Optimizing The Snakes and Ladders Game as A Health Education Media for Premarital Couples at Puskesmas Cawas I, Klaten District

Helmi Nurlaili[1*], Henik Istikhomah[2], Dewi Susilowati[3], Dev Raj Paneru[4]

[1,2,3]Poltekkes Kemenkes Surakarta
Indonesia
[4]Pokhara University Nepal
Nepal
✉ helmi.nurlaili@poltekkes-solo.ac.id*
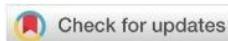
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Abstract

Indonesia's Maternal Mortality Rate is still high with the most common causes in 2023 were hypertension in pregnancy, obstetric hemorrhage, obstetric complications, and other causes. It reveals that before marriage, every individual needs to plan their pregnancy, including getting reproductive health services and reproductive health rights in order to improve health status through maternal health program interventions. Premarital couples are required to attend Premarital Class held by The Ministry of Religious Affairs, Ministry of Health, and the National Population and Family Planning Agency. The midwives provide information of reproductive health by lecturing method. The Snakes and Ladders game is expected to be capable of increasing participation of premarital couples actively so it can elevate their knowledge about reproductive health, pregnancy preparation, anemia, and CED. This community service activity was held on Sunday, March 2, 2025 at Puskesmas Cawas I, Klaten Regency. The tools were banners as game boards and dice. Additional information was conveyed orally with laptop and LCD. Premarital couples had to filling out pre and post questionnaire consist of 10 items. The premarital couples were enthusiastic during the game. Representatives of each group completed the game. Their partner involved by providing answers to the questions they got. Bivariate analysis using Paired T Test shows that ρ value < 0.05. It is concluded that education through Snakes and Ladders game is proven to enhance premarital couples' knowledge about reproductive health, pregnancy preparation, anemia, and CED.

A. Introduction

Reproductive health is a state of complete physical, mental, and social health related to the reproductive system, functions, and processes, not merely free from disease or disability (Permenkes RI, 2025). Reproductive health is targeted by goal 3 of the Sustainable Development Goals (SDGs), which aims to secure healthy lives and promote well-being for all at all ages by ensuring universal access to sexual and reproductive health care, family planning, and education (United Nations, 2025).

The Maternal Mortality Rate (MMR) during 1991 to 2020 was decrease from 390 to 189 per 100,000 live births. This number almost reached the Medium-Term National Development Plan 2024 target, that is 183 per 100,000 live births. However, we still need to accelerate the reduction of MMR to achieve the SGDs target of 70 per 100,000 live births by 2030. MMR in 2023 was 4,482 cases and increased compared to 2022 with 3,572 cases. The most common causes of maternal mortality in 2023 were hypertension in pregnancy, obstetric hemorrhage, obstetric complications, and other causes (Kemenkes RI, 2024a). It

shows that before marriage, every individual needs to plan their pregnancy, including getting reproductive health services and reproductive health rights in order to improve health status through maternal health program interventions.

Reproductive health problems in Indonesia are diverse, one of them is anemia in adolescent girls. The monthly menstrual cycle makes them vulnerable. Anemia can reduce endurance and productivity and risk during pregnancy and will negatively affect the growth and development of the fetus and potentially lead to pregnancy and childbirth complications, including maternal and child mortality. The coverage of blood supplementation tablets for adolescent girls in Indonesia in 2023 is only 78.9% (Kemenkes RI, 2024a).

Another issue is chronic energy deficiency (CED), where nutrient intake is inadequate. CED in adolescents causes problems during pregnancy. Meanwhile, CED in pregnant women risks reducing muscle strength, resulting in prolonged labor, postpartum bleeding, and maternal mortality. Babies who are born are also at risk of fetal death (miscarriage), prematurity, birth defects, low birth weight babies, and infant death. The Indonesian Health Survey in 2023 showed that the prevalence of CED among pregnant and non-pregnant women was 16.9% and 20.6%, respectively (Kemenkes RI, 2024b).

To solve these issues, especially for premarital couples, they need sufficient knowledge and attitudes regarding reproductive health. Brides and grooms must prepare their reproductive health to have a good health status to improve pre-pregnancy health and be able to produce a quality generation (Salekha et al., 2019).

