







The Impact of Health Promotion Using Leaflet Media on Mothers' Knowledge of the Early Stimulation of Toddlers' Development and Growth

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Introduction: Children who get inadequate stimulation will develop slower than those who receive regular and purposeful stimulus. Toddler-age toddlers face a variety of growth and development issues as a result of their mother's lack of information about stimulating their development.

Objective: The purpose of this study is to analyze the impact of health education using leaflet media on mothers' knowledge of early stimulation for toddler-age kids from Gunung Tua village, Subang Regency.

Methods: This study's research design is a quasi-experiment using a one-group pretest-posttest approach. This study's population consists of moms with toddler-aged children living in Gunung Tua village, Subang. The study's sample size is 80 moms, including criteria for inclusion and exclusion. The data collecting method employs a questionnaire derived from the SDIDTK (Stimulation, Detection and Early Intervention of Growth and Development) book Ministry of Health, which contains 20 questions. The data received from the outcomes of collecting data will be evaluated using univariate analysis, searching for the distribution of frequencies and averaged distributions of the variables studied, and using bivariate analysis via the Wilcoxon rank Test.

Results: Women with children aged 1–1.5 years. Of the 25 respondents in this category, 19 had a good level of knowledge, while 6 had a sufficient level of knowledge. After health education, the post-test findings showed that 24 participants had a good level of knowledge and 1 person had sufficient knowledge. Of the 30 mothers surveyed who have children aged 1.5–2 years, the majority (20 respondents) showed a good level of knowledge. Of the responses received, only one had a low level of knowledge, while the other nine had a sufficient level of knowledge. After the health education, the post-test results showed that 26 participants showed a good level of knowledge. Of the 25 respondents who are mothers with children aged 2–3 years, the majority (13 respondents) showed a good level of knowledge. Only one respondent had a low level of knowledge while the other 11 respondents had a sufficient level of knowledge. After health education, the post-test findings showed that 18 participants showed a good level of knowledge. Following healthcare learning, the post-test results revealed that 26 participants had a good level of understanding. The findings using the non-parametric in Wilcoxon Test, the significant values for respondents, particularly mothers with children ages 1–1.5 a long time, 1.5–2 years, and 2–3 years, are 0.002, 0.000, and 0.000, respectively.

Conclusion: In summary, before and after health education using leaflet media can increase mothers' knowledge about stimulation of toddler growth and development in Gunung Tua the village, Subang Regency.

Keywords: growth and development, leaflet, knowledge, stimulation, toddler

Introduction

Children's growth and development will influence the course of the country in the future, thus it is necessary for preparing them to become excellent human resources who actively participate.¹ One of the four essential principles mentioned in the Conventions on the Rights and Freedoms of the Child is the child's right to grow and develop.²

Improvement is a quantitative procedure characterised by the expansion into the functional and structural complexity of the organism.³ The early 1000 days of life, sometimes referred to as “a gold phase” or “insights of opportunity”, are an essential point in the development and growth of a child since the fundamental growth through this period will impact and decide the child’s later development.⁴ Language capabilities, innovative thinking, awareness of society, psychological growth, fine motor abilities, gross-motor abilities, and IQ are all quickly developing. Consequently, early developmental stimulation is necessary to promote the optimum growth of children.⁵

Early development stimulation is a series of activities or interactions designed to stimulate the potential of children’s growth and development optimally from an early age. The purpose of this stimulation is to support the physical, motor, cognitive, social-emotional, language, and other aspects of the child’s development according to his age stage. Developmental delay is a condition in which a child does not reach developmental milestones that are appropriate for his or her age in various aspects, such as motor, cognitive, language, social-emotional, or adaptive abilities.

Children that get minimal or no stimulation develop slower than those who receive regular and purposeful stimulus.⁶ One of the most critical aspects affecting the quality of a kid is the mother’s knowledge and capacity to offer her child with early development stimulation.⁷ A child’s growth is strongly impacted by his mother’s knowledge because women who have higher levels of education and expertise tend to devote greater focus to their child’s development.⁸

Growth is a gradual change in physical characteristics such as height, weight, size, and more. Meanwhile, development is a qualitative change to growth in an orderly and meaningful way that produces maturity.

