

Pilot Testing The Feasibility Of Game-Based Intervention Aimed At Improving Knowledge, Attitude And Skill Towards Healthy Reproduction In Adolescent In Indonesia

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ARTICLE INFORMATION	ABSTRACT
Article history Received (9 June 2025) Revised (17 June 2025) Accepted (17 June 2025) Keywords adolescent reproduction health Duration, score reproduction health game	Introduction : In Indonesia the incidence rate of female adolescent knowledge about reproductive health is low, some of them have pregnant before married, married in young age, consume alcohol, and drug abuse. This study aims to know the correlation between duration and score of playing KEPO Game with knowledge, attitude, and skills of female adolescent reproductive health. Objectives : The design of this research is one group pretest-posttest Methods: design with simple random sampling technique in 8th grade female students of junior high school in Bandung City. Results: The result of the analysis showed that there was no significant correlation between duration and score with knowledge, attitude, and skill of female adolescent in understanding reproduction health with p value $>0,05$ but there was an increase of pretest and posttest result with p value $>0,05$. Conclusions: This explains that KEPO Game can be used as adolescent learning media in studying reproduction health with improvement in Artificial Intelligence in every content of game, time calculation improvement on "replay" menu, should use pedagogy element in every question of KEPO Game and questionnaires, and the adolescents should have instruction about KEPO Game and about reproductive health so that teenagers can answer the questions properly and correctly with time that has been set in KEPO Game.

Introduction

Reproductive health according to International Conference for Population & Development (ICPD) is a situation of physical, mental and social well-being as a whole, not only free from disease or disability but all things that related with reproductive system, its function dan process. (Carroll & Perolini, 2017)

The definition of adolescent according to World Health Organisation (WHO) is age period between 10-19 years old which divided into three stages that is early adolescent (10-13 years old), midle adolescent (14-16 years old) and last adolescent (17-19 years old). (Kemenkes, n.d.)

Young adolescents aged 12–15 years have mostly reached puberty. These boys and girls are physiologically, cognitively, behaviourally and legally too young for parental competence or responsibility because their adult brain development not yet fully formed so that in taking decision, perception and evaluation of a risk, the effects of a regulation and response to a pressure in life cannot be controlled properly. (Goldman & Collier-Harris, 2018)

In Indonesia, the number of adolescent who know about healt reproductive is 35,3% in girls dan 31,2% in boys. (Kemenkes, 2012) Girls have the most complex health



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reproductive problems some of them are dysmenorrhea, flour albus, menstrual disorders and teenage pregnancy (Sianipar et al., 2016) which can influence pregnancy in adulthood (Kemenkes, 2014) and its one of a contributor to maternal and infant mortality rates. (Kemenkes, 2018)

Problems in some developing countries, traditional people who aged 12-15 years already have to think about their future like early-age marriage and work. (Lloyd, 2017) Age 12-15 years is the age of adolescents peak puberty both of girls and boys. (Dixon-Mueller, 2008) Globalization which hit various sectors and life principle, parents still taboo to explain about adolescent health reproductive and increasingly of teenager using electronic media to looking information about healt reproductive but lack of them get the accurate, relevant and age-appropriate and these are causes of adolescent health reproductive. (Strasburger et al., 2020)

There are several interventions in adolescents as an effort to solve reproductive health problems and one of them is World Health Organization (WHO) guidelines for prevention of early pregnancy and reproductive health of adolescents, but this guidelines has several shortcomings that is lack of research resources related to interventions in low-income and middle income countries (LMICs) area and subjects of the research are heterogeneous in environment, culture, and family. (Chandra-Mouli et al., 2019) Utilization both of the internet and technology social media and online games according to experts can be used as a learning media. (Levine, 2021) Digital game-based learning (DGBL) is one of the learning media that has components of education and games and aims to transfer cognitive abilities, skills and behavior change its can be applied to junior high school students up to senior high school students. (Acquah & Katz, 2020)