The Ministry of Religious Affairs, the Ministry of Health, and the National Population and Family Planning Agency collaborate in the implementation and optimization of marriage guidance and health services for premarital couples by organizing premarital classes. Every bride and groom has to participate in this activity to fulfill the administrative requirements in registering a marriage (Efendi, 2021; Firdayanti et al., 2021).

In Indonesia, a premarital program is a religious debriefing conducted by the head of the Religious Affairs Office using a lecture method for approximately one hour in a single session. The same method also happens in the premarital class at Puskesmas Cawas I. The midwives deliver information on reproductive health by lecturing.

To make two-way communication, information can be delivered through games. Games can create the atmosphere more fun but still conducive. The participants will feel excitement, socialization, and curiosity. Information provided by games gives them opportunity to repeat, discover, understand, and practice it (Kaparang et al., 2022). The Snakes and Ladders game played by two or more people using dice and boxes, pictures of stairs and snakes. Participants are invited to do and find their own learning outcomes so that they will actively follow it (Wati, 2021).

Based on the problems mentioned, this community service activity aims to optimize the use of Snakes and Ladders game as a health education media for premarital couples at Puskesmas Cawas I, Klaten Regency.

B. Methods

This community service activity was held on Sunday, March 2, 2025 at Puskesmas Cawas I, Klaten Regency, from 09.00 to 11.30 WIB. Health education for premarital couples was delivered using the Snakes and Ladders game. The tools used were banners as the game boards and dice. Additional information was conveyed orally with the help of a laptop and LCD projector. The 12 premarital couples answered pre- and post-questionnaires consisting of 10 multiple-choice questions about reproductive health, pregnancy preparation, anemia, and CED.

Data were analyzed using univariate and bivariate analysis. Univariate analysis was used to explain the characteristics of each respondent presented with frequency and percentage, while bivariate analysis measured the effect of the Snakes and Ladders game on knowledge change of premarital couples using the Paired T Test in SPSS version 21.

C. Results and Discussion

This activity was attended by 12 premarital couples, the head of the health center, a representative of the Office of Religious Affairs of Cawas District, a representative of the Family Planning Field Officer, a midwife coordinator, a clinical instructor, a representative of the health promotion team, and a representative of the nutrition team. The activity began with filling in attendance, opening, introductions, and explanation of the activities. After that, the premarital couples filled out a pretest questionnaire. The team explained the rules before the Snakes and Ladders game began.

This Snakes and Ladders game consists of a board and dice. The board was about 2 x 2 meters. The banner consists of 30 boxes with pictures about reproductive health, pregnancy preparation, anemia, CED, stunting, cardboard boxes, stairs, and snakes. The die was a wooden box and thrown to determine the number of steps for each player.

Figure 1. Premarital couples filled out the pretest questionnaire

Here is the rules:
1. Played by the premarital couple,
2. The representatives of premarital couples take the lottery number and determine who will play the game,
3. The first player throws the dice and steps as many as number on the dice,
4. If the player gets a 6, he/she will play again,
5. The player has to explain the meaning of the picture according the number they stop,
6. If the player stops at the mystery box picture, they will get a question that must be answered. They can ask their partner,
7. The game stops if one player reaches the finish box or the maximum duration is 40 minutes,

There were 12 premarital couples and if the bride/groom came alone, she/he was not in a group. At this activity, groups with odd number had the opportunity to play snakes and ladders. The group representatives stood near the snakes and ladders board while their partners sat watching and helping to answer questions. Each group representative rolled the dice alternately and followed the game procedure until it was finished.

Figure 2. Team explained the rules of the game

Figure 3. The representative of each team played the game

The premarital couples were enthusiastic during the game. Representatives of each group completed the game from start to finish. There was no substitution of players. Their partner involved by providing answers to the questions they got.

The activity ended with explanation of information about the snakes and ladders box that had not been discussed. After that, the participants were asked to filling out the post-test questionnaire.