Factors that affect the growth and development of children include: Hereditary, type of calamine, hormones, environment, nutrition, socioeconomic status, exercise and health, family influence, geographical influence and learning. Reinforcement is a learning component in which an activity or exercise is repeated and perfected to reinforce the lessons learned by the child. For example, when playing a musical instrument, children become better at playing it when practicing playing an instrument. Therefore, any lesson in children must be repeated until they get maximum results.

Children’s growth and development in other nations likewise pose significant challenges. Research conducted in 54 developed nations identified children with developmental deficits.⁹ According to,¹⁰ The prevalence of developmental delay in the United States ranges from 12.1 to 16%, 22% in Argentina, 23% in Hong Kong, 37.1% in Thailand, and around 19.8% in India. Children who do not have enough stimulation may experience developmental issues. This illness occurs while parents do not have adequate knowledge about suitable stimulation to enhance the growth and psychological growth kids experience according to their age.^{11,12}

Health care for children under five in Indonesia did not meet the 2021 Strategic Plan objective of 70%, with just 69.6% attained in 2021 (Kementerian Kesehatan Republik Indonesia, 2022). According to the Subang Province Health Office, the Gunung Tua Villages Health Facility continued providing early identification services to support children’s development and growth at least twice every year. Based on 2021 report in Subang Province Health Description, the Gunung Tua Local Health Center has attained 53% of its early identification of Development and Growth (DDTK) objective, whereas Subang District had a strategic plan aim of 70% for DDTK.

In Indonesia, the frequency of growth and development delays remains significant, estimated at 5–10%. Motor developmental abnormalities afflict 2 per 1000 neonates, whereas cognitive and linguistic deficits below average are reported in 1 out of every 100 children.¹³ As a result, Indonesia is grappling with a slowing of growth and development.

Health education involves a systematic strategy that tries to promote public knowledge and understanding of what is required to keep and improve one’s health.¹⁴ Health education helps people, communities, and societies to gain information and skills to shift between a condition of ignorance to awareness, and from an incapacity to handle wellness issues to somebody who has the capacity to do so.¹⁵

According to several research studies, leaflets are effective at transmitting information, which improves comprehension and behavior.¹⁶ A leaflet is a type of printed communication that communicates health-related information utilizing folded pieces of paper.¹⁷ It conveys information by the use of words, images, or a mix of both. Research that supports the usefulness of leaflets, such as those performed by,¹⁸ shows significant inequalities in public awareness between the two groups receiving health education leaflets.

The difference between the previous study and the research to be carried out lies in the focus of the discussion, which is related to early stimulation using leaflet media. This new approach has never been researched before. The research will be conducted in Gunung Tua Village, where there is no health education about early stimulation that has been carried out.

According to the statistics supplied, there is a lack of kids who have attained the ideal state of development and growth. Previous research has focused on delivering health education for children's growth and development. The impacts of health education on children's development and growth by the usage of leaflets media have not been well investigated in terms of mother stimulation. The value of parental knowledge in encouraging the development and growth of toddlers has been proved.¹⁹ The usage of leaflet media allows for effective information delivery.²⁰ Thus, the analyst is interested in examining the impact of health education using leaflets media on maternal understanding of early stimulating of the development and growth of toddler-age kids in Gunung Tua the village, Subang Regency.

This study aims to examine the influence provided by health education through leaflet media on increasing the awareness of mothers in Gunung Tua Village, Subang Regency about the importance of early stimulation in the growth and development of children at toddler age. By prioritizing leaflet media as an information tool, this study seeks to understand the extent of the effectiveness of the media in increasing maternal understanding and awareness of various aspects related to early stimulation, which is an important factor in supporting optimal development in children at an early age.

The benefit of this study is to provide valuable insights for health professionals, especially those working in the field of child care or pediatrics, on how effective health education through leaflet distribution is in raising maternal awareness of the importance of early stimulation for the development of toddler-aged children. The findings of this study will be very useful for educators, students, and health workers, especially nurses.

Methodology

This study employed a quasi-experimental approach with a one-group pretest-posttest design. The goal of this study was to see how leaflets affected moms' understanding of how to promote toddler growth and development. According to,^{21,22} a one-group before and after test design lacks a control group. However, this design includes an initial observation (pretest) that permits examination of changes that occur following the experiment (program).

