

Education Model based on Gamification through Exclusive Breastfeeding Quartet Card Game to Improve Behavior and Self-Efficacy of Breastfeeding Mothers

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Abstract:- Exclusive breastfeeding is given for six months as a global strategy to increase infants' growth, development, health, and survival of infants and optimize developmental immunity and growth. The breastfeeding process is also related to the mother's self-efficacy. The use of breastfeeding quartet cards can clarify a problem in the picture because it will be the same as the subject and can make breastfeeding mothers interested in reading and doing it correctly in breastfeeding patterns to their babies. Education using the quartet card media is expected to change the behavior and self-efficacy of breastfeeding mothers. To produce a gamification-based educational model through the exclusive breastfeeding quartet card game to improve the behavior and self-efficacy of breastfeeding mothers. This study uses a quasi-experiment with a pre and post-test approach with a control group design. A sample of 36 respondents divided into the intervention group would be given eight treatments by providing education using a breastfeeding quartet card game for three weeks. While the control group would only receive a questionnaire and no additional treatment. The results of the study with gamification-based educational interventions using quartet card games could increase knowledge (52.4 %), attitudes (35.2%), practice (90.11%), and self-efficacy (26.7%); The results of the statistical analysis of the comparison between before and after the occurrence of significance with p value = 0.000 on all dependent variables; while the comparison between the treatment group and control for knowledge p value = 0.021, attitude p value = 0.026, practice p value = 0.001, and self-efficacy p value = 0.035. The difference in the increase was higher in the intervention group than in the control group. The gamification-based educational model through the exclusive breastfeeding quartet card game was appropriate to use to improve maternal behavior and self-efficacy.

Keyword:- The Gamification, based educational model , exclusive breastfeeding, quartet card game, maternal behavior, self-efficacy.

I. INTRODUCTION

Exclusive breastfeeding (ASI) is given for six months as a global strategy effort to increase the growth, development, health and survival of infants.¹ WHO targets at least 50% in 2025 for the first 6 months of babies so that there is an increase in the number of babies getting exclusive breastfeeding.¹ Breastfeeding can provide all the nutritional and health needs of babies, contains antibodies, and is also safe that can protect against germs, both invisible germs such as diarrhea and pneumonia.² The provision of exclusive breastfeeding for six months which can be continued until the age of 2 years, in addition to adequate complementary feeding (MP ASI), is proven to be one of the effective interventions that can reduce the IMR (Infant Mortality Rate) due to malnutrition.¹ According to WHO, breastfeeding can be an efficient way of improving a child's health and survival. Around 820,000 children's lives would be saved each year if breastmilk were increased to universal levels.¹ WHO 2017 states that only 40% of exclusively breastfed babies are less than 6 months old.³ National Basic Health Research in 2018 stated that exclusive breastfeeding was 68.74% for infants and 37.3% for infants aged up to five months.⁴

Kuantan Singingi Regency, Riau province, in 2019, stated that the coverage of exclusive breastfeeding was 68.4% of exclusively breastfed babies. In 2020 the coverage of exclusive breastfeeding was 75.1%; for the percentage of infants who passed exclusive breastfeeding, 33.7%, the data showed a slight increase in exclusive breastfeeding and those who graduated. Cerenti Health Center is the lowest percentage of exclusive breastfeeding at 42.7%. From these sources, there is still a lack of exclusive breastfeeding for babies, so it needs maximum efforts to reduce the lack of breastfeeding rates for babies in Indonesia.

The factors that cause a mother to not give a baby until six months exclusively, after being identified, were found in the mother's behavior group. This is because the mother feels natural pain when breastfeeding her baby, and also, the milk production is not smooth on the other hand, the lack of support from her husband or closest family to give the exclusive baby breastfeeding.⁵ Previous research at the Public Health Center where it was found that on the first

day, there was no breastfeeding, so mothers were increasingly worried about the lack of breast milk production, one of the reasons was that mothers lacked knowledge of how to breastfeed properly.⁶

Health education using interesting media will be an effort to improve breastfeeding mothers' skills about breastfeeding. Providing game-based education will be more fun. Several health education media are in the form of booklets, picture media, flashcards, visual media, video media.⁷

The breastfeeding process is also related to the mother's self-efficacy. In this study, there is an effect of self-efficacy on having the intention to breastfeed. This shows that the higher the self-efficacy of pregnant women, the higher their intention to breastfeed their children.⁸ The use of education using quartet card media is expected to change the behavior of breastfeeding mothers.

