0.16             | -0.08-0.40       | 0.19             |
| Mother’s latest education | -0.071       | -1.62-1.48       | 0.93             |                  |                  |                  |
| Father’s latest education | 0.32         | -1.11-1.74       | 0.66             |                  |                  |                  |
| Constanta         | 12               | -16.75           | 1.64             |                  |                  |                  |
| R²                | 0.79             | 0.82             |                  |                  |                  |
| N                 | 60               | 60               | 60               |                  |                  |                  |

*significant p<0.05 * *significant p<0.01

The results of the statistical test found that, in model 1, the intervention program had a significant, positive and direct effect on adolescents knowledge with p = 0.000 (p <0.05) with B coefficients of 20.80 (95% CI 18.00-25.59). In model 2, the research found that the intervention program had a significant, positive and direct effect on adolescents knowledge with p = 0.000 (p <0.05) with B coefficients 21.82 (95% CI 18.00-25.59). The others factors that significantly, negatively and contradictive was the number of siblings with p = 0.03 (p <0.05), with B coefficient -1.34 cs (95% CI -2.55-0.12) and activity at school with p = 0.04, with B coefficients -0.61 (-0.53-0.74). In model 3, the study found that the intervention program had a significant, positive and direct effect on knowledge with p = 0.000 (p <0.05) with B coefficients 21.85 (95% CI 18.76-24.94). Another factor that significantly, negatively and contradictive to the knowledge was the number of siblings with p = 0.02 (p <0.05), B coefficients -1.36 (95% CI -2.52-0.21) The intervention program is proven to have an effect on adolescents knowledge, besides that other factors that influence knowledge in this research were the number of siblings and organizational activities that were followed at school.
4. Discussion

The results of the study found that there were significant differences in the pre-test and post-test related to adolescents’ knowledge about reproductive health in the intervention group and the control group. The results of the study prove that the intervention program "Perisai Khatulistiwa" with the slogan "Sambut masa remaja dengan sehat dan taat (welcome adolescence with health and obedience)" affects the knowledge of reproductive health known by adolescents. In addition, siblings and school activities are also predictors of adolescents’ knowledge. Educational programs during puberty have an important role in increasing adolescents’ knowledge. One determinant factor for the low knowledge of reproductive health issue on adolescents is the absence of a school curriculum about reproductive (sexual) health education. School-based reproductive health promotion has proven to be very effective. The correct religious guidance from the teacher can strengthen adolescents’ self-defense, so that it becomes one of the protective factors to avoid free sex behavior. Schools are chosen as a place to provide interventions related to sexuality and reproductive health. Educational intervention programs can achieve the expected changes toward the knowledge of reproductive health in adolescents. Information has a positive effect on the level of awareness and encourages the development of positive knowledge and habits or behavior.

Self-control of sexual desire can be done by strengthening religious teachings and increasing adherence to adolescents. Religiosity (religious obedience) is one of the protective factors in adolescents that can prevent risky behavior. Actually, talking about reproductive health issues which is considered as a taboo in society can inhibit the provision of correct information in adolescents. Islam teaches the knowledge about reproductive health such as akhil baliq, adab (attitude) toward the opposite sex, including the prohibition against free sex. The importance of doing thaharah, the prayer of taking janabah bath, and purification from hadast. Islam also explain the process of menstruation and maintaining cleanliness during menstruation, the process of pregnancy, also provides information to boys about the importance of circumcision for the cleanliness of their reproductive organs. The importance of closing the aurat for young women is not only to fulfill the obligation as Muslims and as self-control, but closing the aurat can protect adolescents from threatening behaviors such as sexual violence or sexual abuse. In addition, adolescents must be able to maintain their honor. They also need to begiven the information about how to socialize with their opposite gender to avoid premarital sexual behavior (zina) which is forbidden in the Islam as stated in Al-Quran to keep away from zina.

The results of this study also found that, the number of siblings in the family could be a source of information and a place for discussion besides parents. Having more than one sibling is predicted to increase adolescents’ knowledge. Organizational activities at schools give the opportunities to provide positive activities to adolescents, telling their problems and obtain solutions. Adolescents who have a lot of activities at school tend to have good knowledge in reproductive health. Activities at school will open up the discourse and mindset of adolescents to new information. Adolescents are more update to the information, including information about health, especially reproductive health.

The researcher identified the advantages of the "Perisai Khatulistiwa" program as a comprehensive program packed with reproductive health and religious education in early adolescents before they reach akhil baliq. The media used in the program are modules for students and instructors that contain reproductive health material and religious material related to reproductive health. Adolescents can view reproductive health in a different perspective. By not considering the knowledge about reproductive health as a taboo or embarrassing thing, parents and teacher should share the information about the reproductive health but keep paying attention to the norm when discussing with them.