The study's sample size includes 256 moms with toddler-aged children who live in Gunung Tua Subang community. The population of subjects for this research was selected applying the Slovin method, which allows for a 1% margin of error. The computation is as follows:

$$n = \frac{N}{1 + N e^2}$$

$$n = \frac{256}{1 + (256 \times 10\%)}$$

$$n = \frac{256}{1 + (256 \times 0.01)}$$

$$n = \frac{256}{3.56}$$

$$n = 71.91$$

Information

n = Number of samples

N = Number of population

e = Error rate in research (0.01)

Slovin computed the sample size from a population of 256 women with toddler-age children to be 72 after rounding, with a 1% accuracy. To account for the possibility of dropouts, the sample size is expanded by 1% above the initial size. As a result, the sample size is 80 moms in total. In addition, proportional random sampling was used to estimate the

sample proportion. This sampling approach is employed for populations composed of persons or items that are not homogenous and proportionately stratified.

This technique is used to group random variables (RWs) in a way that ensures the number of samples is proportional. This technique is used because of the layered nature of the object of analysis, which has several layers of RW ranging from RW 01 to RW 09. The amount per RW is expressed as follows: RW 01 = 31.25% x 30 = 9.3 = 9; RW 02 = 31.25% x 28 = 8.75 = 9; RW 03 = 31.25% x 27 = 8.4 = 8; RW 04 = 31.25% x 22 = 6.8 = 7; RW 05 = 31.25% x 24 = 7.5 = 8; RW 06 = 31.25% x 34 = 10.6 = 11; RW 07 = 31.25% x 37 = 11.5 = 11; RW 08 = 31.25% x 28 = 8.75 = 9; RW 09 = 31.25% x 26 = 8.1 = 8; Total number of samples: 80.

The characteristics of the sample in this study include inclusion criteria: Mothers who have toddler-age children (1–3 years); Mother who lives in Gunung Tua village; Mothers who are willing to participate in research; Children in the care of mothers and mothers who have never participated in training on child growth and development. Meanwhile, the exclusion criteria: Mothers who cannot read or write and mothers who have children with special needs.

The study's independent variable is health education, which is supplied via leaflet stimulation of development and growth. My understanding of the stimulating of development and growth for toddlers varies, which is dependent on this research.

This study employed a questionnaire created by the researcher to assess mothers' understanding of development and growth facilitators in kids aged one to three years. The questionnaire is from the SDIDTK book, which was issued by Indonesia's Ministry of Health in 2016.

The tool assesses mothers' knowledge of growth and development promotion in children aged one to three, with special emphasis on different areas of their understanding of child growth and development. The research questionnaire consisted of 20 statement items using the Likert scale, with 13 statements being favorable (positive) and 7 statements being unfavorable (negative). Our scoring technique for positive statements is as follows: accurate statements are given a value of 1, while inaccurate statements are given a value of 0. In contrast, in the case of negative comments, accurate statements are given a value of 0, while inaccurate statements are given a value of 1.

The formula used to compute the proportion of replies received from the survey, as stated by,²³ that is: Percentage

$$\text{Percentage} = \frac{\text{Number of Correct Values}}{\text{Number of Questions}} \times 100\%$$

According to²⁴ propose a method to classify a person's level of knowledge based on percentage value. This classification system consists of three different levels:

1. The level of category knowledge is good, if the score is 76–100%
2. The level of knowledge of the category is sufficient, if the score is 56–75%
3. The level of knowledge of the category is low, if the score value is <56%

This study used a questionnaire developed by the researcher to evaluate the mother's knowledge of growth and development facilitation in children aged one to three years. The questionnaire comes from the SDIDTK (Stimulation, Detection and Early Intervention of Growth and Development) book published by the Indonesian Ministry of Health in 2016.