II. METHODOLOGY

This study uses Research and Development (R&D), in which the design is a quasi-experiment with a pre and post-test approach with a control group design. This research was conducted in the working area of the Kari Health Center and Teluk Kuantan Health Center in May 2022. The respondents were pregnant women, and there were two groups, the first intervention group and the second group, the control group. The total sample in this study from each intervention group and control group was 18 people. Development of game quartet cards as an educational medium in improving maternal behavior and self-efficacy. This method was a research that will produce a product and test whether the product is effective. The variables measured in this study were knowledge, attitudes, practices, and self-efficacy of pregnant women and measurement using a questionnaire. This research has been registered with the Health Research Ethics Commission of the Health Polytechnic of the Ministry of Health Semarang with an ethical clearance number of No. 0436/EA/KEPK/2022.

III. RESULTS

The results consisted of five stages including information collection, model design, expert validation tests and revisions, trials and model results.

A. Information gathering

Collecting information from various journals, it can be concluded that the knowledge and behavior of pregnant women about breastfeeding are still low and needs to be improved because this will look for references to achieve the exclusive breastfeeding program. Efforts need to be made to reduce and overcome these problems, namely focusing on conveying information or education to pregnant women about exclusive breastfeeding through health education for pregnant women.

The selection of health education must be effective and easily accessible. In accordance with current developments, the selection of methods in health education leads to an easy-to-reach method, namely the game method

and this method will make pregnant women more enthusiastic about participating in education when it is carried out in pregnant women's classes.

B. Design

Dale's Cone Experience Modification Design By E. Dale And Behavioral Theory Notoadmojo.

C. Expert Validation

After expert validation, the validation results obtained from 4 expert validators, it is known that the frequency data of breastfeeding counselor experts were 63.5%, media, and image experts 90.5%, media experts 91.7%, material experts for midwifery lecturers 89.4%. The average value of eligibility was 83,775%.

D. Model Test Results

The product trial activity in the form of a Quartet Card was carried out after the revision of the card design was deemed feasible by the validator to continue for research. The results of the normality test of data on attitudes, practices, and self-efficacy before and after treatment in the intervention group and control group showed that the data was normally distributed, namely p value > 0.05, but for practice, it was not normally distributed.

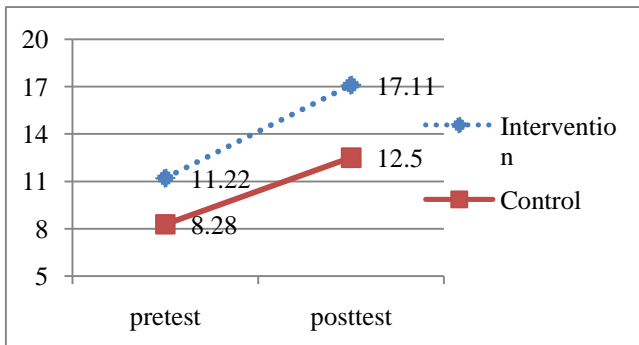
From the results of the analysis, it was found that the homogeneity of the data on the variables of knowledge, attitude, practice, and self-efficacy before and after treatment in the intervention and control groups, the overall data was normally distributed and homogeneous with a P value > 0.05.

a) Knowledge Distribution of Control Group and Intervention Group

The different pretest and post-test tests on the knowledge data of the intervention group and the control group mean a significant difference in the value of knowledge between the intervention group and the control group before and after being given treatment.

In the intervention group, the average knowledge pretest was 11.22; after being given the intervention, the knowledge post-test result was 17.11. There was an increase in knowledge of 5.89. Meanwhile, in the control group, the average pretest value of knowledge was 8.28, and after an increase in knowledge average of 12.50 with an increase in knowledge of the control group of 4.22. So it can be concluded that there was an increase in knowledge in the intervention group than in the positive control group. Knowledge in the control group increased by 50.9%, and in the intervention group, increased by 52.4% after being given education using the quartet card game.

Increased knowledge in the intervention group after being given a gamification-based education model using the exclusive breastfeeding quartet card game by 52.4%.

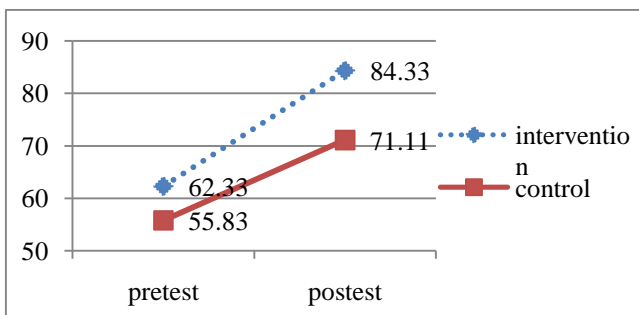


Graph 1: Knowledge Distribution of Control Group and Intervention Group

b) Distribution of Attitudes of Control Group and Intervention Group

The different pretest and posttest tests on the attitude data of the intervention group and the control group mean a significant difference in the attitude value between the intervention group and the control group before and after being given treatment. In the intervention group, the average attitude pretest was 62.33, and after being given the intervention, the attitude post-test result was 84.33, and an increase in attitude was 22.00. While in the control group, the average pretest value of attitudes was 55.83, and after an increase, it became an average altitude of 71.11 with an increase in the attitude of the control group of 16.22. So it can be concluded that there was more attitude improvement in the intervention group than in the positive control group.