The DGBL learning media that is KEPO Game was created as an effort to solve adolescent reproductive health problems in Indonesia. KEPO game is derived from Indonesian slang language which is famous words in adolescent conversation and it is an acronym of Knowing Every Particular Object. The KEPO game contains of theory from the Youth Care Services (Pelayanan Kesehatan Peduli Remaja) module from the Health Ministry of the Republic of Indonesia as an effort to DGBL effectively use as learning media. (Flick, 2019) The theory in KEPO game consists of adolescent growth and development, adolescent reproductive health, sexually transmitted infections, drugs, introduction of gender concepts and education of healthy life skills and it can play in smartphone by offline.

Methods

Method of this research is preexperimental design with one group pre-posttest design. In this study consist of one treatment group which given KEPO Game and the subject previously had not received counseling about reproductive health or similar. This research was conducted by pretest first and then given treatment about adolescent reproductive health with android-based game that is KEPO Game then observe the impact (posttest) of knowledge, attitudes and skills of girls reproductive health. Questionnaire Instruments for Material Experts and Media Experts and Questionnaire Instruments for Users

Sampling technique used with simple random sampling where is the 48 girls as respondents with 20% drop out and it found 53 girls. The inclusion criteria in this study



were 8th grade female students at the junior high school in Bandung City, students who are willing to be respondents, students who have not received about reproductive health education yet, students who can interact well with researchers, students who have an android smartphone with a minimum capacity of RAM is 1G and can play it well. The exclusion criteria are students who were not present during the explanation about how to play KEPO Game and students who have not successfully downloaded the KEPO Game. The respondents can be drop out if the students does not completed the KEPO Game within the appointed time.

The testing of normality data was used Kolmogorov Smirnov Test and the data result were not normally distributed, bivariate analysis conducted was used the Spearman Rank Correlation and Chi Square. To see the results of pretest and posttest were used the Kruskal-Wallis Test or the Mann-Whitney Test. Execution time of this research is about 1 month from May-June 2017. This research was be held in West Java Province. Primary data sources of knowledge, attitudes and skills were used questionnaires and checklists after the samples get an intervention by KEPO Game.

The preparation of this research is preliminary study on agencies which related to adolescent reproductive health, problem identification, KEPO Game scenario making, preliminary studies related to animation where is use in KEPO Game is the animation match with the teenagers, expert tests for the KEPO Game scenario by involving 10 experts they are social obstetric, social pediatric, adolescent psychiatry, adolescent psychology, Religion Ministry of Bandung Province, *PKBI (Perkumpulan Keluarga Berencana Indonesia)* or Indonesian Family Planning Association, *IBI (Ikatan Bidan Indonesia)* or Indonesian Midwives Association, educational psychology and community expert. After 9 experts agree with the revised scenario (except IT expert), then continued to the made of KEPO Game where was collaborated with the IT team. After the KEPO Game already finished, next step was expert tested again with Information Technology (IT) expert and then the last is tested the questionnaire to 8th grade female students who were not received reproductive health education at the different place of junior high school in Bandung City.

The first research implementation was asked the research permits, had meet with the headmaster of junior high school and midwife in community Health centers who responsibility of PKPR for discuss about the research flows there were consist of time, place, facilities, respondent selection and disseminated informed consent. After that, respondents did the pretest to measure the knowledge, attitudes, and skills of adolescents reproductive health. Then, respondents downloaded the KEPO Game application by transferred the APK file (Application Package File) and respondents can played offline. Respondents must played KEPO Game until 1 month, after respondents did the posttest to measure the knowledge, attitudes, and skills of adolescents reproductive health was there increased or decreased.

