



THE INFLUENCE OF GAMES USING ROLLING BALL MEDIA ON THE KNOWLEDGE AND ATTITUDES OF ADOLESCENTS REGARDING STUNTING PREVENTION AT SMA NEGERI 09 BENGKULU CITY

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Abstract

Stunting is a condition of failure to thrive in children under five years old due to chronic malnutrition and recurrent infections, especially in the first 1000 days of life. A total of 81 toddlers in the city of Bengkulu experienced stunting with a prevalence of 3.4% and the second most frequently found in the Beringin Raya Community Health Center were 17 stunted toddlers with a prevalence of 1.9%. The aim of this research is to determine the influence of games using the Rolling Ball game media on teenagers' knowledge and attitudes about stunting prevention at SMA Negeri 09 Bengkulu City. This type of research is pre-experimental with a one group pretest-posttest design. The sample in this research was 33 students of SMA Negeri 09 Bengkulu City using a simple random sampling technique with sampling using the lameshow formula. Data analysis in the study used the Wilcoxon signed rank test. The research results showed that the average knowledge was 5.13 before and after 8.88, while the average attitude was 22.87 before and after 36.78. The results of the Wilcoxon signed rank test obtained $p\text{ value} = 0.000 < 0.005$, which shows that there is an influence of gaming media. Rolling Ball on teenagers' knowledge and attitudes about stunting prevention at SMA Negeri 09 Bengkulu City. It is hoped that this research can be used as an alternative health intervention option for health promoters in conveying information about stunting prevention, so that it can prevent stunting.

Keywords: Attitude, Knowledge, Rolling Ball, Stunting

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INTRODUCTION

According to the World Health Organization (WHO), there are five regions where stunting is most common, including Indonesia. In Southeast Asia (36.4%), according to 2019 WHO data shows that 21.3% of children under the age of 5 are affected by stunting. This is less than 50% of children under 5

years of age who are affected by stunting, and 54% of the 144 million children under five who are stunted are in Asia (UNICEF, WHO, 2019). Adolescent are vulnerable to nutritional problems because they experience rapid growth and physiological and mental changes. As expectant mothers, teenagers must be educated about stunting.

This is done to prepare prospective mothers with knowledge about prevention through proper nutrition in the adolescent stage, reproductive age, pregnancy and after giving birth, as well as how to care for children. Identifying, avoiding, and overcoming nutritional problems including weighing regularly, giving exclusive breast milk to babies from birth to six months of age (Exclusive Breast Milk), consuming different food menus, using iodized salt, and taking nutritional supplements as recommended by a doctor (Ministry of Health RI, 2022).

Minister of Health Regulation Number 51 of 2016 concerning Nutritional Supplementation Product Standards covers types of food supplements such as vitamin A capsules, blood supplement tablets (TTD), additional food for pregnant women, toddlers and school-aged children, complementary foods for breast milk, and multi-vitamin powder and minerals. The level of energy intake, duration of illness, birth weight, mother's education level, and family income level are other factors that cause high stunting rates, levels of protein intake and exclusion of breast milk (ASI). In the short term, stunted children have negative effects, such as delays in brain development, intelligence, impaired physical growth and metabolic disorders.

One effort to change and increase knowledge in a relatively short time is health education. Health education is the learning process of a person, group, or community from not knowing about the value of health to knowing and being able to overcome health problems. This health education can increase understanding of nutrition and health. Teenagers must have counseling media, media in conveying information about health education functions as a tool to facilitate communication and disseminate information widely. Android-based applications are the main choice for disseminating information because they are able to disseminate information in a relatively short time (Fitriami & Galaresa, 2021).

Rollingball media is an interactive media for overcoming stunting which explains the categories of stunting knowledge consisting of understanding, causes, impacts and prevention stunting. Stunting Rollingball is a non-digital media so it is easy to use. An attractive box with an explanation in the box makes it easy for readers to understand.

Data from the Indonesian Ministry of Health (2022) The prevalence of stunting in Bengkulu province reached 4.1%. According to data from the Health Department (Health Service). According to SSGI data (2022), the prevalence in Bengkulu province reached 19.8%. In 2022, Bengkulu City found that 0.8% experienced stunting. At the Beringin Raya community health center, the highest rate was 1.9%

experiencing stunting. One of the causes of stunting is early marriage in Indonesia, one in nine girls gets married before the age of 18 (Central Statistics Agency, 2020).

