

RESEARCH ARTICLE

Reproductive Health Game (KEPO Game) to the Self-Concept and Adolescent Reproductive Health Motivation

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Abstract

The problem of adolescent reproductive health has not been adequately addressed, although there have been many tried attempts both formally and informally. Adolescents aged 12–15 years old are suitable for early reproductive health education, so the needed media that suits their needs and developments. Reproductive health/*kesehatan reproduksi* (KEPO) game contains information about reproductive health and moral messages in the formation of self-concept, healthy reproduction, health motivation, and responsibility. The purpose of this study was for knowing the effect of using the KEPO game to the self-concept and motivation of adolescent reproductive health. The study layout uses a quasi-experiment with a pretest-posttest with control group design. The treatment group received a KEPO game, while the control group received the Young Health Programme (YHP). This study uses a sampling technique using simple random sampling with a sample of 42 students for each group. The analysis used is the nonparametric test. This research was implemented in the work area of the Public Health Center Ujungberung in Bandung city on the April–May 2017. The results showed that there was an effect of using the KEPO game to self-concept and motivation of adolescent reproductive health ($p < 0.001$). The increase in self-concept in the treatment group was 8.2%, while in the control group it was 2.2%. For reproductive health motivation, the treatment group experienced an increase of 9.5%, while the control group experienced an increase of only 0.8%. In conclusion, the KEPO game increased self-concept and reproductive health motivation in adolescents.

Key words: Motivation, reproductive health game, self-concept

Gim Kesehatan Reproduksi (KEPO) untuk Konsep Diri dan Motivasi Kesehatan Reproduksi Remaja

Abstrak

Masalah kesehatan reproduksi remaja belum teratasi dengan baik, meskipun telah banyak upaya yang dilakukan baik secara formal maupun informal. Remaja usia 12–15 tahun merupakan masa yang tepat untuk pendidikan kesehatan reproduksi secara dini sehingga dibutuhkan media yang sesuai dengan kebutuhan dan perkembangannya. Gim kesehatan reproduksi (KEPO) berisikan informasi tentang kesehatan reproduksi dan pesan moral dalam pembentukan konsep diri dan motivasi kesehatan reproduksi yang sehat serta bertanggung jawab. Tujuan penelitian mengetahui pengaruh penggunaan gim KEPO terhadap konsep diri dan motivasi kesehatan reproduksi remaja. Rancangan penelitian menggunakan *quasi-experiment* dengan *pretest-posttest with control group design*. Kelompok perlakuan mendapatkan gim KEPO, sedangkan kelompok kontrol mendapatkan Program Pelayanan Kesehatan Peduli Remaja (PKPR). Teknik pengambilan sampel menggunakan *simple random sampling* dengan jumlah sampel 42 siswa untuk setiap kelompok. Analisis yang digunakan adalah tes nonparametrik. Penelitian ini dilakukan di wilayah kerja Puskesmas Ujungberung Kota Bandung pada bulan April–Mei 2017. Hasil penelitian menunjukkan terdapat pengaruh penggunaan gim KEPO terhadap konsep diri dan motivasi kesehatan reproduksi remaja ($p < 0,001$). Kenaikan konsep diri pada kelompok perlakuan 8,2%, sedangkan pada kelompok kontrol 2,2%. Untuk motivasi kesehatan reproduksi pada kelompok perlakuan mengalami kenaikan 9,5%, sedangkan kelompok kontrol mengalami peningkatan hanya 0,8%. Simpulan, gim KEPO meningkatkan konsep diri dan motivasi kesehatan reproduksi remaja.

Kata kunci: Gim kesehatan reproduksi, konsep diri, motivasi

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Introduction

Based on data from *Proyeksi Penduduk Indonesia* (Indonesia Population Projection) 2000–2035, in 2010 more than 43 million or around 18.3% of Indonesia's population were teenagers.¹ This amount is so large, that it establishes teenagers as the nation's next generation which are needed to be prepared to become healthy people physically, mentally, and spiritually. Adolescence is a transitional period from childhood to adulthood characterized by the occurrence of physical, psychological, intellectual, and social growth and development. According to the World Health Organization (WHO), adolescents are between 10–19 years old.²