This research was be held after obtained a feasibility permit from the medical research ethics commission of the Medicine Faculty, Padjadjaran University. This study applied three basic principles of research ethics they are respect to person, benefit and justice



Variable	Statistical Measure	Results
1. KEPO's Game Duration (minutes)		Tabel 1. Overview of Earning KEPO's Game Duration and Scores
Average (SD)	114,9 (15,1)	
Median	117	
Range	90 – 152	
KEPO's Game Duration Category :		
Fast	4 (7,5%)	
Normal	36 (67,9 %)	
Slow	13 (24,5 %)	
2. KEPO's Game Score		
Average (SD)	443,6 (66,3)	
Median	457	
Range	305 – 532	
KEPO's Game Score Category :		
Good	38 (71,7 %)	
Moderate	15 (28,3 %)	

Description:

1. Duration:
- a. Fast = <96 minute
 - b. Normal = 96–126 minute
 - c. Slow = >126 minute
2. Skor:
- a. Good = 408–536
 - b. Moderate = 300–407
 - c. Less = <300

Table 1 presents the length of respondents time played the entire KEPO Game from 1st scene–5th scene and present the score which played the KEPO Game. The median of duration in played KEPO Game was 117 minutes and this was belong to normal chategory with percentage about 67.9%. The median of score in played KEPO Game was 457 minutes and this was belong to good chategory with percentage about 71.7%. Tabel 2. The Relationship between Game Duration, KEPO's Game Score and Knowledge, Attitudes and Skills

Component	Correlation Coefficient (rs)	P Value
1. KEPO's Duration with KEPO's Score	0,122	0,383
2. Duration of KEPO with % increase in knowledge	0,043	0,758
3. Duration of KEPO with % increase in attitude	0,056	0,689
4. Duration of KEPO with % increase in skills	0,127	0,363
5. KEPO's score with % increase in knowledge	-0,018	0,896
6. KEPO's score with % increase in attitude	-0,225	0,106
7. KEPO's score with % increase in skills	0,077	0,583
8. Knowledge score with attitude score (posttest data)	0,703	<0,001
9. Knowledge score with skill score (posttest data)	0,509	<0,001
10. Attitude scores with skill scores (posttest data)	0,419	0,002

Description : r_s = Spearman's Rank Correlation Coefficient

Table 2 explains not significant relationship between duration and score with knowledge, attitudes and skills of adolescent reproductive health ($p>0.05$) but it is

explains when score of knowledge is increased will be followed by higher score of attitudes and skills of adolescents reproductive health.

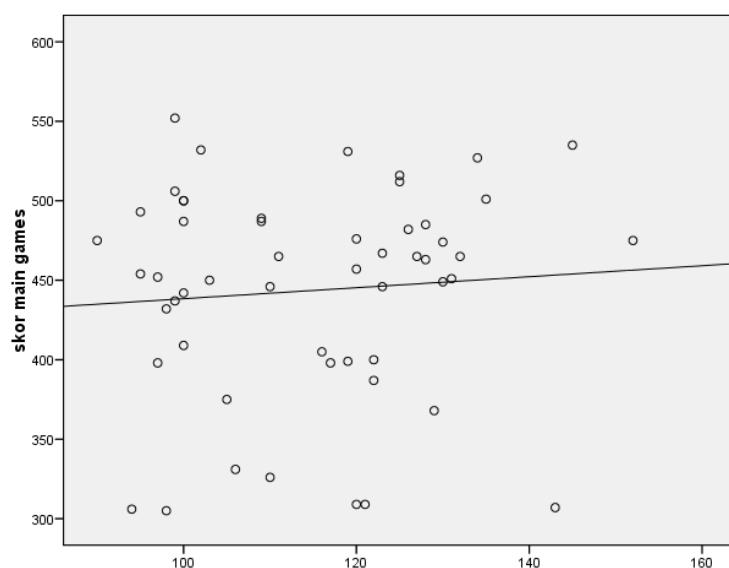
Tabel 3. The Relationship Between Duration and KEPO's Game Scores

Variable	KEPO Score		P Value*	Correlation Coefficient (phi)
	Good	Moderate		
1. Duration			0,463*	0,170**
Fast	3	1		
Normal	24	12		
Slow	11	2		

Description: * Chi-Square Test, ** Phi Correlation Coefficient

Table 3 shows the result is no significant relationship between duration and scores in playing KEPO games ($p > 0.05$). Most respondents have normal category duration with good score when played KEPO Game but between duration and score have low relationship ($r < 0.4$).

