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Research Article

THE EFFECT OF MANJUJAI-BASED PSYCHOSOCIAL STIMULATION EDUCATION USING ANIMATED VIDEO ON THE KNOWLEDGE AND ATTITUDE OF MOTHERS WITH CHILDREN AGED 6–24 MONTHS

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ABSTRACT

Background:
According to the Indonesian Ministry of Health's 2016 Health Profile, 56.4% of children under five years old experience growth and development disorders. This study aims to determine the effect of Manjujai-based psychosocial stimulation education using animated video on the knowledge and attitude of mothers with children aged 6–24 months.

Methods: This study employed a quantitative approach using a quasi-experimental design with a pretest-posttest control group. A total of 60 respondents were selected using purposive sampling. The study was conducted from April to May 2025. Data were analyzed up to the multivariate level using the General Linear Model (GLM).

Results: The independent t-test showed a significant difference ($p < 0.001$) in the mean score changes of maternal knowledge and attitude between the intervention and control groups. This indicates that Manjujai-based psychosocial stimulation education through animated video has a significant effect on improving maternal knowledge and attitude. Multivariate analysis using GLM confirmed the significant effect of the intervention ($p < 0.001$) after controlling for confounding variables.

Conclusion: Psychosocial stimulation education using animated video is proven to significantly improve maternal knowledge and attitude in providing psychosocial stimulation care for children.

Keywords: Education, Animated Video, Psychosocial Stimulation, Manjujai

INTRODUCTION

The golden age period is a critical stage that occurs only once in a child's life, during which no fewer than 100 billion brain cells are ready to be stimulated in order to support the optimal development of the child's intelligence in the future. According to WHO data from 2011, more than 250 million children under the age of five in developing countries are at risk of not reaching their developmental potential (in cognitive, language, socio-emotional, and other aspects). Asia is the continent with the highest number of children experiencing developmental delays. India, Bangladesh, and Indonesia together account for 145 million (66%) of the 219 million children affected by developmental disorders.2 Health education media commonly used in Indonesia today are still largely conventional, such as leaflets, booklets, flip charts, or PowerPoint presentations. However, several advancements have been made in developing educational media using advanced technology, such as audiovisual video approaches. Animated videos have become the preferred choice in today's technological era. Not only are they visually appealing, but they also help retain information longer in memory and enhance respondent satisfaction and engagement. The use of educational videos can strengthen the learning process by presenting information through an effective combination of visual and auditory elements.3 According to Lawrence Green's theory, a person's health is influenced by three factors: predisposing, reinforcing, and enabling factors. Predisposing factors are reflected in knowledge, beliefs, and values. Reinforcing factors are reflected in the physical environment and the availability of health facilities. Enabling factors are reflected in the attitudes and behaviors of health workers or other personnel who serve as reference groups for community behavior.4 Research by Nidatul Khofiyah stated that education influences the provision of proper and targeted child development stimulation, which regularly enhances child development. Similarly, studies by Siska and Hinda found that educational stimulation significantly impacts parental knowledge, which serves as one of the supporting factors in promoting child development.5,6 timulation will be effective if it takes into account the child's needs according to their developmental stage. The age groups for providing stimulation to toddlers are 12–15 months, 15–18 months, 18–24 months, 24–36 months, 36–48 months, and 48–60 months.7 According to a study conducted by Adnan Faris Naufal et al. in 2024, before receiving education, only 23 children (52.3%) were categorized as having good development. After the education was provided, the number increased to 34 respondents (77.3%) in the good development category. This proves that both child development and the mother's ability to provide stimulation improved after receiving education.8 A study conducted by Utaminingtyas in 2019 stated that providing health education about stimulation had a significant effect on the development of children aged 12 to 24 months, with a p-value < 0.05.9

The aim of this study is to determine the effect of Manjujai-based psychosocial stimulation education using animated video on the knowledge, attitude, and practice of psychosocial stimulation care among mothers of children aged 6 to 24 months.