Adolescents who marry too early result in specific risks for babies, such as low birth weight (LBW), prematurity, asphyxia and stunting. Therefore, adolescent girls must be physically prepared (have healthy nutrition, avoid anemia), understand toddler development and stunting (Larasati et al., 2018). Nutritional problems as toddlers or preschoolers cause stunting in teenagers. If a toddler experiences malnutrition, which indicates stunting, the teenager's growth and development will be hampered. In the long term, stunting has an impact on the health of adolescent girls with short stature, increased risk of obesity, and decreased reproductive health.

The impact of stunting can cause a decrease in achievement and learning ability, as well as a decrease in work ability and capacity. Stunting increases the risk of obstetric complications, disruption of childbirth in women, and loss of physical abilities in adolescent boys and girls (Soliman et al., 2021). The adolescent phase is the last opportunity to treat growth disorders that occurred during childhood. In addition, this will support growth as much as possible to stop the cycle of nutritional disorders such as stunting between generations.

The working area of the Beringin Raya Community Health Center has 2 high schools consisting of 2 states. One of them is SMA Negeri 09. The initial survey conducted by researchers at SMA Negeri 09, Bengkulu City, by conducting questions and answers to students regarding stunting, found that 6 students said they did not know what stunting was, while 4 others said that stunting was short. It is important to provide education about stunting from adolescence because many teenagers do not know about stunting and the factors that cause it. Based on the above phenomenon, researchers want to investigate "The influence of games using rolling ball media on teenagers' knowledge and attitudes regarding stunting prevention at SMA Negeri 09 Bengkulu City.

MATERIALS AND METHODS

This type of research is pre-experimental with a one group pretest-posttest design. The sample in this research was 33 students of SMA Negeri 09 Bengkulu City using a simple random sampling technique with sampling using the lameshow formula. The sample inclusion criteria in this study are as follows, be in class X, willing to be a respondent, In good health. Students who attend the pre-test and post-test Research data analysis used Wilcoxon signed rank test.

RESULTS AND DISCUSSION

Results

Table 1: Knowledge before and after being given the Rolling Ball media to prevent stunting among female students at SMA Negeri 09 Bengkulu City.

Variable	N	Mean \pm SD	Min-Max
Knowledge (pretest)	33	4.94 \pm 0.952	30-70
Knowledge (posttest)	33	8.91 \pm 0.668	80-100

Based on table 1, it shows that before being given the intervention, the average knowledge was 4.94 with the lowest score being 3 and the highest being 7, the standard deviation was 0.952 and the mean ranged between 4.61-5.27. Meanwhile, after being given the intervention, the average knowledge was 8.91 with the lowest score being 8 and the highest being 10, the standard deviation was 0.668 and the mean ranged between 8.68-9.14.

Table 2: Attitudes before and after being given the Rolling Ball media to prevent stunting among female students at SMA Negeri 09 Bengkulu City.

Variable	N	Mean \pm SD	Min-Max
Attitude (pretest)	33	23.09 \pm 2.644	20-29
Attitude (posttest)	33	36.18 \pm 2.657	29-40

Based on table 2, the mean attitude score data obtained before the intervention was given, the mean attitude was 23.09 with the lowest score being 20 and the highest being 29, the standard deviation was 2.644 and the mean range was between 22.17-24.01 or less. Meanwhile, after being given the intervention, the mean attitude was 36.18 with the lowest score being 29 and the highest being 40, the standard deviation was 2.657 and the mean range was between 35.25-37.10, good.

Discussion

Knowledge of Teenagers at SMA Negeri 09 Bengkulu City

Knowledge before the intervention was carried out with the Rolling Ball game media and after the intervention was carried out increased. This is in line with the results of research conducted by Ayu (2020) showing that there is a difference in knowledge of using the rolling ball game media before the intervention and after the intervention. Likewise, in research conducted by Putri (2020), there were differences in teenagers' knowledge before and after being given the rolling ball game as media, as shown by the difference in pretest and posttest averages. Research conducted by Dina (2021) showed that there was an increase in students' knowledge about balanced nutrition before being given the rolling ball game media intervention and after the intervention was carried out.

This research contained 10 knowledge questions about stunting prevention, after being given a game with the Rolling Ball game media there were still many wrong answers to the knowledge question in question item number 2 regarding what is not a factor causing stunting in toddlers is (73.5%), question item number 3, namely regarding the long-term impact of stunting, is (67.6%) and question item number

9, stunting only becomes visible when the child is older (64.7%). In question number 2, it is because the choice options make respondents hesitate to choose the correct answer, in question number 3, it is because the respondent was not careful in reading the question so that it affects when answering, while in question number 9 there is a choice option that is almost the same because they don't understand, but Almost overall there was an increase in answers from before to after being given the game using the Rolling Ball game as media.

