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Pregnant Women's Behavior in Stimulating the Fetus After Giving Education Through Audiovisual Media

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A B S T R A C T

National data from the Ministry of Health of the Republic of Indonesia in 2018, 11% of toddlers in Indonesia experience growth and development disorders. It is estimated that 1-3% experience delays in motor development. Efforts to maintain and increase intelligence potential during pregnancy are very important to prepare quality Indonesian human resources in an effort to increase the Human Development Index (IPM) of Indonesian society in the future. The purpose of this study is to ascertain how fetal stimulation knowledge and behavior among pregnant women in the *Bandengan* Subdistrict are related to education through audiovisual media. The research design is a quasi-experiment with a one-group pretest and posttest design technique. This research was conducted in *Bandengan* Village, *Kendal* District, *Kendal* Regency in September-December 2022. The population in this study were all pregnant women who were in *Bandengan* Village Trimesters 2 and 3 in October-December 2021, with a total of 73 pregnant women. In this study, the respondents were the total population of pregnant women in *Bandengan* village. The measurement tool used a questionnaire regarding the depth of fetal stimulation knowledge. The result of a statistical test using the Wilcoxon test show that there is a relationship between fetal stimulation in pregnant women through audiovisual media education with a p-value of 0.000, with a description of pregnant women's behavior regarding fetal stimulation after receiving education of 100%. For future researchers, other methods that are more perfect in the health education model can be used.

Data nasional Kemenkes RI 2018, 11% balita di Indonesia mengalami gangguan pertumbuhan dan perkembangan. Diperkirakan 1-3% mengalami keterlambatan perkembangan motorik. Upaya dalam memelihara dan meningkatkan potensi intelegensi pada periode kehamilan sangat penting untuk mempersiapkan SDM Indonesia yang berkualitas dalam upaya meningkatkan Indeks Pembangunan Manusia (IPM) masyarakat Indonesia dikemudian hari. Tujuan dari penelitian ini adalah untuk mengetahui pengaruh edukasi melalui media audiovisual terhadap pengetahuan dan perilaku stimulasi janin pada ibu hamil di Kelurahan Bandengan. Desain penelitian ini yaitu quasi experiment dengan pendekatan one group pretest and posttest design. Penelitian ini dilaksanakan di Kelurahan Bandengan Kecamatan Kendal Kabupaten Kendal pada bulan September-Desember 2022. Populasi dalam penelitian ini adalah semua ibu hamil yang berada di Kelurahan Bandengan Trimester 2 dan 3 pada bulan Oktober-Desember 2021, sebanyak 73 ibu hamil. Dalam penelitian ini, responden adalah total populasi ibu hamil di Kelurahan Bandengan. Instrumen penelitian menggunakan kuesioner tingkat pengetahuan stimulasi janin. Uji statistik yang digunakan adalah Uji Wilcoxon, diperoleh hasil bahwa ada pengaruh edukasi melalui media audiovisual terhadap pengetahuan ibu hamil tentang stimulasi janin dengan p value 0.000, dengan gambaran perilaku ibu hamil mengenai stimulasi janin setelah mendapatkan edukasi sebesar 100%.. Bagi peneliti selanjutnya dapat menggunakan metode lain yang lebih sempurna dalam model pendidikan kesehatan.

Introduction

According to the World Health Organization (WHO), the prevalence of toddlers with growth and developmental abnormalities is 28.7%, and Indonesia is the third country in Southeast Asia with the greatest prevalence (Rumahorbo et al., 2020). It is estimated that 200 million children under five in developing countries experience developmental delays due to poverty, malnutrition, high infection rates, lack of stimulation and education and instability at home. The incidence of developmental deviations in children worldwide is 10-17%. The prevalence of developmental delays ranges from 12–16% in the United States, 24% in Thailand, and 22% in Argentina, while it ranges from 29.9% in Indonesia. According to UNICEF, 3 million children or 27.5% of children under the age of five still experience growth and development abnormalities, particularly motor development disorders (UNICEF, 2019).