Diagram 1. Scatter Diagram of the Relationship Between Duration and KEPO's Game Scores



Based on diagram 1 shows there is positive relationship between duration and score of the KEPO Game. It explains that enhancement of duration has followed with enhancement of score in playing KEPO Game.

Tabel 4. Overview of Knowledge, Attitudes and Skills Based on KEPO's Game Duration and Scores

Variable	KEPO's Duration			P Value	KEPO's Score		P Value
	Fast	Normal	Slow		Good	Moderate	

1. Knowledge:				0,647*			0,404*
Good	3	24	7		22	12	
Moderate	1	7	5		11	2	
Less	0	5	1		5	1	
2. Attitude:				0,374**			0,250**
Positive	4	30	10		31	13	
Negative	0	6	3		7	2	
3. Skills:				0,836**			0,717**
Proficient	3	28	9		27	13	
Not proficient	1	8	4		11	2	

Description : *Kruskal-Wallis Test **Mann-Whitney Test

Table 4 shows there is no difference between duration and scores of KEPO games with adolescent knowledge, attitudes, and skills of reproductive health with p value> 0.05.

Tabel 5. Comparison of Knowledge, Attitudes and Adolescent Reproductive Health Skills Scores Before and After Given the KEPO's Game Intervention

Variable	Measurement		P Value*)	Enhancement (%)
	Before	After		
1. Knowledge:			<0,001*	
Average (SD)	58,3 (13,4)	77,9 (13,8)		36,1 (15,9)
Median	60	80		33,3
Range	33 – 83	50 – 97		3,8 – 81,8
2. Sikap :			<0,001*	
Average (SD)	93,6 (15,4)	106,4 (19,9)		13,7 (8,6)
Median	93	100		11,9
Range	60 – 137	70 – 154		4,3 – 52,7
3. Keterampilan :			<0,001*	
Average (SD)	62,1 (8,4)	71,6 (8,0)		15,9 (7,5)
Median	65	73		14,3
Range	31 – 71	40 – 81		4,5 – 36,0

Description : *Wilcoxon's Paired Data Test

Table 5 shows there are significant differences (p <0.001) score of knowledge, attitudes and skills before and after KEPO Game intervention. The median percentage increased is 33.3%, attitude is 11.9% and skills is 14.3%.

Discussion

An RCT involving 1,950 adolescent girls showed significant improvements: awareness of menstrual hygiene products increased from 33% to 92%, knowledge of oral contraception from 2% to 17%, confidence in negotiating contraception from 60% to 85%, and the ability to refuse sexual relations when unprepared rose from 61% to 85%. (Raj et al., 2025). Bandura's theory states that learning occurs through observation, imitation, and modeling. Educational games like KEPO enable users to learn through simulation and direct interaction with the content. (Bandura, 2001). A meta-analytic



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study of 65 research papers showed that game-based learning increases knowledge by 9% and skills by 14% compared to traditional methods. This highlights the great potential of educational games like KEPO. (Sitzmann, 2011).

The research data indicates that there is no significant relationship between the duration of gameplay and the increase in knowledge. This aligns with the theory that learning experiences depend not only on duration but also on content quality and pedagogical support. Therefore, KEPO is more effective when used as a complement to direct education, such as counseling or instructional sessions. (Chandra-mouli et al., 2013). Adolescents are more motivated to learn when the learning media is enjoyable and interactive. KEPO, as a game-based platform, can enhance learning engagement through appealing elements of challenge and reward. (Zhao et al., 2012).