According to Puspitaningrum et al (2017), increasing adolescent knowledge is also influenced by the distance between the intervention time and the posttest. This is because it is related to memory in storing information (retention). The shorter the time between the intervention and the post test, the better the post test results will be because the memory is still strong. If the longer the gap between the intervention time and the post test, a person's retention will not last long. As much as 54% of the material will be remembered after 1 day, 35% of the material will be remembered after 7 days, 21% of the material will be remembered after 14 days, and 8% of the material will be remembered after 14 days.

Based on this, it can be concluded that after 14 days, 90% of students almost forgot the information they had obtained. Knowledge is the result of human curiosity about something and the desire to improve the dignity of life so that life becomes better and more comfortable which develops as an effort to fulfill human needs both now and in the future (Ariani, 2014). Another factor that can influence a person's knowledge is access to information and experience. Access to information is a medium that can provide information and knowledge to a person. The more information you access, the more knowledge you will gain (Ariani, 2014).

Increased knowledge can also be influenced by several factors, such as education, personal experience or from other people, the environment and mass media (Ariani, 2014). Using media in providing health education aims to attract a person's attention to a problem or to the information that will be provided, so that it can improve a person's knowledge and attitudes (Machfoed I, 2005). Health education is an activity that helps individuals, groups or communities to improve abilities in the form of knowledge, attitudes and psychomotor skills to achieve optimal health (Ariani, 2014).

Attitudes of Adolescents at SMA Negeri 09 Bengkulu City

Attitudes before the intervention with the Rolling Ball game media and after the intervention were carried out increased. The results of the attitude research before being given the game with the Rolling Ball game medium improved greatly. This is in line with the results of research conducted by Ayu (2020) showing differences in attitudes towards using the rolling ball game media before the intervention and attitudes after the intervention showed an improvement. The results of Putri's research (2020) showed

that teenagers' attitudes before the intervention and after the intervention using the rolling ball game media had increased.

The results of Dina's research (2021) show that there are differences in students' attitudes before being given intervention through the rolling ball game media and after being given intervention through the rolling ball game media. This research contained 10 attitude statements, 5 of which were positive statements. There are attitude statements with low scores after being given the Rolling Ball game media, namely in positive statement number 1 balanced nutrition must be applied in everyday life (5.9%), negative statement number 2 children with stunting will have a bright future (0.0%). This is due to the respondents' lack of understanding regarding nutritional needs.

Nuryani's 2019 research results show that teenagers have low knowledge regarding nutrition. As many as 63.9% of teenagers lack knowledge. Research conducted by Refky et al 2024 on students showed that most of the respondents' knowledge was in the poor category at 39.33%. Low knowledge of balanced nutrition among adolescents can be caused by a lack of sources of information about balanced nutrition both in the environment where adolescents live and at school. After being given a game with the Rolling Ball game media, almost all of them experienced an increase in the average attitude score from before to after.

Attitude is a person's closed reaction to a stimulus or object. Attitude is simply the tendency to act towards an object in a certain way. Attitude is a person's view, opinion, response or assessment and also feelings towards a stimulus or object accompanied by a tendency to act (Notoatmodjo, 2012). The formation or factors that influence attitudes are personal experience, the influence of other people who are considered important, the influence of culture, mass media, educational institutions, religion, and emotional factors. Attitude is a person's closed response to a stimulus or object, and involves the relevant opinion and emotional factors (Azwar, 2013).

Attitudes can also be influenced by knowledge. According to Walgito (2003), several factors influence a person's attitude, one of which is knowledge. The knowledge possessed by respondents is the basis for determining attitudes. If the respondent's knowledge is good then the respondent's attitude will be positive, and vice versa if the respondent's knowledge is bad then the respondent's attitude can also be negative.

The Influence of ROLLING BALL Media on Knowledge and Attitudes About Stunting in Adolescents at SMA Negeri 09 Bengkulu City

The results of this research show that rolling ball media can increase the average value of knowledge and attitudes regarding stunting prevention, where previous research has experienced an increase both before and after the intervention. The knowledge result before the intervention was 4.94, while the

average after the intervention was given was 8.91 with a mean difference of 3.97. Then the average attitude before the intervention was 23.09 and after the intervention using rolling ball media was 36.18 with a mean difference of 13.09.