The age of 12–15 years old is the right time for information delivery about health, especially reproductive health because this age is the peak of puberty, immature physical growth, psychosocial development, and adult brain development.³ These changes can cause problems that can interfere with the teenager's development, for example, reproductive health problems. According to WHO, adolescents have health threats that are dominated by their behavior and ignoring this population will cause serious health hazards to their reproduction.^{4,5} Adolescent reproductive health problems in Indonesia generally occur in women, including sexuality, human immunodeficiency virus (HIV)/acquired immune deficiency syndrome (AIDS) as well as narcotics, psychotropics, and addictive substances (NAPZA), low knowledge about adolescent reproductive health, and the median age of the first marriage for women, which is still relatively low.^{2,6}

The low health information for adolescents faces several challenges such as it delivered by un-optimal reproductive health information, electronic information technology that is not educational, improper parenting, socioeconomic and cultural factors and limited access to reproductive health services. Young women need to be provided an early reproductive health education using media that is appropriate to their development and needs.

Games are one of the media that is suitable for teenagers who have great curiosity, love adventure, and challenges because games have challenges, are interesting, exciting, and more interactive.⁷ Games are an integral part of teenage life. When teens play games, they do something different and have their challenges to complete

the game. According to the Entertainment Software Association (ESA) in 2015, teenagers under the age of 18 play video games as much as 26% and the average duration of playing is 5 hours a week. As many as 33% of girls under the age of 18 play video games, while it is only 15% for boys under 18 years old.⁸

The game can train for making life goals, provide feedback and assistance, maintain habits, stimulate, and monitor individual characteristics, such as self-esteem, self-concept, and goal setting. Players will also gain experience and can express themselves according to what they want without feeling uncomfortable.⁹ Games can help in shaping youth motivation, and self-concept.¹⁰ Positive self-concept and motivation can improve health and responsibility of reproductive health behavior.

From the above phenomenon, researchers are interested in designing a game application for teenagers that contains information about adolescent reproductive health. Informal education through this game will make teenagers more interested in exploring information about reproduction. Reproductive health games which are named reproductive health/*kesehatan reproduksi* (KEPO) game consists of several questions in the form of knowledge, attitudes, and skills packaged in the form of animation, and there are several notes and health information videos so that teenagers are expected to be healthy and responsible about reproductive health. The material in this game contains information about the growth and development of adolescents, adolescent reproductive health, sexually transmitted infections (STIs) and HIV/AIDS, drugs, the introduction of gender concepts and future preparation, education in healthy life skills, and mental endurance through social skills.

The purpose of this study was for knowing the effect of using the KEPO game to the self-concept and motivation of adolescent reproductive health.

Methods

The method used in this study is the quasi-experiment with a control group pretest-posttest design. Respondent divided into two groups, the treatment group, and the control group, both who were given questionnaires before and after the intervention. The treatment group exposed to the game, while the control group educate through the Young Health Programme (YHP) from the public health center. This research

was implemented in the work area of the Public Health Center Ujungberung in Bandung city on April–May 2017 period. The State Junior High School 50 has a treatment group population because it is a school where the YHP services are inactive, while the State Junior High School 8 is a control group population with the most active YHP. The sampling technique used is the simple random sampling with a sample of 42 people for each group.

The inclusion criteria consisted of female students aged 12–15 years old, have android-based smartphones with a minimum RAM capacity of 1 GB with installed reproductive health games and play games at least three times in a week with a duration of 60 minutes in each playtime (treatment group). While the control group provided with YHP services by the public health center, while the exclusion criteria were adolescents who were sick or absent at the pretest and posttest, had received training on reproductive health and became a reproductive health representative at school. The drop out criteria was if the respondent did not use the game according to the instructions given (treatment group) and not attending the YHP services from the health center (control group).

The first stage is to implement a preliminary survey, literature study and identify adolescent reproductive health problems, to design the game scenario. After the experts analyzed the scenario, the game was designed in collaboration with the informatics engineering team and tested again and on adolescents. Experts are from the

Department of Social Pediatrics, Social Obstetrics, Community/Public Health, Psychology, Adolescent Psychiatry, Educational Psychology, Ministry of Religion, Informatics Technology (IT) Team, Professional Organizations, and Indonesian Planned Parenthood Association.