The pilot project of adolescent reproductive health as game-based learning media which it calls KEPO game has been running successfully and has been used by 53 junior high school female students randomly with age range 12-15 years for 1 month. The KEPO game was proven to be able to improve adolescent knowledge, attitudes and skills about reproductive health because the type KEPO game belong to serious digital game where specifically designed for education and training. This game design is combination of fun and education so that subjects can enjoy the theory which is presented and also can increased motivation to learn something (Graesser et al., 2009). Serious game aims to educate and make better behavior changes and this type of game is exactly used as a learning media for health promotion. (Kato, 2020)

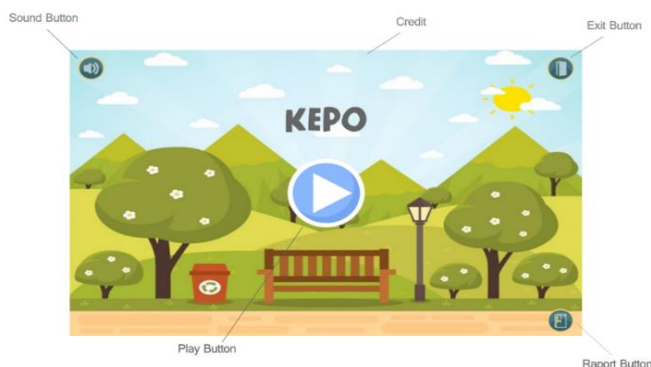
Picture 1. KEPO's Game Splash Screen



This study focuses on adolescents aged between 12-15 years because at that age is the peak of puberty in adolescents and this is relevant adolescent in 12-15 years be as a respondents in DGBL research. The pubertal what is meant is half of all girls menstruate at age 12 years, entering puberty at age 8 with significant proportions starting the process of sexual maturation while half of all boys reach spermatarche at 13 years where will affect of their overall physiological and psychological changes. (Goldstein, 2011)

This KEPO Game pilot study has several advantages there are become a learning media about reproductive health with animative substance in smartphone which daily use by teenagers so they can learn about reproductive health in time that they want and it can played repeatedly. Serious games will have a long-term effect if the subject plays the game longer and repetitively. (Wouters et al., 2013)

Picture 2. KEPO's Game Menu Appearance



KEPO game is the first game that contains of content about reproductive health and it can be played offline with the substance had been taken from PKPR module which designed by the Health Ministry of The Republic of Indonesia as a improvement efforts of knowledge, attitudes and skills adolescents reproductive health which during this time is still used conventional media such as providing the theory with power points and leaflets. (Boyle et al., 2016)

The insignificance between score and duration of playing KEPO games is not related to increasing knowledge, attitudes and skills of reproductive health in adolescents and this explains that duration and score of playing a game not always significant to the desired output and the technology used in the KEPO game is still simple and not yet supported by rigours substances (Bengtsson, 2016).

Picture 3. Display of One of The Questions in The KEPO's Game

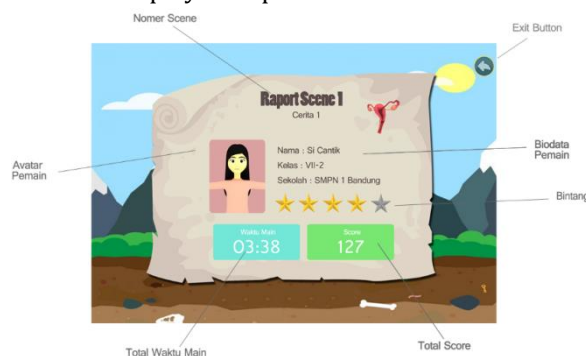


The results of this study is explained that KEPO game can be used as a learning media for adolescent in learn about reproductive health and this accordace with previous research which explained that medical curriculum designers must consider using video games as a safe and effective learning media. (Kato, 2020)

In this study the subjects have good knowledge, attitudes, and skills either in normal or long duration when they played KEPO game and this explains that the subject ever had information about adolescent reproductive health from other sources like internet (the source is except counseling at school because it is an exclusion criteria) so it can conclude that KEPO game can used as complement conventional lectures for reproductive health like movie that had been made by *MCR (Mitra Citra Remaja) PKBI*