According to information from the Central Statistics Agency's (BPS) official website, Indonesia's Human Development Index (IPM) will be 72.29 in 2021. When compared to the previous year, when the score was 71.94 points, this score has grown by 0.49%. Indonesia's HDI in 2021 is ranked 5th in ASEAN and 107th in the world out of 189 countries (BPS, 2022). According to national data, according to the Indonesian Ministry of Health, in 2018, 11% of children under five in Indonesia experienced growth and development disorders. Meanwhile, data from Riskesdas in 2018 showed that the development of children aged 36-59 months in the motor aspect reached 97.8% of the target of 98.3%. The Indonesian Health Profile stated that the number of children under five at intervals was 14,228,917 people. Around 10% of children are estimated to experience developmental delays, and it is estimated that 1-3% specifically for children under 5 years in Indonesia experience general developmental delays including motor development (Jurana, 2017).

Intelligence is one of the crucial things that must be considered in the younger generation as a determinant of the quality of human resources which is closely related to the success of national development and HDI (Almatsier, 2014). Efforts to maintain and increase intelligence potential during pregnancy are very important to prepare quality Indonesian human resources to increase the HDI of Indonesian society in the future (Suparni & Aisyah, 2019). Preparation of superior quality human resources can be started from an early age even in the womb through prenatal education. Prenatal education is providing a stimulus to children with certain exercises and methods carried out by the mother. According to Rene Van de Carr, prenatal stimulation can help develop a child's orientation and effectiveness in coping with the outside world after he is born (Rahman & Hardiana, 2022). Likewise, research conducted by Setyaningsih (2017) shows that there is a substantial relationship between fetal stimulation and newborn baby temperament. During pregnancy, mothers who stimulate the fetus have a 5.611 chance of giving birth to a child with a calm disposition. This is because this stimulation can influence the baby's character psychologically by fostering brain development. The fetus in the womb is stimulated by talking, chatting, singing, reading prayers, and singing religious songs while being rubbed on the mother's stomach. The baby's brain can be stimulated from 18 to 20 weeks of gestation. This is caused by the massive expansion of fetal nerve cells that occurs during this period; Therefore, it should be done frequently, continuously and sustainably with affection (Yulita & Yanti, 2020).

Method

This study's design is a quasi-experiment with a one-group pretest and posttest approach, meaning there is no comparison group (control) but at least one observation has been made (pretest), allowing testing of the changes that take place after the experiment (program) (Sugiyono, 2019). This research was conducted in *Bandengan* Village, *Kendal* District, *Kendal* Regency in September-December 2022. The population in this study were all pregnant women who were in *Bandengan* Village Trimesters 2 and 3 in October-December 2021, with as many as 73 pregnant women. The inclusion criteria for pregnant women in trimesters 2-3, pregnant women who are willing to be respondents, and pregnant women who are physically healthy and have no mental disorders. Pregnant women who were sick, pregnant women who were not willing, and pregnant women in the 1st trimester were excluded. The study used total sampling so that the respondents were the entire population of pregnant women in *Bandengan* Village. The implementation of this research was conducted during the Covid-19 pandemic situation so all data collection activities were carried out online with the help of the WhatsApp application and Google Forms. Researchers provided education through audiovisual media in the form of videos sent via WhatsApp to respondents after a pretest was carried out using a Google form. Audiovisual video media contains the meaning of stimulation, benefits, goals, principles, stimulation of the five senses and prenatal stimulation in the form of music and sound. Next, the researchers gave a post-test questionnaire via Google Forms 14 days after providing the education. The measurement tool used a questionnaire regarding the depth of fetal stimulation knowledge. The components studied were knowledge, totalling 22 questions in the form of unfavourable and favorable questions with right and wrong answers, and 1 behavioral question with a yes or no question answer. How to fill in by selecting answers (multiple choice). The Wilcoxon test is the statistical analysis method employed. The purpose of this study is to ascertain how fetal stimulation knowledge and behavior among pregnant women in the *Bandengan* Subdistrict are related to education through audiovisual media.

Results

This research was conducted during the COVID-19 epidemic situation so all data collection activities were carried out online with the help of the WhatsApp and Google form applications. The intervention was also carried out online by distributing audiovisual media embedded at the end of the Google form pretest. Following are the study's findings.

