The improvement students’ reproductive health knowledge using BASR BPP KRR learning material

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Abstract. Based on studies reported the higher cases and improper sexual behaviour emerged due to the lower of health reproductive knowledge among teenagers and our representative survey that described a need for improving students health sexual knowledge in Kota Padang, we integrated promotion and prevention knowledge into learning material for students of senior high school (SMA). Furthermore, an experimental study has been conducted to measure the influence of learning material, called BASR BPP KRR toward adolescence’ health reproductive knowledge. Population consists of SMA students in Kota Padang. By using purposive sampling, around 179 SMA students are involved as the sample which represent three different categories of school academic ability level. Experimentation applies pre-test – post-test group only design, consist of two variable, learning material (independent variable) and reproductive health knowledge (dependent variable) which measured using multiple choice test. Then, the learning result (gain) analysed statistically by using t-test. The result showed the highest knowledge improvement on average were 28.7 by students’ of higher category school, 17.7 by middle category school, and 1.04 by lower category school. The result shows BASR BPP KRR learning material significantly contributes to the improvement of higher academic level students. The increasing gain score also found toward middle academic level students, yet it is not statistically significant. Toward students’ of a lower academic level, BASR BPP KRR learning material does not increase the knowledge.

1. Introduction
Teenagers are a period that is vulnerable to the sensation of change in the biological dimension, cognitive dimensions, and social dimensions. Of these three dimensions, changes that are macro and can be easily recognized by the individual concerned and also others are biological changes. Natural processes of growth and development play a role in biological changes in adolescent boys and girls, but the activation of sexual hormones will display the effects of change that greatly distinguish between adolescent boys and girls.

Menstruation events, wet dreams (nocturnal emissions/orgasm), and appearance one by one feminine and masculine characters are clear markers entering the phase of teenage life, which is in line with the development of mental processes or thinking abilities. According to Piaget's theory, adolescents are in a transitional phase from concrete operations to formal operations, where the ability to think logically is more mature and achieves the ability to think abstractly and begin to adopt a value system. The social dimension develops through active participation as well as passive youth in their communities to strengthen the formation of a value system in themselves. At this time, teenagers respond quickly to various forms of novelty in the form of information, objects, technology, and
lifestyle. Some of them imitate directly, do not filter, and not even reach the risk of self-harm, as well as reproductive health.

The World Health Organization (WHO) describes reproductive health as a complete physical, mental and social condition, free from disease or disability in all aspects related to the reproductive system, function, and processes [1]. The world pays great attention to optimizing adolescent reproductive health because of the low quality of health will affect the quantity and quality of the human regeneration process. However, the issue of adolescent reproductive health remains a research focus in both developed and developing countries. The difference, developed countries have focused more on the involvement of government policies in taking solutions, such as in the United Kingdom. [2] Report the problem of teenage pregnancy and care is important in terms of sexual behavior and knowledge, but government intervention is much more important because it relates to the health and social problems of a nation. Problem of teenage pregnancy is an important issue in the world [3], therefore there is need for reproductive health services specifically for adolescents, screening systems and referrals to risks.

In Indonesia, teenager-related cases are relatively high. In 2007, [4] conducted a survey of adolescents aged 15-24 years and found that knowledge and education were significant determinants of risky behavior in adolescents, in addition to attitudes, age, gender, economic status, access to information media, communication with parents and friends who behave at risk. The most dominant factor in relation is sex. Male adolescents are 30 times more likely to smoke, 10 times more likely to drink alcohol, 20 times more for drug abuse, and 5 times more likely to have premarital sexual intercourse, when compared to female adolescents. The results showed that the prevalence of the increased number of cases of risky behavior compared to 2003. In line with these findings, [5] reported that Makassar's youth knowledge of reproductive health was still low. Adolescents in Makassar claim to be accustomed to physical contact of the opposite sex. Previously, [6] has explained that adolescents often experience a lack of basic information about reproductive health and experience barriers to accessing reproductive health service. Considering its’ risky impact, [4] recommends particularly counselling on reproductive health. What is expected is the change of knowledge about adolescent reproductive health to a better state.

Reproductive knowledge is the basic element to drive behaviour. [7] Has measured changes in knowledge which is packaged in the name of the Youth Reproductive Health Triad (called CRR) including sexuality, HIV, and drug use in students. The results of the study showed that there was a change in knowledge through the education process. Level of pre-test knowledge of respondents to the new treatment group reached sufficient categories (before and after the education process) is a reflection for us to imply efforts to improve reproductive health in a more real and empirical context, namely the learning process in schools. However, this study does not explain definitively about the type of educational process that effectively causes changes in that knowledge.

Schools are the most potential agent to build the younger reproductive knowledge due to most of the teenagers’ daily time are used to interact in the learning process. Although schools do not mainly account for this task, due to it become capacity of health services institution, school involvement are required. Students develop their social interaction through school social structure among younger, in which their knowledge and behaviour are shaped each other, include related to reproductive health. [8] Conducted a case study to determine the extent of integration of reproductive health promotion and preventive information in two high schools in Padang and it is known that teacher did not clearly explain reproductive promotion and prevention material toward young students. It possible cause students lack of appropriate knowledge around risks of reproductive health.