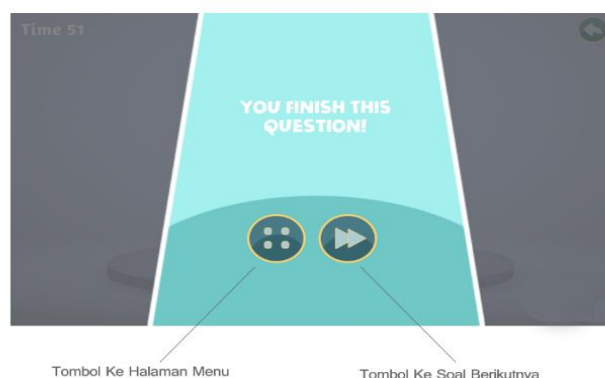
Bandung City and *Hobi Berteater* titled “*Balukarna*” which is teen-friendly service and information related to reproductive health, HIV and AIDS, sexual violence, unplanned pregnancy and drug use and use of social media. (Shin et al., 2012)

Picture 4. Display of Report Cards for each KEPO's Game Scene



The characteristics of game are challenge, interesting, exciting, and interactive can be an effective learning media especially for teenagers.³⁴ Improvement of KEPO game is be required as a game-based learning media which this learning method can create the environment of learning to be fun and impressive like reality and this appropriate to cone of experience from Edgar Dale. Edgar Dale's Cone of experience has been used as a based in determining what media or tools are appropriate for students. This cone of experience is explain that more concrete students in learn something will be more experience gained of them. (Susilana & Riyana., 2019)

Picture 5. Display of the KEPO's Game Scene Switching Menu



The explanation above can be concluded that KEPO Game has been needed the improvement and development especially for "replay" menu and the addition of Artificial Intelligence (AI) in order to this game can be used as a reproductive health learning media which provide with real experiences and it can improve the knowledge, attitudes, and skills of adolescents in understanding their reproductive health so that this KEPO game is more appropriate to be as a complement of existing reproductive health learning process that is with counseling method.(Susilana & Riyana., 2019)