The Pearson correlation bivariate technique was used to conduct a validity test. Pearson bivariate testing entails determining the correlation between the significance of every question answer and the overall score of the questionnaire items. A survey item is considered legitimate if the estimated significance value exceeds the crucial *r* value, which is calculated using a significance threshold of 0.05 for a study size of 20 participants, or 0.632. The instrument's reliability is examined using internal consistency, especially Cronbach's alpha, with SPSS software. Cronbach's Alpha greater than 0.60 indicates a construct's reliability. In contrast, if Cronbach's Alpha gets lower than 0.60, the construct is regarded to be of low quality.²⁵

Data collection and analysis utilizing computerised statistical software in the type of the SPSS software, with analysis of data using univariate provided in the form of distributions of frequency using a calculation method as follows,²⁶ that is:

Percentage: $\frac{F}{N} \times 100\%$

Information:

F: Frequency

N: Number of Samples

Bivariate analysis seeks to determine the link between two variables or to detect significant differences between two groups. The statistical test utilized is a non-parametric test, which means it makes no predictions regarding the statistical characteristics of the underlying data.²⁷ The Kolmogorov–Smirnov test is commonly used in studies with more than 50 participants.²⁸ The decision criteria for the Kolmogorov–Smirnov test was if the asymptotic significance value was larger than 0.05.

Padjadjaran University's ethical committee has also accepted this study under the code 1133/UN6.KEP/EC/2023. That all participants provided informed consent, in accordance with the Declaration of Helsinki. All authors expressed their agreement with the article on the results of this study. Following that, the researcher completes necessary pre-research documents, such as getting ethics commission approval, acquiring a study's license, and developing relationships with associated bodies including the Health Department Office, health facilities, and other integrated service posts. The implementation of the research was carried out for four months starting from September 2023 to December 2023.

Results and Discussion

From the information in Table 1, presented, knowledge of can be known that the majority of those who participated with an age range of 26–35 are 44 respondents (55.0%), to a high school graduation level of 48 respondents (60.5%), and with jobs as a homemaker a total of 64 respondents (80.0%), and there are additionally mothers with children who have the average ages of 1.5–2 years a total of 30 individuals (38.0%), with a position of the firstborn child as many as 33 individuals (41.0%).

Based on Table 2, it can be found that the pretest results are categorized into three groups: women with children aged 1–1.5 years. Of the 25 respondents in this category, 19 had a good level of knowledge, while 6 had a sufficient level of knowledge and 1 person had a lack of knowledge. After health education, the posttest findings showed that 24 participants had a good level of knowledge. Of the 30 mothers surveyed who have children aged 1.5–2 years, the

Table 1 Distribution of Respondent Characteristics (n=80)

Variable	Frequency	Percentage
Age		
17–25 Year	27	33,7%
26–35 Year	44	55,0%
36–45 Year	9	11,3%
Last Education		
Primary school	0	0,0%
First-Level Advanced Schools	0	0,0%
Upper Level Advanced School	48	60,0%
Diploma	32	40,0%
Work		
Housewives	64	80,0%
Farmers/Laborers/Traders/Self-Employed	15	18,7%
State Civil Apparatus	1	1,3%
Mother With Aged Children		
1–1,5 Year	25	31,0%
1,5–2 Year	30	38,0%
2–3 Year	25	31,0%
Child Order Position		
1st Child	33	41,0%
2nd Child	31	39,0%
3rd Child	16	20,0%

Table 2 Frequency Distribution of Respondents' Knowledge Categories Before and After Receiving Health Education on Child Growth and Development Stimulation (Pre-Test and Post-Test) (n=80)

Level of Knowledge	Low		Enough		High	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Pre-Test Results						
- Mother with Children Age 1 year–1.5 years (n=25)	0	0%	6	24%	19	76%
- Mother with Child Age 1.5 years–2 years (n=30)	1	3,33%	9	30%	20	66,67%
- Mother with Children Age 2 years–3 years (n=25)	1	4%	11	44%	13	52%
Post-Test Results						
- Mother with Children Age 1 year - 1.5 years (n=25)	0	0%	1	4%	24	96%%
- Mother with Child Age 1.5 years–2 years (n=30)	0	0%	4	13,33%	26	86,67%
- Mother with Children Age 2 years–3 years (n=25)	0	0%	7	28%	18	72

majority (26 respondents) show a good level of knowledge. Of the responses received, only one had a sufficient level of understanding, while the other nine had a sufficient level of knowledge. After the health education, the post-test results showed that 26 participants showed a good level of knowledge. Of the 25 respondents who were mothers with children aged 2–3 years, the majority of (13 respondents) showed a good level of knowledge. Only one respondent has a low level of knowledge, while the other respondent has a sufficient level of knowledge. After health education, posttest show that 18 participants show high level of understanding.