Figure 4. Photo with all participants of community service

Table 1. The brides' characteristic

Variable	n	%
Age		
16-25 years	8	66.7
26-35 years	4	33.3
Religion		
Islam	10	83.3
Kristen	2	16.7
Income		
<500.000	3	25
500.000-1.000.000	5	41.7
>1.000.000	4	33.3
Insurance participation		
JKN Mandiri	3	25
JKN PBI	9	75
Medical checkup		
Urine Routine Test	12	100
HIV/AIDS	12	100
TBC	12	100
Hemoglobin Test		
Normal	5	41.7
Abnormal	7	58.3
Mid-upper arm circumference		
Normal	12	100
Abnormal	0	0
Fe-tablet consumption		
Yes	2	16.7
No	10	83.3
Reproductive health and pregnancy planning knowledge		
Yes	2	16.7
No	10	83.3

Table 1 uncovers that most premarital couples were 16-25 years old (66.7%), Muslim (83.3%), had a family income of Rp.500,000-1,000,000 (41.7%), had health insurance of JKN PBI (75%), had anemia (58.3%), did not consume Fe tablets (83.3%), and did not know about reproductive health and pregnancy planning (83.3%). While all of them conducted regular medical checkups and had normal mid-upper arm circumference.

Previous studies shows that knowledge can be influenced by several factors. Based on the characteristics of premarital couples on Table 1, age and income are factors associated with knowledge. Age reflects the physical, psychological, and social maturity that affects the learning process. It means that age is one of the factors that influence the capture of information which ultimately affects the increase in knowledge

(Hanifah & Suparti, 2017). The older the age, the more the capacity and mindset will increase. People are mature and have the stability to think and a new pattern of life starting from the age of 21-40 years to 60 years and over (Febryani et al., 2021). A sistematic review study conducted by Machmud et al., (2021) found that income is a driving force behind the health disparities and is directly associated with health literacy. People with lower income are less likely to seek health information or to use health-care professionals as a first source of health information and have greater difficulty understanding information compared to people with higher income (Tanga et al., 2019).

Table 2. Frequency distribution of pre and posttest knowledge among premarital couple

Variable	n	Min	Max	Median	Mean
Pretest	12	3	8	5	5.08
Posttest	12	5	9	7.50	7.42

Table 3. The effect of snakes and ladders game on premarital couple's knowledge

Variable	Mean	Std. Deviation	Std. Error Mean	t	df	Asymp. Sig. (2-tailed)
Pretest-posttest	-2.333	1.614	0.466	-5.007	11	0.000

Table 3 reveals that there is a change in the knowledge of premarital couples before and after participating in the Snakes and Ladders game with a value of $\rho<0.05$. So, there is a significant difference in premarital couples' knowledge between pretest and posttest.

Learning media is very important in the transfer of knowledge. Learning nowadays is no longer teacher-oriented but rather prioritizes participant activeness. In this technological era, the use of media in the learning process is becoming increasingly diverse. Besides that, the paradigm shift from passive learning to active learning makes the role of learning media even more important. As human activities become increasingly busy, they demand efficiency and effectiveness in learning and communicating. Active learning requires a decrease in the dominance of the teacher and is replaced by learning media around students or even learning resources that are also the source of the learning message (Kurniawan, 2017).

Through the Snakes and Ladders game, individuals can understand information or material more easily. Individuals are invited to do and find their own learning outcomes so that they actively carry out the learning. We can say that the Snakes and Ladders game is an engaging learning method because it is done while playing, so the individuals are more enthusiastic. The Snakes and Ladders game media affects individual knowledge and attitudes. It can generate interest when providing health education and increase motivation because there is a competence aspect to win from other groups (Sabila et al., 2021).

Changes in knowledge with the Snakes and Ladders simulation method occur because respondents are invited to utilize all their sensory organs to learn and understand the material presented. In addition, respondents interacted with each other and exchanged information. The information cards and Snakes and Ladders board made participants less bored (Sulistiyawati, 2021).