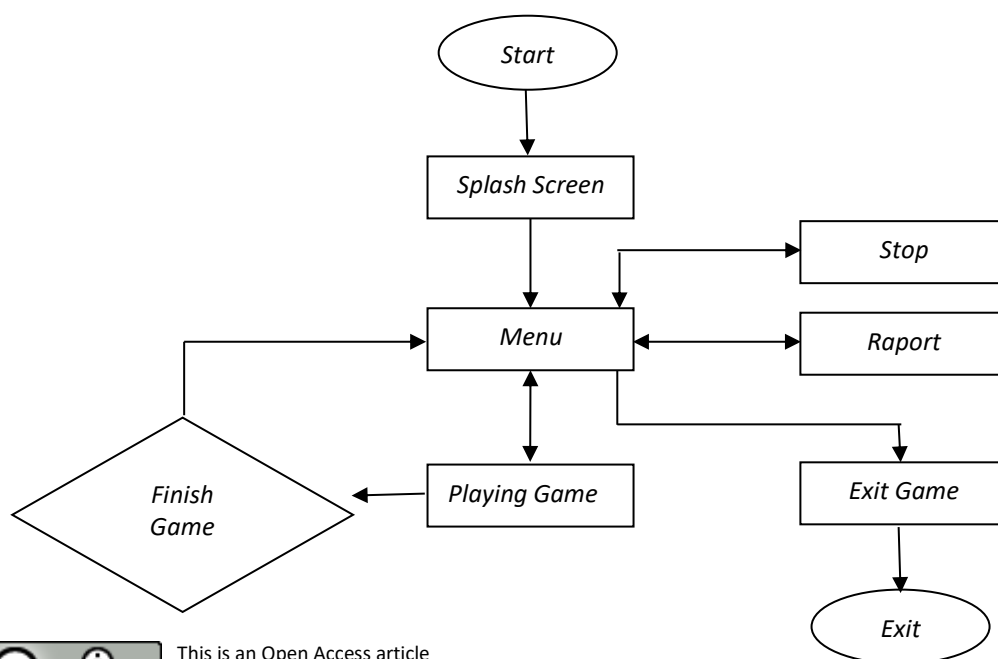
Picture 6. KEPO's Shop Appearance



Picture 7. Credit Menu Appearance



Skema 1KEPO's Game Flowchart



Conclusion

Duration and score of using KEPO Games have no relationship with the knowledge, attitudes, and skills of adolescents in understanding reproductive health but there is a significant improvement after being given the KEPO Game.

Action research is needed in further research to develop other factors that influence knowledge, attitudes and skills adolescent reproductive health and the improvement of research methods with mix of methods in order to KEPO game can be used as a good learning media for adolescents reproductive health.

KEPO game can be used as complementary learning media after teenagers has counseling about reproductive health. This game is need to make an Artificial Intelligence in each question content, improvement of time calculation in the "replay" menu, pedagogical element in each question content.

References

- Acquah, E. O., & Katz, H. T. (2020). Digital game-based L2 learning outcomes for primary through high-school students: A systematic literature review. *Computers & Education*, 143, 103667. <https://doi.org/https://doi.org/10.1016/j.compedu.2019.103667>
- Bandura, A. (2001). SOCIAL COGNITIVE THEORY: An Agentic Perspective. *Annual Review of Psychology*, 52, 1–26.
- Bengtsson, M. (2016). How to plan and perform a qualitative study using content analysis. *NursingPlus Open*, 2, 8–14. <https://doi.org/https://doi.org/10.1016/j.npls.2016.01.001>
- Boyle, E. A., Hainey, T., Connolly, T. M., Gray, G., Earp, J., Ott, M., Lim, T., Ninaus, M., Ribeiro, C., & Pereira, J. (2016). An update to the systematic literature review of empirical evidence of the impacts and outcomes of computer games and serious games. *Computers & Education*, 94, 178–192. <https://doi.org/https://doi.org/10.1016/j.compedu.2015.11.003>
- Carroll, A., & Perolini, A. C. (2017). Human Rights References to Sexual and Reproductive Health and Rights. *ILGA Europe, December*.
- Chandra-Mouli, V., Camacho, A. V., & Michaud, P.-A. (2019). WHO guidelines on preventing early pregnancy and poor reproductive outcomes among adolescents in developing countries. *The Journal of Adolescent Health : Official Publication of the Society for Adolescent Medicine*, 52(5), 517–522. <https://doi.org/10.1016/j.jadohealth.2013.03.002>
- Chandra-mouli, V., Sc, M., Camacho, A. V., D, M., Michaud, P., & D, M. (2013). WHO Guidelines on Preventing Early Pregnancy and Poor Reproductive Outcomes Among Adolescents in Developing Countries. *Journal of Adolescent Health*, 52(5), 517–522. <https://doi.org/10.1016/j.jadohealth.2013.03.002>
- Dixon-Mueller, R. (2008). How young is 'too young'? Comparative perspectives on adolescent sexual, marital and reproductive transitions. *Studies in Family Planning*, 39, 247–262.