Based on Table 3, the results of the non-parametric Wilcoxon Test are displayed. The significance values for respondents, especially mothers with children aged 1–1.5 years, 1.5–2 years, and 2–3 years, are 0.002, 0.000, and 0.000, respectively. Thus, it can be concluded that the dissemination of health education using leaflets has a significant impact on the level of awareness among mothers about the stimulation of the growth and development of toddler-age children in Gunung Tua Village, Subang Regency.

The debate in the study regarding the impact of health education using brochures on mothers' knowledge of early stimulation for toddler-aged children in Gunung Tua Village, Subang Regency, is as follows.

Characteristics of Respondents

This research included 80 mothers from Gunung Tua Village in Subang Regency, who had toddler-aged children between the ages of one and three. The bulk of respondents, or early adulthood, are around aged of 26 and 35, based on the statistics previously mentioned. This finding aligns with the findings of Yusran's (2014) study, which found that half of the twenty respondents, or 10 out of the twenty, were in the earliest stages of adulthood, with an age range of 26 to 35.

Table 3 Wilcoxon Test Non-Parametric Test Results (Ranks)

Respondents	Result			P-value
	Category	Pre-test	Post-test	
Mother with Children Age 1 year - 1.5 years (n=25)	Low	0.00	0.00	0.002
	Enough	24.00	4.00	
	High	76.00	96.00	
Mother with Child Age 1.5 years–2 years (n=30)	Low	3.33	0.00	0.000
	Enough	30.00	13.33	
	High	66.67	86.67	
Mother with Children Age 2 years–3 years (n=25)	Low	4.00	0.00	0.000
	Enough	44.00	28.00	
	High	52.00	72.00	

Thirteen out of the twenty replies (65%) in the experiment group were all the same age. The older a person is, the more experience can compensate for the older mother with more basic knowledge. Aging has a significant influence on someone's cognitive capabilities, which results in less effective thought and understanding process compared to their early years.²¹

Additionally, the demographics of participants in terms of their highest degree of education reveal that the majority of them have successfully finished their secondary schooling (SLTA), with a high school degree being the second most common. Research²⁹ data also revealed that 65% of the thirteen participants in the control group had finished upper secondary education, whereas 20% had a diploma. 45% of the nine responders in the group participating in the experiment had a high school diploma as their greatest level of education. Discovered that a person's education degree has a significant influence on their capacity to acquire information. People with a higher degree of education are better able to acquire and comprehend information.³⁰

The majority of responders (80.00%) are housewives. These results are consistent with research,²⁹ who stated that 12 participants (or 60% of those in the control group) were housewives. A person's career significantly influences their capacity to collect knowledge about an object.²¹

The Influence of Health Education Through Leaflet Media on Mother's Knowledge About Early Stimulation of Toddler-Age Children's Growth and Development

According to the study's findings, the amount of awareness among mothers and their kids aged 1 to 3 years on stimulating toddler growth and development may be classified as follows: other moms had high knowledge, others had adequate knowledge, and two of the participants showed a lack of understanding. This shows that some mothers may not have been shown about the significance for early stimulation for toddler development. This absence of information is why responders are labeled as deficient in knowledge. The posttest findings revealed a substantial improvement in mother knowledge after receiving health education via leaflet media about stimulating toddler growth and development. More specifically, no more individuals were recognized as lacking comprehension, and a large number of the respondents were now classified as having a high degree of knowledge. This study validates the results of the research.³¹ This indicates a gain in understanding following health education. The initial assessment revealed a passable median understanding score (67.7); however, subsequent tests revealed a good mean knowledge score (83.5), representing a 15.8% improvement.