MATERIAL AND METHODS

This study employed a quantitative approach. The research design was a quasi-experimental study with a pretest-posttest control group design. This research is part of

a larger study titled "Provision of Functional Dadih Bread to Pregnant Women and Follow-up on Child Growth and Development," conducted by Prof. Dr. Helmizar, SKM, M. Biomed in 2024. The total population in this study was 85 individuals. The sample size was determined using the hypothesis test formula for the difference between two means. In this study, the sample size was calculated by comparing two means based on previous research (Lameshow et al., 1990):10

The sample in Padang City consisted of 60 participants, selected through purposive sampling, and was distributed across Belimbing, Kuranji, and Nanggalo Public Health Centers. The research procedure was as follows:

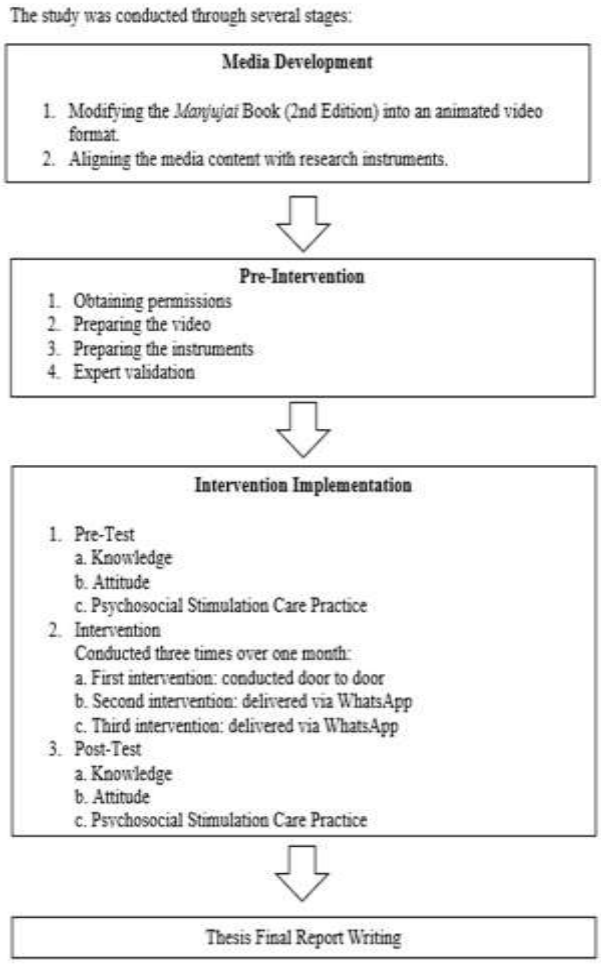

Figure 1. Research Procedure

RESULTS

Maternal Knowledge and Attitude

The purpose of univariate analysis is to describe each research variable, namely the characteristics of respondents and the dependent variables (maternal knowledge and attitude) in both the intervention and control groups.

Table 1. Frequency Distribution of Maternal Knowledge and Attitude Scores in the Intervention and Control Groups

Variabel	Intervention Group (n=30)	Control Group (n=30)
Knowledge		
Pretest		
Mean ± SD	6,73 ± 1,66	7,17 ± 1,64
Median (Min-Maks)	6,50 (4 - 9)	7 (2 - 10)
Posttest		
Mean ± SD	13,37 ± 1,22	9,40 ± 1,45
Median (Min-Maks)	14 (10 - 15)	9 (6 - 12)
Attitude		
Pretest		
Mean ± SD	33,03 ± 3,58	32,33 ± 3,47
Median (Min-Maks)	32 (27 - 41)	32 (26 - 41)
Posttest		
Mean ± SD	51,73 ± 3,62	37,37 ± 3,21
Median (Min-Maks)	52 (44 - 59)	37 (31 - 45)

N=60

Based on Table 1, in the intervention group, the mean knowledge score before the intervention was 6.73, which increased to 13.37 after the intervention. The mean attitude score before the intervention was 33.03, which increased to 51.73 after the intervention. In the control group, the mean knowledge score before the intervention was 7.17, which increased to 9.40 after the intervention. The mean attitude score before

the intervention was 32.33, which increased to 37.37 after the intervention.