The research questionnaire tested for validity and reliability in 30 adolescents. The instrument of self-concept variable research used the Tennessee Self Concept Scale (TSCS). The TSCS has 100 questions consisting of 6 dimensions, namely physical, moral-ethical, personal, family, social and self-criticism.⁹ The motivation questionnaire consists of 4 components, namely attention, relevance, confidence, and satisfaction. This motivation model is known as the ARCS Model term proposed by Keller.¹¹

In the treatment group, this game was installed first and used for 30 days, every week when an evaluation of the game usage conducted. The control group obtained reproductive health services from the Public Health Center (YHP). The data normality test used was the Shapiro-Wilk test, and the results of the data not normally distributed, that data analysis used is a non-parametric test. The research protocol was approved by the Health Research Ethics Committee of Faculty of Medicine, Universitas Padjadjaran, Bandung with the letter of ethics approval number: 400/UN6.C.10/PN/2017.

Results

The results in Table 1 show that there were

Table 1 The Effect of Reproductive Health Game (KEPO Game) to Adolescence Self-Concept

Self-Concept	Groups		p Value*
	Treatment (n=42)	Control (n=42)	
Pretest			0.534
Mean (SD)	59.6 (6.8)	60.6 (7.8)	
Median	58.0	58.9	
Range	49.0–78.7	48.2–79.5	
Posttest			0.007
Mean (SD)	64.9 (6.3)	61.9 (7.6)	
Median	64.5	60.6	
Range	51.0–81.7	48.2–81.0	
Differences in pretest-posttest	p<0.001**	p<0.001**	
% increase (SD)	8.2 (4.5)	2.2 (1.2)	p<0.001

*Mann-Whitney test, **Wilcoxon test

Table 2 The Effect of the Reproductive Health Game (KEPO Game) to Adolescence Reproductive Health Motivation

Motivation	Groups		p Value*
	Treatment (n=42)	Control (n=42)	
Pretest			0.446
Mean (SD)	60.8 (12.1)	58.9 (9.7)	
Median	60.0	60.0	
Range	30.0–97.0	37.0–94.0	
Posttest			0.000
Mean (SD)	66.8 (9.2)	59.3 (9.5)	
Median	66.5	61.0	
Range	49.0–96.0	40.0–94.0	
Differences in pretest-posttest	p<0.001**	p<0.05**	
% increase (SD)	9.5 (9.2)	0.8 (5.1)	p<0.001

*Mann-Whitney test, **Wilcoxon test

no differences in self-concept at the pretest with $p>0.05$, while at the posttest there were differences in the self-concept with a value of $p<0.05$. Besides, there are also significant differences in adolescent self-concept before and after the treatment and control groups with $p<0.001$. The percentage increase in self-concept in the treatment group was higher than the control group ($8.2>2.2$).

The results of the analysis in Table 2 show that there were no differences in reproductive health motivation at the pretest with $p>0.05$, while at the posttest there were significant differences in reproductive health motivation with $p<0.001$. There was a significant difference in the reproductive health motivation before and after the treatment with $p<0.001$. The percentage of an increase in reproductive health motivation in the treatment group was higher than the control group ($9.5>0.8$).

Discussion

Self-concept is what someone knows about themselves, which composed through the experience of interacting with the environment. Self-concept is not an intrinsic factor but develops from a continuous and differentiated experience. The basics of an individual's self-concept inculcated at the beginning of the day¹² and if others want to know whether she will be able to do something or if she wants to keep trying to achieve what she wants. Teenagers who have a positive self-concept will be optimistic, confident

and always act positively towards everything.¹³

Providing reproductive health information to adolescents through games can have many benefits. In addition to increasing the understanding of reproductive health material, it also helps in the formation of a positive self-concept.¹⁰ Health games are one of the methods that are interesting, innovative, potential and very effective to improve knowledge, attitudes, and skills, convey persuasive messages, change behavior, reduce stress, increase motivation and self-efficacy, change the habits and behavior of the players, grow interactivity, feedback, foster the ability to manage, and the opportunity for players to become desired characters in the game.^{14,15}

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Figure KEPO Game Display

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According to Atkinson and Shiffrin,¹⁶ information is processed and stored in 3 stages, namely sensory registers, short-term memory, and long-term memory. The new information is stored in a buffer called a sensory register. The duration of the information stored in the sensory memory is very short. The duration of information stored in short-term memory is 18–20 seconds. The storage duration will increase for up to 30 seconds if there is repeated information. If the information in short-term memory continues to be used, then over time the information enters the long-term memory stage.