The study's findings revealed an increase in mother knowledge of the stimulation of toddler-age children's growth and development following the distribution of health information via leaflets. Mothers have a significant role in their children's growth and development. A mother's expertise in child development enables her to rapidly detect any irregularities or issues that may arise throughout her child's growth phase. This capacity gives opportunity for appropriate care and stimulating during the early stages of growth. These acts aim to assist the young generation's optimal growth and development, therefore positively impacting their future and the larger society. The study confirms the results of prior investigations undertaken by,³¹ This reveals a strong link between health education aimed at boosting the healthy growth of children aged zero to three years and parents' knowledge and attitudes.

The purpose of this study is to assess the impact of health education utilizing leaflets as a medium to promote mothers' awareness in promoting the growth and development of toddlers in Gunung Tua village, Subang Regency. The findings of the Wilcoxon rank non-parametric test for moms with kids aged 1 to 1.5 years revealed a significant value of 0.002. For women with children aged 1.5 to 2, the significance value is 0.000. In a similar way, the statistically significant value for moms with children aged 2 to 3 years old is the same: 0.000. All of this information fulfilled the significance criterion, having a p-value less than 0.05. Thus, we may infer that mothers in Gunung Tua the village, Subang Regencies, have considerably profited from the use of leaflet medium for health education in boosting the growth of their toddler-age children. Previous research by,³¹ In accordance with these findings, a study named "The Influence of Health Education on the Growth and Education of Children Aged 0–3 Years on Mothers' Knowledge and Attitudes" was conducted. The study found that after obtaining health education, participants' general level of knowledge increased significantly, from

somewhat adequate (pre-test) to good (post-test). This is corroborated by a p-value of 0.001, a value less than the cutoff value of 0.05.

Service report results by Shalahuddin et al indicating that healthcare education has a significant effect on knowledge improvement. Health education focuses on disseminating health-related information, which has the capacity to alter individual understanding.³² It is hoped that the information obtained through health education will inspire the community to prioritize child development. The acquisition of broad knowledge can have a beneficial impact on changing behavior, as learning involves transitioning from a state of ignorance to one of knowledge. Leaflets are used as a medium to transmit information in this investigation. A leaflet is a text medium consisting of one or more folded sheets of paper. Leaflets are a medium that is often used by health practitioners for the purpose of disseminating information in the realm of health education. The main benefits of this leaflet are ease of storage and portability, allowing participants to easily access and review the materials provided in case of oblivion or need.¹⁷ The leaflet contains health messages and information presented in the form of text, visuals, or a combination of both.³³

Research Limitations

Here are some of the limitations that can be identified: Limitations of Research Methodology with a quasi-experimental or pre-post test design may have limitations on the control of external variables that can affect the results. The sample is less representative because, only in one particular region or group can limit the generalization of the findings. The information in the leaflet tends to be limited and may not be able to cover all aspects of early stimulation in depth. Duration of the intervention, with health education through leaflet media, is usually provided in a short time, so the long-term effects of the intervention are difficult to measure. The mother's level of education, experience, and background can affect the acceptance and understanding of the information in the leaflet.

To overcome this limitation, in the future researchers will need to design more comprehensive studies with a mixed-methods approach, involving a larger sample size, and considering long-term impact measurements and external variables.

Conclusion

Prior to receiving the provision of health education through leaflet media on early stimulation of child development at toddler age, the majority of mothers had a satisfactory level of knowledge, with 52 respondents and 26 mothers having an enough level of knowledge. However, there are 2 respondents who have low knowledge in this area. Each mother observed an increase in their knowledge after being exposed to health education through the media leaflet on early stimulation of child development in toddlers. None of the mothers had any low knowledge, while 12 had enough knowledge, and as many as 68 had high knowledge. Before and after the provision of health education through leaflet media regarding mothers' understanding of early stimulation in child development at toddler age, there was a marked increase. All mothers showed increased knowledge, with those who were previously lacking in knowledge now having enough knowledge, and some mothers with enough knowledge now having high knowledge.

The provision of health education through leaflet media can significantly affect maternal education in Gunung Tua Village, Subang Regency, regarding early stimulation of child development at toddler age.

Data Sharing Statement

The datasets generated during and analyzed for the current study results are available from the corresponding author upon reasonable request.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising, or critically

reviewing the article; gave final approval for the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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