The weakness of this study is that this research just evaluate the result for short term that is about three month, so that researchers do not know for sure the retention of knowledge will increase or decrease and how long it will match to the current situation. In the future, it is necessary to evaluate the program's effectiveness for the long term. It is also necessary to conduct a discussion about the factors related to the readiness of the role of parents in guiding the adolescents about reproductive health based on Islamic value.

5. Conclusions and Suggestions
School-based adolescents’ reproductive health promotion programs named “Perisai Khatulistiwa” have been shown to influence the level of knowledge about reproductive health of early adolescents (12-14 years) on junior high school students. The other factors that influence the knowledge about reproductive health are the number of siblings and activities at school. For school institutions, there should be a class of "Puberty Counseling" at schools, in order to identify the special needs of students who will face akhil baliq, giving the students a chance to share their experiences, discuss students' problems and difficulties and find the solutions. It needs to conduct further research to evaluate the effectiveness of the program for the long term, with a larger number of samples and a further analysis about adolescents’ need toward reproductive health based on their age.

6. Reference

[1] BKKBN 2013 Remaja dan permasalahannya jadi perhatian dunia. Available from: http://www.bkkbn.go.id/viewberita.aspx?beritaid=840.
[2] Maisya IB, Susilowati A 2014 Faktor pada Remaja Muda dari Persadanya Media Informasi Hubungannya dengan Perilaku Berisiko. Jurnal Kesehatan Reproduksi. 5127-33.
[3] Pinyerd B, Zipf WB 2005 Puberty—Timing is everything! Journal of Pediatric Nursing. 20(2):75-82.
[4] Dallard C 2001 Sex education: politicians parents teachers and teens. Guttmacher Report on Public Policy. 9-12.
[5] Kesehatan reproduksi remaja; Informasi ringkas [press release]. Jakarta2004.
[6] Haider SJ, Saleh SN, Kamal N, Gray A 1997 Study of adolescents: dynamics of perception attitude knowledge and use of reproductive health care.
[7] WHO 2011 The sexual and reproductive health of younger adolescents research issues in developing countries. Geneva, Switzerland: WHO Document Production Services.
[8] Nurohmah A 2013 Pentingnya pendidikan kesehatan reproduksi sejak dini dalam keluarga. Yogyakarta. Pusat Studi Gender Universitas Islam Indonesia-Yogyakarta Universitas Islam Indonesia.
[9] Igra V, Irwin, C E 1995 Social pediatrics: Oxford University Press; 1995.
[10] Chambel D T, Stanley J C 2015 Experimental and quasi-experimental designs for research. Ravenio Books
[11] Dodd TJ 2003 A guide to research ethics. Available from:http://www.lib.uconn.edu/DoddCentre/ASC/dodphot1.htm.
[12] Moodi M, Zamanipour N, Sharifirad G-R, Shahnazi H 2013 Evaluating puberty health program effect on knowledge increase among female intermediate and high school students in BirjandIran. Journal of education and health promotion13:2.
[13] AlQuaiz AM, Kazi A, Al Muneeef M 2013 Determinants of sexual health knowledge in adolescent girls in schools of Riyadh-Saudi Arabia: a cross sectional study. BMC women's health13(1):1.
[14] Tawfik M, El-Sharkawy O, Abdelbaqy M, Hanafy S, Shehata S, Malek A, et al 2013 School-based reproductive health education among adolescent girls in Alexandria Egypt.
[15] Aaro LE, Flisher AJ, Kaaya S, Onya H, Fuglesang M, Kblepp K-I, et al 2006 Promoting sexual and reproductive health in early adolescence in South Africa and Tanzania: Development of a theory-and evidence-based intervention programme. Scandinavian Journal of Public Health34(2):150-8.
[16] Kotwal N, Khan N, Kaul S 2014 A review of the effectiveness of the interventions on adolescent reproductive health in developing countries. International Journal of Scientific Research Publications4(5):1-4.
[17] Christie D, Viner R 2005. Adolescent development. Bmj330(7486):301-4.

Acknowledgments

The acknowledgment is expressed to the government of Pontianak City, National Education Department of Pontianak City, Religion Department of West Kalimantan Province, Health Department of Pontianak City, the headmasters of Junior High School and Islamic Junior high school where the research was conducted, the teachers, parents and research respondents, and the research institution of STIK Muhammadiyah as the funder of the research.