This proves that providing ROLLING BALL game media can improve or change teenagers' attitudes. In line with Putri's research (2020), there is a difference in the average knowledge before and after balanced nutrition education using rolling ball media. It can be concluded that health education using the rolling ball game has a significant influence (Ulfiatun, 2020). One factor that influences a person's knowledge and attitudes is the media. Media functions to make it easier for someone to understand information that is considered complicated. This increase in knowledge and attitude shows success in providing games with Rolling Ball media.

Apart from that, improved attitudes are also due to increased knowledge. This increase in knowledge and attitudes is obtained from the learning process by utilizing all the senses, where 13% of knowledge is obtained through the sense of hearing and 35-55% through the senses of hearing and sight. This is in accordance with the aim of providing nutrition education, namely to produce increased knowledge which will influence changes in attitudes and behavior (Nurul, 2016). Adolescence is a transition period from childhood to adulthood. One of the characteristics of someone who has entered adolescence is the emergence of curiosity about information. Usually this information is obtained from books, magazines, tabloids, even the internet and also gaming media.

It can be seen that game media is one of media that teenagers are interested in obtaining information. The health promotion media used in this research is the rolling ball game media. The Rolling ball game is an educational board game that is well known and is often played when gathering with family or friends anywhere and anytime (Rizkillah, 2017).

CONCLUSION

Based on the research objectives and discussion results obtained from health promotion with educational games using rolling ball as a media on the knowledge and attitudes of teenagers regarding stunting prevention at SMA 09, Bengkulu City, the researchers drew the following conclusions:

1. Rolling ball media has been created for counseling using game methods to improve teenagers' knowledge and attitudes.
2. Adolescents' knowledge before being given intervention through Rolling Ball media was still lacking and after being given the intervention increased.
3. Teenagers' attitudes before being given intervention through Rolling Ball media were still low and after being given the intervention increased.

4. Knowledge and attitudes of adolescents regarding preventing stunting using the rolling ball game media before and after being given the intervention increased.

REFERENCES

- Afrisah, K., Febria, C., & Mariyona, K. (2022). Description of the Level of Mother's Knowledge Regarding the Nutritional Status of Toddlers in Kenagarian Tanjung Bungo, Suliki District, Limapuluh Kota Regency. *Hero University Nursing Journal*, 6(1), 23–30. <http://journal.universitaspahlawan.ac.id/index.php/ners>
- Anwar, S., Winarti, E., & Sunardi, S. (2022). Systematic Review of Risk Factors, Causes and Impact of Stunting in Children. *Journal of Health Sciences*, 11(1), 88. <https://doi.org/10.32831/jik.v11i1.445>
- Citrakesumasari, C., Kurniati, Y., Syam, A., Salam, A., & Virani, D. (2020). Prevention of Stunting Through Empowerment of PKK Cadres, Barebbo District in Bone Regency. *Prevention of Stunting Through Empowerment of Family Welfare Program Cadres in Barebbo District in Bone Regency. Panrita Abdi Journal*, 4(3), 322–327.
- Damayanti, A. A. (2021). The influence of health promotion on maternal knowledge regarding stunting in Tanjung Wangi village in 2021. The influence of health promotion on maternal knowledge regarding stunting in Tanjung Wangi village in 2021 Thesis, 1–24.
- Darsini, Fahrurrozi, & Cahyono, E. A. (2019). Knowledge; Review Article. *Journal of Nursing*, 12(1), 97.
- Handayani, H., Mamlukah, & Suparman, R. (2023). The Influence of Health Promotion through Video and Leaflet Based Media on the Knowledge and Attitudes of Saka Bakti Husada Cadres in Stunting Prevention in Sukarame District during the Covid-19 Pandemic in 2022. *Information Media*, 19(2), 70–76. <https://doi.org/10.37160/mijournal.v19i2.126>
- Kaban, N. B., & Sotirus, N. Y. (2022). Stunting in Toddlers Judging from mother's knowledge. *Flora Stick Journal*, 15(2), 1–4.
- Katulistiwa, P., & Palu, Mothers' Knowledge About Stunting Prevention in Toddlers in North Tatura Kota District. (2021). **Niswa Salamung*, 2(1), 44–49.
- Khairiyati, R. &. (2014). Stunting 1. *Journal of Chemical Information and Modeling*, 53(11), 1689–1699.
- Indonesian Ministry of Health. (2019). Indonesian Health Profile in 2019. In Ministry of Health, Republic of Indonesia (Vol. 42, Issue 4). <https://pusdatin.kemkes.go.id/resources/download/pusdatin/profil-kesehatanindonesia/Profil-Kesehatan-indonesia-2019.pdf>, accessed on 14 September 2021.
- Decree of the Minister of Health of the Republic of Indonesia Number. 2 of 2020. Child Anthropometric Standards. Jakarta: Indonesian Ministry of Health. http://hukor.kemkes.go.id/uploads/produk_law/PMK_No__2_Th_2020_ttg_Standar_Antropometri_Anak.pdf, accessed 10 September 2021.
- Kumun, P., Correlative, D., Kumun, P., Sampling, R., Tau, K., Kumun, P., Kumun, P., & Kumun, P. (2022). Schizophrenia Sufferers in the Kumun Health Center Working Area in 2022 Ade Irawan, Sarniyati, Riris Friandi Literature Review Schizophrenia is a serious mental disorder