The Effect of Manjujai-Based Psychosocial Stimulation Education Using Animated Video on Maternal Knowledge

The normality test in this study used two testing approaches. First, the Shapiro-Wilk test was used because the sample size in this study was less than 50. The data were considered normally distributed if the test results showed a p-value greater than 0.05. Second, skewness and its standard error were used; if the skewness value divided by its standard error yielded a value between -2 and +2, the distribution was considered normal. If either of the two testing approaches indicated a normal distribution, the data were concluded to be normally distributed. normal, maka kesimpulan menyatakan data tersebut berdistribusi normal.

Table 2. Normality Test Results

Variabel	Saphiro Wilk		Skewness/SE		Kesimpulan
	Sig.	Ket	Hasil	Ket	
Knowledge	<0,001	Not Normal	0,428/0,309= 1,39	Normal	Normal
Attitude	<0,001	Not Normal	0,236/0,309= 0,76	Normal	Normal

Table 2 shows that the data on maternal knowledge and attitude are normally distributed; therefore, the statistical tests used were the paired t-test and the independent t-test.

Table 3. The Effect of Manjujai-Based Psychosocial Stimulation Education Using Animated Video on Maternal Knowledge

Variabel	Group		Mean ± SD	*p-value*[a]	Mean ± SD (*Delta*)	*p-value*[b]	Effectiven
Knowledge	Intervention	Before	6,73 ± 1,66	<0,001	6,63 ± 1,46	<0,001	(6,63-2,23/(= 65,37%
		After	13,37 ± 1,22				
	Control	Before	7,17 ± 1,64	<0,001	2,23 ± 0,68		
		After	9,40 ± 1,45				

Note: Effectiveness = Mean Difference (Intervention vs Control) / Mean Before Intervention × 100%
a = paired t-test, b = independent t-test

Table 3 shows that in the intervention group (provision of Manjujai-based psychosocial stimulation education using animated video), the mean knowledge score before the intervention was 6.73 and increased to 13.37 after the intervention. The paired t-test result showed a p-value of < 0.001, indicating a significant difference in maternal knowledge scores in the intervention group before and after the intervention.

In the control group, the mean maternal knowledge score before the intervention was 7.17 and increased to 9.40 after the intervention. The paired t-test also showed a p-value of < 0.001, indicating a significant difference in knowledge scores before and after the intervention in the control group.

Table 3 also shows that the mean increase in knowledge score (difference) was higher in the intervention group compared to the control group (6.63 vs 2.23). The independent t-test result showed a p-value of < 0.001, suggesting that Manjujai-based psychosocial stimulation education using animated video had a significant effect on improving maternal knowledge. The effectiveness of the intervention in increasing maternal knowledge was 65.37%.

Table 4. The Effect of Manjujai-Based Psychosocial Stimulation Education Using Animated Video on Maternal Attitude

Variabel	Group		Mean ± SD	p-value[a]	Mean ± SD (Delta)	p-value[b]	Effectiven
Attitude	Intervention	Before	33,03 ± 3,58	<0,001	18,70 ± 2,89	<0,001	(18,70-5,13/3 = 41,08%
		After	51,73 ± 3,62				
	Control	Before	32,33 ± 3,47	<0,001	5,13 ± 1,11		
		After	37,37 ± 3,21				

Note: Effectiveness = Mean Difference (Intervention vs Control) / Mean Before Intervention × 100%
a = paired t-test, b = independent t-test

Table 4 shows that in the intervention group (provision of Manjujai-based psychosocial stimulation education using animated video), the mean attitude score before the intervention was 33.03 and increased to 51.73 after the intervention. The paired t-test result showed a p-value of < 0.001, indicating a significant difference in maternal attitude scores in the intervention group before and after the intervention.

In the control group, the mean maternal attitude score before the intervention was 32.33 and increased to 37.37 after the intervention. The paired t-test result also showed a p-value of < 0.001, indicating a significant difference in maternal attitude scores in the control group before and after the intervention.

Table 4 also shows that the mean increase in attitude score (difference) was higher in the intervention group compared to the control group (18.70 vs 2.89). The independent t-test result showed a p-value of < 0.001, indicating a significant difference in the attitude score change between the intervention and control groups. It can be concluded that Manjujai-based psychosocial stimulation education using animated video had a significant effect on improving maternal attitudes. The effectiveness of the intervention in increasing maternal attitude was 41.08%.