Table 1. Frequency Distribution of Mother's Knowledge Level of Fetal Stimulation

Category	Frequency			
	Pretest	**%**	**Posttest**	**%**
Good (>75%) / score 15-20	59	80,8	71	97,3
Fair (56-75%) / score 11-14	13	17,8	2	2,7
Less (<56%) / score 1-10	1	1,4	0	0
Total	73	100	73	100

Based on Table 1, the knowledge level of respondents regarding fetal stimulation showed that in the pretest good knowledge of 59 respondents (80.8%), sufficient knowledge of 13 respondents (17.8%) and knowledge of less than 1 respondent (1.4%). The posttest shows good knowledge of 50 respondents (97.3%), sufficient knowledge of 2 people (2.7%) and less knowledge of 0 respondents (0%).

Table 2. Frequency Distribution of Fetal Stimulation Behavior

Category	Frequency
Yes (doing stimulation)	73 (100%)
No (does not stimulate)	0 (0%)
Total	73 (100%)

Based on Table 2 with the question of whether to stimulate or communicate with the fetus, all respondents answered yes (100%) because they had received more education and knowledge about fetal stimulation.

Bivariate analysis was carried out to find out the relationship between the independent variable (education using audiovisual media) with the dependent variable (knowledge of pregnant women about fetal stimulation). Before the data was analyzed, the Kolmogorov-Smirnov test was used to check the data's normality first. The knowledge variable's normality test findings yielded pretest data with a p-value of 0.005 (P<0.05) while in the posttest column, it showed a p-value of 0.000 (P<0.05), therefore it was concluded that the data were not normally distributed, then for knowing the difference in knowledge during the pretest and posttest the authors used the Wilcoxon Test.

Table 3. Results of the Wilcoxon Test on Variable Knowledge of Pregnant Women about Fetal Stimulation

Knowledge	*Wilcoxon Test*		
	Mean	**Total**	***p-value***
Pretest	16,26	73	0,000
Posttest	18,45		

Table 3 showed that at the pretest the mean score of pregnant women's knowledge about fetal stimulation was 16.26, while at the posttest the score was 18.45. This shows an increase in the average score of pregnant women's knowledge about fetal stimulation from 16.26 to 18.45. It is also known that the Wilcoxon test results show a difference between pregnant women's knowledge of fetal stimulation before and after the intervention is administered, and that this difference has a p-value of 0.000 (<0.05), indicating that the intervention has an impact on pregnant women's knowledge.

Discussion

Description of the Knowledge Level of Pregnant Women Regarding Fetal Stimulation in *Bandengan* Village, *Kendal* District, *Kendal* Regency

The results of the study, mean score at the time of the pretest was 16.26. While the mean score at the time of the posttest was 18.45. This demonstrates that the average value of knowledge has increased, so it can be concluded that the value of knowledge is better at the time of the posttest after being given the intervention. It can be described according to the table of the frequency of pregnant women with good knowledge on the pretest of 59 respondents (80.8%), 13 respondents (17.8%) and less knowledge of 1 respondent (1.4%). Whereas in the post-test pregnant women with good knowledge 71 respondents (97.3%), 2 people (2.7%) had sufficient knowledge and 0 respondents (0%) had insufficient knowledge. This shows an increase in the category of good knowledge in pregnant women.

Knowledge is one of the variables that is expected to increase in this study after being given health education interventions using audiovisual media regarding fetal stimulation. Knowledge is the result of "knowing" that occurs after a person experiences the process of sensing an object. Optimal sensing will

produce new knowledge. The senses of sight and hearing themselves are two senses that have a major influence on one's knowledge (Notoatmodjo, 2014). In accordance with Sari & Wijayanti's research (2013), the stimulation of fetal intelligence in the womb and pregnant women's understanding of fetal development are positively and significantly related. Certain knowledge about health, such as about fetal development, is important before someone stimulates fetal intelligence. This is because a person's actions tend to be based on the knowledge he has, so with good knowledge about fetal development it is hoped that someone can stimulate the intelligence of the fetus in the womb. The influence of knowledge on child development is very important because knowledgeable women will be more concerned with their child's growth. On the other hand, if the mother doesn't monitor the child's development and doesn't give it stimulation, the infant could face developmental delays (Nuraina, 2020).