To respond to the need, in 2017, [9] have designed a well-structured and printed learning material series, for students at Junior and High School, and Biology Pre-service Teacher. The development process has been preceded by preliminary analysis on several available Biology Books, both for Senior and Junior Level. It is known that the percentage of adolescent reproductive health preventive efforts in books Kemendikbud 62%, Erlangga 39%, and Yudhistira 44%. It can be concluded that the three books are still less presenting efforts to prevent adolescent reproductive health is <70%. The
learning material series called BASR BPP KRR, an abbreviation for Bahan Ajar Sistem Reproduksi Berorientasi Promotif dan Preventive Kesehatan Reproduksi Remaja. For a more simple speech, learning material is called *Bahan Ajar Kespro*. It has passed series procedure of expert judgments and gains validity and practicality criteria on a very good level, at least. This article will describe how *Bahan Ajar Kespro* can improve students’ health reproductive knowledge through a teacher-guided learning process, especially for the teen learner in SMA Kota Padang.

2. Method

This experimental study use and has been conducted in July 2018. The research involved all of the senior high school students in Kota Padang as population. To determine the research sample, purposively we choose senior high school students who registered at XI class of three different schools, an amount of 179 students. Each school is representative of three distinguished average level of academic ability, consist of higher (SMA 4 Padang), middle (SMA Pertiwi Padang) and lower level (SMA PGRI Padang). We exclude top-rank schools due to it exclusively held enrichment program academically, and its students’ ability is much higher than others. We classify students into one experiment and control group/class for each school. In this term, *Bahan Ajar Kespro* is the independent variable, and students' reproductive health knowledge is the dependent variable. We apply pre-test – post-test group only design to attain data (gain score), therefore we have pre-learning and post-learning measurement through multiple choice testing, toward both control and group experiments. The gain score then analyzed statistically using independent sample t-Test as preserved in SPSS16.00 with the sig. value p < 0.05. To fulfil the statistical requirement for t-Test procedure, we refer to sig. value of Shapiro-Wilk with Liliefors Significance Correction for Normality (p > 0.05) and sig. value of Lavene Test for Variance Homogeneity (p > 0.05).

3. Result and Discussion

Students’ attainment for those three level of students' academic ability is different each other. Here, we use gain value; a difference value between pre-test and post-test score counted through subtraction operation. Mean is similar to the average of gain value for one group of students (class) and set as classical improvement score. The larger mean value implies the better improvement in students' reproductive health knowledge.

| School         | Higher Academic Ability Students (HAAS) | Middle Academic Ability Students (MAAS) | Lower Academic Ability Students (LAAS) |
|----------------|----------------------------------------|----------------------------------------|----------------------------------------|
| Control Group  | N                                      | 28                                     | 31                                     | N                                      |
| Mean           | 17.93                                  | Mean                                   | 13.31                                  | Mean                                   |
| Std. Deviation | 11.72                                  | Std. Deviation 12.17                   | Std. Deviation 9.53                    |
| Experiment Group | N                                      | 29                                     | 33                                     | N                                      |
| Mean           | 28.73                                  | Mean                                   | 17.72                                  | Mean                                   |
| Std. Deviation | 10.07                                  | Std. Deviation 11.62                   | Std. Deviation 4.85                    |
| Sig. value (p 0.05) | 0.000                                  | 0.142                                  | 0.000                                  |

Based on Table 1, it can be seen that the largest improvement as the effect of using *Bahan Ajar Kespro* existed on HAAS, is 28.73 on average, much larger compare to control group achievement, 17.93, in which the mean difference is significant. For MAAS, the improvement score reaches 17.72 on average for the experiments group, which is several points larger than control group, 13.31, yet the mean differences are categorized insignificant. It can be understood that *Bahan ajar Kespro* does not
increase students' reproductive health knowledge for MAAS. Then, for the third group of students, LAAS, we find quite strange data, where students who use Bahan Ajar Kespro gain a mere lower mean compare another 1.04 to 9.72. Its' mean differences are significant. A much larger improvement score has existed beyond students who did not use Bahan ajar kespro, or in another word, Bahan ajar kespro fail to increase reproductive health knowledge for the student from lower academic ability. Shortly concluded, Bahan Ajar Kespro is significantly effective to enhance health reproductive knowledge for students with the high academic ability only.

Students' reproductive health knowledge increases through learning the reproductive system topic increases after using Bahan Ajar Kespro. This is due to the abundance of information presented in Bahan Ajar Kespro, consist concepts and basic principles of improving reproductive health. This information is presented systematically with a contextual approach, where information is mostly a case or problem that is encountered directly by students in their personal and social life as teenagers, such as myths that develop in the community, cases of Human Immunodeficiency syndrome Virus (HIV) caused by sexually risks behaviour and trends in sexual deviations such as Lesbian Gay Bisexual and Transgender (LGBT). Social experience is a component that cannot be ignored in the formation of student knowledge. [10] Confirms that knowledge, behaviour, and experience of the personal realm are interconnected, for example, the experience of vaginal discharge in adolescent girls is related to how to respond to it. These issues are packaged in information that is promotion and prevention. [11] Told that promotion and prevention efforts/information included part of adolescent reproductive health education.