The Effect of Manjujai-Based Psychosocial Stimulation Education Using Animated Video on Maternal Knowledge and Attitude of Mothers with Children Aged 6 to 24 Months

The multivariate analysis in this study used the General Linear Model (GLM) multivariate test to assess the effect of Manjujai-based psychosocial stimulation education using animated video on maternal knowledge, attitude, and the practice of psychosocial stimulation care for children aged 6 to 24 months, after controlling for confounding variables (child's age, mother's age, mother's education, mother's occupation, and history of exposure to stimulation education other than Manjujai). All variables—including the main independent variable (intervention group) and the confounding variables—were analyzed simultaneously with the dependent variables (knowledge and attitude), resulting in a multivariate model as shown in Table 4 below.

Table 5 The Effect of Manjujai-Based Psychosocial Stimulation Education Using Animated Video on Maternal Knowledge and Attitude of Mothers with Children Aged 6 to 24 Months After Controlling for Confounding Variables

Dependent Variable	Independent Variable	B	*p-value*	R^2
Knowledge (Difference)	**Intervention**	**4,348**	**<0,001**	
	Child's Age			
	6-12 Months	0,300	0,497	
	13-24 Months	Ref.		
	Mother's Age	-0,022	0,491	
	Education			
	High	-0,956	0,010	
	Medium	-0,767	0,083	**0,787**
	Low	Ref.		
	Occupation			
	Unemployed	-0,308	0,526	
	Employed	Ref.		
	History of Exposure to Stimulation Education			
	Yes	-0,201	0,597	
	No	Ref.		
Attitude (Difference)	**Intervention**	**13,679**	**<0,001**	
	Child's Age			
	6-12 Months	-0,278	0,740	
	13-24 Months	Ref.		
	Mother's Age	0,116	0,064	
	Education			
	High	-0,735	0,502	
	Medium	-0,777	0,350	**0,908**
	Low	Ref.		
	Occupation			
	Unemployed	0,736	0,426	
	Employed	Ref.		
	History of Exposure to Stimulation Education			
	Yes	-0,136	0,850	
	No	Ref.		

Note: Analysis was conducted using multivariate General Linear Model (GLM).
B = Regression Coefficient / The magnitude of the effect or relationship between the independent variable (X) and the dependent variable (Y) in a regression model
R^2 = Coefficient of Determination

Table 5 shows that the intervention (provision of Manjujai-based psychosocial stimulation education using animated video) had a significant effect on improving maternal knowledge ($p < 0.001$). Mothers who received the intervention had a higher mean knowledge difference score (4.35 points) compared to the control group, after controlling for child's age, mother's age, mother's education, mother's occupation, and prior exposure to stimulation education other than Manjujai. The analysis resulted in an R Square of 0.787, which means that the intervention along with those confounding variables explained 78.7% of the variation in the increase of maternal knowledge, while the remaining 21.3% was explained by other variables.

Table 5 also shows that the intervention had a significant effect on improving maternal attitude ($p < 0.001$). Mothers who received the intervention had a higher mean attitude difference score (13.68 points) compared to the control group, after controlling for child's age, mother's age, mother's education, mother's occupation, and prior exposure to stimulation education other than Manjujai. The analysis yielded an R Square of 0.908, indicating that the intervention and those confounding variables

explained 90.8% of the variation in the increase of maternal attitude, with the remaining 9.2% explained by other factors.

DISCUSSION

According to cognitive theory, individuals are more likely to understand and retain information when it is presented in an engaging and meaningful form. The animated video media used in this intervention was designed with consideration of the local Manjujai cultural context and visual-auditory learning styles, thereby enhancing the mothers' cognitive processes in understanding the material. This improvement aligns with the findings of Safitri et al. (2021), which showed that interactive visual media is effective in increasing maternal knowledge regarding child care. In addition, materials linked to local culture are more easily accepted as they foster a sense of familiarity, relevance, and emotional connection.12