The Snakes and ladders game health media proved effective in increasing the knowledge of 49 premarital couples about stunting prevention at the Batunadua Health Center, Padang Sidempuan city, with $\rho = 0.000$ (Ritonga et al., 2023). A similar method was also able to improve the knowledge and attitude of 62 premarital couples about stunting prevention at the Religious Affairs Office of Payung Sekaki and Singkarak, Solok Regency. There was an average increase in knowledge and attitude with ρ values of 0.0001 each (Loreza, 2023).

Similar to research conducted by Kaparang et al., (2022) in the Mamboro Health Center area, Palu City, snakes and ladders games were able to increase the knowledge of pregnant women about pregnancy danger signs with a value of $\rho = 0.000$. A similar method was also carried out by Martilova et al., (2023) in community service activities in Dusun V Kampung Baru Kualu, Pekanbaru. There are differences in pre and post test scores on the knowledge of pregnant women and cadres about healthy pregnancy.

The knowledge of pregnant women in Puskesmas Mapane, Poso Regency, has increased after being given education through Snakes and Ladders games. 40 pregnant women got an increase in correct answers after participating in the Snakes and Ladders pregnant women class activity (Longgupa et al., 2020).

The Snakes and Ladders game as health education media was also proven to increase the knowledge of junior high school students in Ternate about how to deal with menstrual pain with a value of $\rho = 0.001$ (Hardianti & Prihatin, 2020).

D. Conclusion

Pregnancy planning education is important to prepare the premarital couples for marriage. The educational method should involve active learning, where participants are directly involved in the learning process. Education through Snakes and Ladders game has been proven to increase their knowledge. The participants seemed enthusiastic during the game and asked questions. We hope that the Snakes and Ladders game learning method can be sustained and aplied to other topics or participants.

E. Acknowledgment

References

Efendi, M. A. (2021). *Kemenag, Kemenkes, dan BKKBN Sinergi Optimalisasi Bimwin dan Layanan Kesehatan Catin*. Kemenag RI. Google Scholar

Febryani, D., Rosalina, E., & Susilo, W. H. (2021). Hubungan antara Pengetahuan, Usia, Tingkat Pendidikan dan Pendapatan Kepala Keluarga dengan Perilaku Hidup Bersih dan Sehat pada Tatanan Rumah Tangga di Kecamatan Kalideres Jakarta Barat. *Carolus Journal of Nursing*, *3*(2), 170–180. Google Scholar

Firdayanti, Ramlan, H., & Rusman, A. D. P. (2021). Analisis karakteristik calon pengantin terhadap kesiapan menjadi ibu di KUA Kota Parepare. *Jurnal Ilmiah Manusia Dan Kesehatan*, *4*(2), 287–298. https://doi.org/10.31850/makes.v4i2.616

Hanifah, L., & Suparti, S. (2017). Hubungan Usia dengan Pengetahuan Remaja Putri tentang Pemeriksaan Payudara Sendiri (SADARI). *Jurnal STIKESMUS*, *8*(2). Google Scholar

Hardianti, R. N., & Prihatin, S. (2020). Pengaruh Media Permainan Ular Tangga terhadap Pengetahuan Siswi SMP 6 Ternate tentang Cara Mengatasi Nyeri Haid. *Jurnal Kebidanan*, *9*(2), 130–135. https://doi.org/10.35890/jkdh.v9i2.158

Kaparang, M. J., Baharta, F., & Lisnawati. (2022). Pelaksanaan Metode Ular Tangga pada Kelas Ibu Hamil Terhadap Peningkatan Pengetahuan Ibu tentang Tanda Bahaya Kehamilan. *Jurnal Bidan Cerdas*, *4*(1), 62–68. https://doi.org/10.33860/jbc.v4i1.763

Kemenkes RI. (2024a). *Profil Kesehatan Indonesia 2023*. Kemenkes RI. https://kemkes.go.id/id/profil-kesehatan-indonesia-2023

Kemenkes RI. (2024b). Survei Kesehatan Indonesi (SKI) Tahun 2023 dalam Angka. In *Kemenkes RI*.

Permenkes RI Nomor 2 Tahun 2025 tentang Penyelenggaraan Upaya Kesehatan Reproduksi, (2025).