Many studies have been conducted using games on smartphones for health, including the use of "Flowy" games in patients with anxiety problems. These game players are motivated to detect and overcome the anxiety problems.¹⁷ Games have also been designed for lung cancer patients. Players know about the problems that they will face and how to overcome them and can create an optimal self-management of patients to increase the confidence and motivation of sufferers.¹⁸ Katsikitis et al.¹⁹ also designed a game on a smartphone called "Knowing You, Knowing

Me (KYKM)." In this game, a mother and daughter can discuss the positive abilities they have, build good relationships, and how to manage risky behaviors in the social environment.

This game is expected to help adolescents in assessing how their characteristics are, how they should behave, how to assess the results that they achieved and analyze the suitability of their ideal behavior and form a series of behavioral attitudes, values, and goals expected by society. In other words, the games can help the formation of components of youth self-concept such as body image, self-ideal, self-esteem, role performance and identity.¹²

In the game, there are questions about the relationship, social, cultural, religion, and human rights, so that teenagers not only get information about reproductive health but also there are some moral messages that can be used as guidelines in interacting with other people and the environment.

Based on the results of interviews with several respondents, they stated that the KEPO game was more attractive and can be used at any time. Storylines and animations in the game are real and like everyday life. So that makes them prefer the KEPO game rather than other forms of reproductive health services that they have experienced.

There is an increase in reproductive health motivation in groups using KEPO game because respondents obtain information about reproductive health regularly and continuously for one month of research. Respondents have used this game three times a week with a duration of 60 minutes for each player. During use, respondents exposed to reproductive health, including the impact that would occur if they did not have a healthy and responsible reproductive health. The dangers displayed in this 3-dimensional animation form a deep impression on teenagers. Various questions in the storyline of this game look real and are like the daily lives of teenagers. Not only is the material/problem packaged in the form of animation, the addition of notes or information and animated videos in the game can also increase motivation. Notes and animated videos provide additional information for teenagers about their reproductive health, so they will be motivated to be better.

Health motivation/healthy life behavior divided into three domains, which are health knowledge, a healthy attitude, and health practice. Health motivation is a mental impulse that can

grow from within and a result of external stimuli. It acts to meet the need for reproductive health.¹⁴ Components of motivation that measured consists of attention to reproductive health, relevance to the goals to achieve reproductive health, the existence of confidence and satisfaction that will arise when making appropriate health advice and information. According to Sardiman,²⁰ motivation will encourage individuals to act, determine the direction of their actions following the objectives to achieved and select the actions to be taken. Actions or behaviors related to reproductive health formed if there is motivation from within the individual. If the motivation is high, then the reproductive health behavior will also lead to the positive side, and vice versa.²¹

Motivation is a situation in a person that encourages him to carry out certain activities in order to achieve a goal. Santrock²² defines motivation as a process that gives encouragement, direction, and persistence of behavior. Motivated behavior is a behavior that is full of energy, directed and lasting. According to Winkel,²³ motivation is the driving force that becomes active. The motivation will be more active if there is a need to achieve the goal. The need for reproductive health education is essential when teenagers motivated through the use of reproductive health games.

Jong et al.²⁴ revealed that one of the media for learning are games. Games are not only entertaining but can also increase knowledge. According to Bellotti et al.,²⁵ the game can achieve learning goals and awareness, cognitive, behavioral, affective, and also benefit its users. Granic concludes that games are crucial in cognitive formation, motivation, social and emotional formation in children. Children who play the right games can help themselves in their development.⁶ Ozcelik et al.²⁶ also concluded that the use of games could have a positive impact on increasing motivation. Based on the results of Grimes's et al.'s²⁷ research, serious games can provide entertainment and provide opportunities for players to explore themselves. This game can provide positive results such as motivating a healthy lifestyle.

Rath et al.²⁸ concludes that games can also change teen behavior. After playing this game, male teenagers who participate with the respondents in the study have reduced their smoking habits. This game increases player knowledge, directs attitude and motivates players to improve their habits and increases players'

trust in the health information that they obtain. Similarly, research implemented by Safitri et al.,²⁹ through the use of media in the form of SEHATI applications can increase children's knowledge and skills in brushing teeth.

Further development of the game, preferably in 3-dimensional form is needed to make it more attractive. Maximum effects of the game for adolescents in improving their self-concept and reproductive health motivation are important.

Conclusion

The KEPO game increased self-concept and reproductive health motivation in adolescents.

Conflict of Interest

All authors declare that there was no conflict of interest in this article.

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