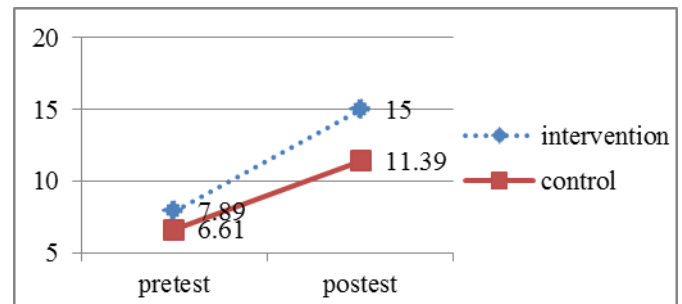
In the control group, there was an increase of 29.0%, and in the intervention group an increase of 35.2% after being given education using the ASI quartet card game. Improved attitudes in the intervention group after being given a gamification-based education model using the exclusive breastfeeding quartet card game by 35.2%.



Graph 2: Distribution of Attitudes of Control Group and Intervention Group

c) Distribution of Control Group Practices and Intervention Group

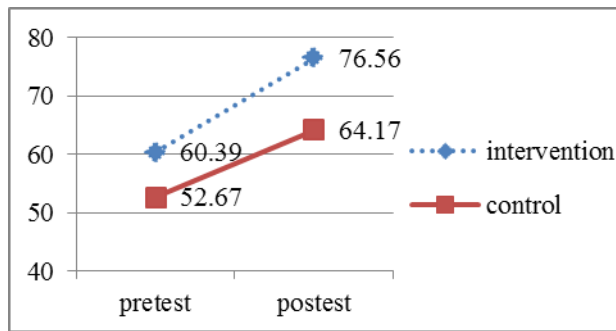
The different pretest and post-test tests on the practice data of the intervention group and the control group mean a significant difference in the practice value between the intervention group and the control group before and after being given treatment. The intervention group had an average practice pretest of 7.89; after being given the intervention, the knowledge post-test result was 15.00. There was an increase in knowledge of 7.11. While in the control group, the average practice pretest score was 6.61, and after an increase, it became an average practice of 11.39 with an increase in the practice of the control group of 4.77. So it can be concluded that there was more attitude improvement in the intervention group than in the positive control group. The practice in the control group increased by 72.1%, and in the intervention group, it increased by 90.11% after being given education using the ASI quartet card game. This is evidenced by the existence of a delta value (Δ) on the increase in knowledge in the control group, only 4.77 (72.1%), while the intervention group was greater by 7.11 (90.11%).



Graph 3: Distribution of Control Group Practices and Intervention Group

d) Distribution of Self efficacy of Control Group and Intervention Group

The different pretest and post-test tests on the Self-efficacy data of the intervention group and the control group mean a significant difference in the value of Self-efficacy between the intervention group and the control group before and after being given treatment. In the intervention group, the average self-efficacy pretest was 60.39, and after being given the intervention, the Self-efficacy post-test results were 75.56, and an increase in Self-efficacy was 16.17. While in the control group, the average self-efficacy pretest score was 52.67, and after an increase, it became an average Self-efficacy of 64.17 with an increase in the control group's Self-efficacy of 11.5. So it can be concluded that there was an increase in self-efficacy in the intervention group than in the positive control group. This is evidenced by the delta value (Δ) on the increase in self-efficacy in the control group, which is only 11.5 (21.8%), while the intervention group is larger, namely 16.17 (26.7%).



Graph 4: Distribution of Self efficacy of Control Group and Intervention Group

IV. PRODUCT RESULTS

The product in the research was a quartet card. The educational model using a quartet card media containing introductions, games, and evaluations is expected to change the behavior and self-efficacy of pregnant women. The advantages of the quartet card media are the attractive and innovative models and the material focused on exclusive breastfeeding, which is expected to increase pregnant women's knowledge, attitudes, practices, and self-efficacy in the breastfeeding process. This Exclusive Breastfeeding Quartet Card is a game that contains breastfeeding education. The nursing quartet card has 32 cards and eight themes, each of which has four cards. Quartet card size was 8.5cm x 6cm.