characterized by a decrease or inability to communicate, disruption of reality (hallucinations. Proceedings, 1(2), 705–713.

- Lestari, D. E., Haryani, T., & Igiyany, P. D. (2021). Effectiveness of Leaflet Media to Increase Female Students' Knowledge About Awareness. *Indonesian Journal of Public Health Research and Development*, 2(2), 148–154. <https://doi.org/10.15294/jppkmi.v2i2.52431>.
- Mawarni, L. (2019). The Influence of Health Education Using Flipchart Media on Mothers' Knowledge and Attitudes About Stunting in the Sp Health Center Work Area. Padang, Oki Regency. 17–30.
- Meiningsih, S. (2021). Rolling Ball - Learning Cell in Learning to Improve Students' English Writing Skills. *Journal of Pedagogy*, 8(2), 190. <https://doi.org/10.33394/jp.v8i2.3511>.
- Basic Health Research. 2018. Jakarta: Indonesian Ministry of Health.
- Sewa, R., Tumurang, M., & Boky, H. (2019). The Influence of Health Promotion on Knowledge and Attitudes with Stunting Prevention Measures by Posyandu Cadres in the Working Area of the Bailang Community Health Center, Manado City. *Journal of PublicHealth*, 8(4), 80–88. <https://ejournal.unsrat.ac.id/index.php/kemas/article/view/23968/23615>.
- Simbolon, D. and Batbual, B. (2019). Prevention of Stunting in the First 1000 Days of Life Through Specific Nutritional Interventions in Pregnant Women with Chronic Energy Deficiency. Yogyakarta: Deepublish. accessed 05 October 2021.
- Smartcards, E., Improve, D., Practice, D. A. N., Select, D., & Snacks, P. (2016). The Effect of Smartcards in Increasing Knowledge, Attitudes, and Practices in Choosing Snack Foods. *Journal of Health Education / Association for the Advancement of Health Education*, 1(1), 85–90.
- Smith, V., Devane, D., Begley, C. M., Clarke, M., Research, B. M., Surahman, Rachmat, M., Supardi, S., Saputra, R., Nuryadi, Tutut Dewi Astuti, Endang Sri Utami, Martinus Budiantara, Sastroasmoro, S., Çelik, A., Yaman, H., Turan, S., Kara, A., Kara, F., ... Hastono, S. P. (2017).
- Stunting, P., Masa, D. I., Anak, P., Tk, S., & Harapan, K. (2022). using direct nutritional status measurements using anthropometric assessments. One of prevention. 2(9), 2899–2906.
- Suparyanto and Rosad. (2020). Description of Mother's Nutritional Knowledge and Parenting Patterns on Stunting Events. Suparyanto and Rosad, 5(3), 248–253.
- Tampubolon, L. (2019). The Influence of Nutrition Education using Comic Media on Knowledge and Attitudes of Young Women about the First 1000 Days of Life (HPK) at Nusantara Private High School, Lubuk Pakam. <http://repo.poltekkes.medan.ac.id/jspui/bitstream/123456789/1781/1/skrip%20lena%20.pdf>, accessed 05 October 2021.
- Yuhansyah, M. (2019). Description of Mothers' Level of Knowledge about Nutrition for Toddlers at Upt Youth Health Center, Samarinda City. *Borneo Nursing Journal*, 1(1), 76–82.
- Yulianti, S., & R, D. T. (2020). Stunting and Motor Development of Toddlers in the Working Area of the Kemumu Community Health Center, North Bengkulu Regency. *College Journal of Nutrition*, 9(1), 1–5. <https://doi.org/10.14710/jnc.v9i1.24530>