Kurniawan, M. R. (2017). Analisis Karakter Media Pembelajaran Berdasarkan Gaya Belajar Peserta Didik. *JINoP (Jurnal Inovasi Pembelajaran)*, *3*(1), 491–506. https://doi.org/10.22219/jinop.v3i1.4319

Longgupa, L. W., Nurfatimah, & Siregar, N. Y. (2020). Pelaksanaan Permainan Ular Tangga dalam Kelas Ibu Hamil di Kecamatan Poso Pesisir Kabupaten Poso. *Poltekita: Jurnal Pengabdian Masyarakat*, *1*(1), 23–28. https://doi.org/10.33860/pjpm.v1i1.73

Loreza, D. (2023). *Efektivitas Media Ular Tangga terhadap Peningkatan Pengetahuan dan Sikap Calon Pengantin tentang Pencegahan Stunting di KUA Payung Sekaki dan KUA Singkarak, Kabupaten Solok* [Poltekkes Kemenkes Padang]. Google Scholar

Machmud, P. B., Glasauer, S., Gottschick, C., & Mikolajczyk, R. (2021). Knowledge, Vaccination Status, And Reasons For Avoiding Vaccinations Against Hepatitis B In Developing Countries: A Systematic Review. *Vaccines*, *9*(6), 1–26. https://doi.org/10.3390/vaccines9060625

Martilova, D., Hayati, S., Amran, H. F., Safitri, Y., Kirana, D. N., Ingelia, & Dale, D. S. (2023). Media Permainan Ular Tangga dan Puzzle Sebagai Upaya Peningkatan Pengetahuan Ibu Hamil dan Kader Tentang Kehamilan Sehat di Dusun V Kampung Baru Kualu. *BERNAS: Jurnal Pengabdian Kepada Masyarakat*, *4*(3), 1751–1757. https://doi.org/10.31949/jb.v4i3.5145

Ritonga, M., Harahap, A., & Ahmad, H. (2023). Pengaruh Pola Asuh Menggunakan Media Permainan Ular Tangga terhadap Pencegahan Stunting pada Calon Pengantin di Wilayah Kerja Puskesmas Batunadua Kota Padang Sidempuan. *MPPKI*, *6*(6), 1227–1234. https://doi.org/10.56338/mppki.v6i6.3528

Sabila, S., Nabila, K., Ayunda, S. S., & Khasanah, N. (2021). Pengaplikasian Game Edukasi (Ular Tangga) untuk Meningkatkan Konsentrasi terhadap Minat Belajar Peserta Didik. *Prosiding SEMAI Seminar Nasional PGMI*, 499–518. Google Scholar

Salekha, D. F., Nugraheni, S. A., & Mawarni, A. (2019). Pengetahuan dan sikap tentang kesehatan reproduksi yang mengikuti dan tidak mengikuti SUSCATIN (Studi pada calon pengantin yang terdaftar di KUA Kabupaten Grobogan). *Jurnal Kesehatan Masyarakat*, *7*(4), 675–682. https://doi.org/10.14710/jkm.v7i4.25005

Sulistiyawati, I. (2021). Analisa Metode Simulasi Ular Tangga Terhadap Pengetahuan Dan Sikap Ibu Hamil Tentang Pencegahan Stunting. *Jurnal Kebidanan Akademi Kebidanan Jember*, *5*(1), 28–35. Google Scholar

Tanga, A. T., Teshome, M. A., Hiko, D., Fikru, C., & Jilo, G. K. (2019). Sero-Prevalence Of Hepatitis B Virus And Associated Factors Among Pregnant Women In Gambella Hospital, South Western Ethiopia: Facility Based Cross-Sectional Study. *BMC Infectious Diseases*, *19*(1), 1–7. https://doi.org/10.1186/s12879-019-4220-z

United Nations. (2025). *The 17 Goals*. United Nations. Google Scholar

Wati, A. (2021). Pengembangan Media Permainan Ular Tangga untuk Meningkatkan Hasil Belajar Siswa Sekolah Dasar. *Mahaguru: Jurnal Pendidikan Guru Sekolah Dasar*, *2*(1), 68–73. https://doi.org/10.33487/mgr.v2i1.1728