Health promotion means the process/effort to improve public health skills in maintaining and improving their health. High school students are members of the school community who are also citizens in the real context later. Students also need to recognize preventive information, namely matters relating to efforts to prevent or anticipate the risk of reproductive health problems. School-age youth involvement in the preventive program includes the initial level in the view of Leavell and Clark, known as primary prevention, namely efforts to prevent people who are still in optimal health from being trapped in and suffering from reproductive problems.

In teaching materials, promotion values are presented with a simulative display that starts with the question "do you know?" or "is it right?" This questioning format is designed to avoid monotonous structures from majority of learning resources, narrative type, consisting of outline topic, subtopic, and content. Furthermore, preventive values are displayed through attractive columns that are placed between narratives that contain reproductive concepts and structures. This display variation is intentionally designed as the best form of combination between the materials outlined in the material curriculum outlined in the reproductive health education program. This combination results in a lighter and less material view so that it is hoped that it will better maintain the attention of students to read more. In addition, the use of this teaching material as a source of learning gives two benefits at once, namely the existence of material at the theoretical level as well as at the practical level.

However, innovations in the presentation structure of Bahan Ajar Kespro that appear different are thought to have different effects on students with different abilities. High-ability students usually generally have the skill to read and analyse information better and are able to capture messages from various models of information visualization, such as paragraphs, images, schemes, and tables. Thus, in a certain time interval, students with high academic abilities will be quicker to analyse the meaning of all visualizations presented. On the contrary, this ability is less owned by students with moderate and low abilities. We suspect that innovative features added to teaching materials become less important than the information contained in paragraph sections. While, sexually cases and risks, scientific explanation and persuasive message for caring personal reproductive health are organised on non-paragraph sections.

Recent students' ability in academic reading are influence by many factors. Study of [12] informed that socioeconomic situation of the family has a great impact on students reading literacy as well as parents' education and reading aloud to a child at the preschool age. In this case, LAAS are majority consist of students with low income family. They have less opportunity to undergo academic
experiences modelled by their parents due to earning money for primary need has become main focus in their daily interactions. Students high achieving in reading literacy usually like reading for their own enjoyment and come from families where parents spend a lot of time on reading.

It is predicted that the low reading academic ability relate to informational technology development, in which abundant academic reading material are on line available, and reading ability preferences changed. According to [13], on line materials were preferred over print materials. Scrolling and dragging of electronic page have caused students used to make quick movement to find out their target reading, and ignoring non-target sentences. Therefore, students need more time to read all of section printed material, in this case Bahan Ajar Kespro, to meet their focus. Differ from HAAS and MAAS, LAAS need more time to explore all information provided while time for reading is relatively restricted during the learning.

Besides, reading literacy is possibly influenced by gender. In turn, it also affect their attention and knowledge for caring personal reproductive health. In turn, male students will perform different health reproductive knowledge. As well In Nepal, the male had less sexual and reproductive knowledge, except for methods to prevent pregnancy [14]. Besides, preventing unwanted pregnancies was more important than oneself from Sexual Transmitted Infections (STIs). [15] Report changes in the way people think about adolescents who become mothers due to pregnancy outside of marriage in Ghana. The community should think more about competency development programs so that pregnant teenagers still have social, economic and cultural access and continue to live as young mothers.

Seeing the limited contribution of teaching and learning materials to the improvement of adolescent health knowledge, researchers suggest other innovations in presenting information, such as multimedia format teaching materials so that it is more adaptive to different student learning speeds. The form of multimedia has the flexibility to disseminate more varied information, such as being taught to be integrated with online learning. This is in line with [14] suggestion about the need for a kind of establishing a hotline through the Internet, where personalized and confidential counselling can be offered, could be supplemented to the sexual education in school.

In addition, research related to adolescent reproductive health needs to be carried out collaboratively between practitioners of education, health, economics, social, and culture. Recommendations made by [16] regarding the need for evidence-based preventive science approaches that protect address to factor and risk of adolescent reproductive health in poor and developing countries. For this reason, a database is needed that documents best and promises practices in prevention science and adolescent health. This database will facilitate diagnosis and quick assessment by collaborating parties.

4. Conclusion
Innovation in presenting promotion and prevention material into the teaching and learning materials has increased the knowledge of adolescent reproductive health in high school students in Padang City. However, the learning material called BASR BPP KRR or Bahan Ajar Kespro effectiveness is still limited to students with high academic ability (HAAS). Slightly different, Bahan Ajar Kespro enhance gain score of MAAS through a greater score compare. Lastly, Bahan Ajar Kespro do not increase low academic ability students (LAAS). Further research is needed to improve the quality of bahan Ajar Kespro, in term of type and format, in order that compatible for all learning and academic ability. Principally, learning material should optimizes its benefits and make better strived to use an appropriate learning model, including adapting it in online learning.

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