Fig. 1: PRODUCT RESULTS

V. DISCUSSION

In this result, knowledge with a p-value <0.05, providing education and information through the educational media of the quartet card game proved to help increase the knowledge of pregnant women so that, in the end, the process of breastfeeding when breastfeeding mothers can take place well. In this study, there was an increase in the control and intervention groups, but after being given education using the quartet card game, it greatly influenced the mother's behavior in breastfeeding. This research is in line with the research of Putri Kusumawati Priyono, who stated that the data before behavioral counseling was carried out, the two groups had almost the same or no different values after counseling with simulation methods or added with posters greatly influenced the behavior of mothers in breastfeeding.⁹

In accordance with previous studies, namely increased maternal knowledge did not lead to a significant increase in mothers' attitudes toward breastfeeding. However, the mother's attitudes after the study had a higher average than before the study. This is because many factors influence attitude change, namely personal experience, the influence of other people who are considered important, cultural influences, mass media, educational institutions and religious institutions, and emotional factors.

The knowledge of this study is in line with what Ronaldo Yogi Pradesta et al. said; this study also showed no increase in knowledge before and after being given the quartet card media in the control group with p-value = 0.785. The results of the pretest and posttest knowledge in the control group did not show any improvement. This is because, in the control group, there is no learning process or quartet card media game in the control group in the study given after the posttest. So the respondents in this study did not get information and lacked understanding of drugs.¹⁰

The mean attitude of giving breastmilk after treatment was higher than before, 86.56, from the previous one at 62.33. The minimum value after treatment was higher than before treatment, which was 78 from the previous 55. This is the same as the results of research by kosnim, which shows The result of giving breastmilk to babies is significantly influenced by attitude Beta value = 0.17, p-value 0.01).

This study is in line with Hanulan Septiani et al., namely that a positive attitude about breastmilk will affect the practice of exclusive breastfeeding. Behavior is the result of a careful and reasoned decision-making process by considering the advantages and disadvantages of the action.¹¹

In this study, the average practice value after being given treatment has increased from before, namely with a value of 15.00, with the previous 7.89. The p-value <0.05 indicates a change in the orbit of breastfeeding mothers when given quartet card gamification education. This study is in line with the research conducted by Ernawati, which shows that there is an influence on the mother's actions with a p-value of 0.008 with group education interventions.¹²

Based on the research results through hypothesis testing of the action, there is a significant difference between the action before and after being given counseling using a multimedia-based quartet card media with a p-value (0.000). In other words, the multimedia-based quartet card is effective in changing students' actions about Clean and Healthy Life Behavior.¹³

The behavior was seen to increase so much because before the treatment did not use the practice of breastfeeding using phantoms but used pictures from the exclusive breastfeeding quartet card, this was caused because they were not given the same treatment in practice.

This is in line with Sarwono's statement that human behavior results from various forms of experience and interaction with the environment manifested in knowledge, attitudes, and actions. It can be concluded that a person's behavior is formed based on the knowledge obtained through various forms of sensing, based on the reaction to the knowledge obtained after gaining knowledge so that individuals have positive and negative attitudes and actions by realizing the knowledge and attitudes obtained by doing real actions.¹⁴

Increased knowledge, attitudes, practices, and self-efficacy. Gamification-based education using a quartet card game can provide a spike in practice obtained before and after being given education.

This study found that self-efficacy is still low. This is due to self-efficacy, a mother's belief closely related to the mother's attitude. A positive attitude about breast milk will affect the practice of exclusive breastfeeding. Behavior is the result of a careful and reasoned decision-making process by considering the advantages and disadvantages of the action.¹¹

Gamification leads to the merging of technological media with everyday activities that are made in an attractive display and produce different experiences for those who use them (Ho, 2019; Huang, Hew, & Lo, 2019).¹⁵

Games can have an addictive effect on humans because of the dopamine released when we succeed in doing something. This substance makes us feel happy and makes us addicted. Addiction is the desire to continue to feel the feeling of being a winner or succeeding while playing a game, thus making us very involved in something, and this is a form of self-motivation. This is what makes games continue to exist in human culture from the past until now.¹⁶

VI. CONCLUSION

The Gamification-Based Educational Model Through Exclusive Breastfeeding Quartet Card Games is appropriate for improving maternal behavior and self-efficacy. In future research, it is hoped that there will be the use of language in the card material about breastfeeding so that mothers can understand. The creation of a game group due to the constraints of the mother's different home addresses. Questions for expert validation must have different categories of questions according to the specifics of each validator so that each category of questions corresponds to the category of validators. The quartet card game begins with playing with the midwife, and the mother can play independently after the demonstration with the midwife. The application of the breastfeeding process at the beginning of the intervention did not use phantoms or assistive devices in this study, only using pictures on the quartet card.

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