- Flick, U. (2019). An introduction to qualitative research, 4th ed. In *An introduction to qualitative research, 4th ed.* (pp. xxi, 505–xxi, 505). Sage Publications Ltd.
- Goldman, J., & Collier-Harris, C. (2018). School-based reproductive health and safety education for students aged 12–15 years in UNESCO's (2009) International Technical Guidance. *Cambridge Journal of Education*, 42, 445–461. <https://doi.org/10.1080/0305764X.2012.733343>
- Goldstein, J. R. (2011). A secular trend toward earlier male sexual maturity: Evidence from shifting ages of male young adult mortality. *PLoS ONE*, 6(8). <https://doi.org/10.1371/journal.pone.0014826>
- Graesser, A., Chipman, P., Leeming, F., & Biedenbach, S. (2009). *Deep learning and emotion in serious games*. In: Ritterfeld, U., Cody, M., Vorderer, P. (Eds.), *Serious Games, Mechanisms and Effects*. Routledge, New York and London.
- Kato, P. M. (2020). Video Games in Health Care: Closing the Gap. *Review of General Psychology*, 14(2), 113–121. <https://doi.org/10.1037/a0019441>
- Kemenkes. (n.d.). *Modul pelatihan Pelayanan Kesehatan Peduli Remaja (PKPR) bagi tenaga kesehatan*.
- Kemenkes. (2012). *Survei Demografi dan Kesehatan Indonesia*.
- Kemenkes. (2014). *Peraturan Menteri Kesehatan Republik Indonesia Nomor 97 Pasal 5*.
- Kemenkes. (2018). *Profil kesehatan Indonesia 2017 Jakarta: kemenkes RI. Diakses pada tanggal 18 Maret 2023*.
- Levine, D. (2021). Using technology, new media, and mobile for sexual and reproductive health. *Sexuality Research and Social Policy*, 8(1), 18–26. <https://doi.org/10.1007/s13178-011-0040-7>
- Lloyd, C. B. (2017). *Among adolescents in developing countries Poverty, Gender, and Youth The Role of Schools in Promoting Sexual and Reproductive*. 6.
- Raj, A., Shankar, L., Dixit, A., Saha, A., Battala, M., Khan, N., Ayyagari, K., Saggurti, N., & Howard, S. (2025). Enhancing Reproductive Health Among Adolescent Girls in India : Results Of An Individualized RCT to Study The Efficacy of The Go Nisha Go Mobile Game. *Reproductive Health*, 1–11. <https://doi.org/10.1186/s12978-025-02005-1>
- Shin, N., Sutherland, L. M., Norris, C. A., & Soloway, E. (2012). Effects of game technology on elementary student learning in mathematics. *British Journal of Educational Technology*, 43(4), 540–560. <https://doi.org/https://doi.org/10.1111/j.1467-8535.2011.01197.x>
- Sianipar, O., Chandra Bunawan, N., Almazini, P., Calista, N., Wulandari, P., Rovenska, N., Djuanda, R. E., Seno, A., Suarhana, E., & Adjie, S. (2016). Prevalensi Gangguan Menstruasi dan Faktor-faktor yang Berhubungan pada Siswi SMU di Kecamatan Pulo Gadung Jakarta Timur Prevalence of Menstrual Disorder and Associated Factors of at High School in Pulo Gadung Subdistrict of East Jakarta. *Artikel Penelitian Maj Kedokt Indon*, 59(7), 308–313.
- Sitzmann, T. (2011). A Meta-Analytic Examination of The Instructional Effectiveness of Computer-Based Simulation Games. *Personnel Psychology*, 64, 489–528.
- Strasburger, V. C., Jordan, A. B., & Donnerstein, E. (2020). Health effects of media on children and adolescents. *Pediatrics*, 125(4), 756–767. <https://doi.org/10.1542/peds.2009-2563>



- Susilana, R., & Riyana., C. (2019). Media pembelajaran. Hakikat, pengembangan, pemanfaatan, dan penilaian. In *Wacana Prima*.
- Wouters, P., van Nimwegen, C., van Oostendorp, H., & van der Spek, E. D. (2013). A meta-analysis of the cognitive and motivational effects of serious games. In *Journal of Educational Psychology* (Vol. 105, Issue 2, pp. 249–265). American Psychological Association. <https://doi.org/10.1037/a0031311>
- Zhao, J., Ordóñez, P., Pablos, D., & Qi, Z. (2012). Computers in Human Behavior Enterprise knowledge management model based on China's practice and case study. *Computers in Human Behavior*, 28(2), 324–330. <https://doi.org/10.1016/j.chb.2011.10.001>