Theoretically, a person's attitude is formed through a combination of knowledge, experience, and influences from the social environment. According to Rosenberg's three-component theory of attitude from 1960, which includes affective, behavioral, and cognitive components, a positive attitude toward a behavior (in this case, stimulation practices) arises when an individual has sufficient knowledge (cognitive), feels its importance (affective), and is ready to carry it out (conative). The educational video used in this intervention not only delivered information but also clearly illustrated positive interactions between mother and child in the local cultural context. This helped shape positive perceptions and increased mothers' confidence in practicing stimulation at home. These results are consistent with a study by Aritonang et al. in 2023, which found that animated video interventions improved mothers' positive attitudes toward exclusive breastfeeding ($p = 0.000$).14

Based on the results of the analysis in this study, the provision of Manjujai-based psychosocial stimulation education using animated video had an effect on increasing maternal knowledge. The increase in knowledge scores among mothers in the intervention group was much higher compared to the control group. This increase is in accordance with the principles of cognitive theory, which states that the learning process will be optimal when the information provided is connected to the cognitive structure already possessed by the individual. The Manjujai animated video, which contains visual, narrative, and locally-based cultural contextual elements, made it easier for mothers to understand the concept of stimulation because the information was delivered both verbally and visually. This is in line with the dual coding theory, which explains that information delivered through two sensory channels, namely audio and visual, is more easily absorbed and remembered, thereby strengthening knowledge retention.16

In line with the study conducted by Safitri et al. in 2021, the use of educational video interventions was shown to significantly improve mothers' knowledge and attitudes regarding exclusive breastfeeding. This is because audiovisual media is more engaging and easier to understand compared to printed media.17 A study by Nuraini et al. in 2024 also proved that short but intensive educational videos were effective in increasing pregnant women's knowledge about stunting prevention.18

Based on the analysis results of this study, the provision of Manjujai-based psychosocial stimulation education using

animated video had an effect on improving maternal attitude. In this case, the Manjujai animated video functioned as an effective modeling medium in shaping maternal attitudes, as the educational messages were delivered through characters, dialogues, and storylines that were familiar and relevant to their daily lives.19

This is in line with a study conducted by Ningrum in 2024, which showed that attitudes toward stunting prevention were better in the group that received video-based interventions compared to the group that received booklet-based interventions. This proves that nutrition education delivered through video has an impact on improving attitudes toward stunting, as there was an increase in attitude scores after the nutrition education was provided using video.20 This is also in line with the study conducted by Yolahumaroh et al. in 2024, which found a difference in attitude after the educational video was provided. There was a significant difference in attitude variables before and after the video-based education, with a p-value of 0.000.21

These findings remained consistent after controlling for confounding variables, including the child's age, mother's age, mother's education, mother's occupation, and history of exposure to stimulation education other than Manjujai. This indicates that the intervention had an independent and strong effect on improving maternal caregiving ability, regardless of sociodemographic characteristics or previous educational exposure. Manjujai, as a culturally based educational method delivered through visual media, proved to be effective in reaching mothers from various backgrounds.

The increase in knowledge scores indicates that the educational material delivered through animated video was easy to understand and succeeded in enhancing mothers' understanding of the importance of early psychosocial stimulation using the Manjujai method. This is supported by Albert Bandura's social learning theory from 1986, which emphasizes the importance of observation and imitation in acquiring new knowledge and skills. Visual media such as the Manjujai animated video provides concrete examples that can be directly internalized by mothers through observational learning.22

In terms of attitude, the intervention was also proven effective in shaping mothers' positive perceptions of the importance of emotional and social involvement in child caregiving. This is in line with the study by Miranda et al. in 2023, which stated that culturally-based educational content can foster emotional attachment and increase parental awareness of their role in supporting children's social and emotional stimulation 23.

CONCLUSION

Manjujai-based psychosocial stimulation education delivered through animated video has been proven effective in increasing maternal knowledge and attitude toward psychosocial stimulation care for children aged 6 to 24 months. This intervention demonstrated a significant effect compared to the control group, both before and after the treatment, and remained significant after controlling for confounding variables such as child's age, mother's age, education, occupation, and prior educational exposure. This approach supports the integration of local culture and digital media into public health promotion strategies

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