Growth stimulation is well related to the purpose of providing stimulation. Knowledge of pregnant women about fetal growth is necessary for success in stimulation. Lack of counselling, information, and education (IEC) services is one of the factors contributing to pregnant moms' lack of awareness (Ekayanthi & Suryani, 2019). This does not correlate with this research because most respondents (80.8%) had good knowledge. Education is one component of a person's knowledge contributor. Education can be provided in non-formal forms such as health education or counselling to convey information or material about it so that the audience has better knowledge than before being given education. This is in accordance with Notoatmodjo (2014) which states that one of the factors that influence knowledge is education. Education is the provision of direction on a subject by a third party so that the recipient may comprehend it. In addition, information media also influences knowledge, here the author uses audiovisual media regarding fetal stimulation as a means of imparting knowledge. Suparni & Aisyah (2019) revealed that to be able to carry out stimulation, knowledge about fetal stimulation is needed.

Description of the Behavior of Pregnant Women Regarding Fetal Stimulation in *Bandengan* Village, *Kendal* District, *Kendal* Regency

The results of the answers to the behavioral variables after being given education, all respondents as many as 73 respondents (100%) answered that they often carry out stimuli according to the material in audiovisual media, such as communicating with the fetus or inviting the fetus to tell stories, listening to classical music such as Mozart, stimulating the fetus's sense of sight by attaching a flashlight to the mother's stomach, and stimulating the fetus's sense of taste through tactile stimulation by stroking. stomach. Stimulation is carried out every day and as often as possible when the opportunity arises. This means that education also affects the behavior of pregnant women because the education provided is education related to pregnancy, a way to stimulate a baby's intelligence with an audiovisual approach that makes pregnant women better understand how to stimulate or communicate with the fetus.

This is in accordance with the basic theory developed by Lawrence Green (1991) in Nursalam (2014), The following factors have an impact on behavioral causes: Knowledge and attitudes are among the predisposing elements (Predisposing elements). After pregnant women get education about fetal stimulus through audiovisual media it becomes knowledge that triggers pregnant women to continue to

stimulate or communicate with the fetus for the sake of the baby's intelligence. Nuraina (2020) revealed that Prenatal stimulation can take the form of conversation. When a woman speaks, the fetus can understand the words she uses since it can hear the mother's voice. Additionally, since the fetus will progressively identify its mother, communication with the fetus is crucial. Early communication, i.e. while the infant is still in the womb, can help the mother and fetus build a deeper inner bond (Nuraina, 2020).

A theory by Nuraina (2020) explains that at the 16th week of pregnancy, the fetus will begin to hear waves passing through the amniotic fluid. The sound that the fetus likes the most is the mother's voice. The sound of the mother's heartbeat and digestive system is likewise known to the fetus. The fetus also has senses that capture sound sources which are waves. The fetal ear is filled with amniotic fluid so that it perceives sound by vibrations in the cranial bones. These waves are captured by the eardrum through air conduction. Marx and Nagy in their research showed that the fetus tends to reach out and touch the uterine wall when the mother touches her stomach and also touches herself less during that touch (Valiani & HadiAlijanvand, 2021). The sensory system, which includes the senses of hearing, sight, touch, smell, and taste, can also be stimulated by stimulation. Additionally, stimulation can encourage communication, excite the fetus's pleasurable feelings, and promote both gross and fine movements of the hands, feet, and fingers (Nuraina, 2020). So stimulation can stimulate the ability of the fetus so that it can grow and develop optimally. Baibazarova's theory in Setyaningsih (2017) explains that when a pregnant mother gives tactile stimuli to her fetus, the mother will feel close to her baby, this will reduce maternal stress and depression due to a decrease in the amount of cortisol in the blood and amniotic fluid, this has a significant effect on indirectly to the baby (Setyaningsih, 2017).

Relationship between education and audiovisual media with pregnant women's knowledge of fetal stimulation

The Wilcoxon test results in Table 3 obtained a p-value of 0.000 <0.05, which means that the hypothesis is accepted so that there is a relationship between education through audiovisual media on pregnant women's knowledge of fetal stimulation in *Bandengan* Village, *Kendal* District, *Kendal* Regency. The results of this study are in line with the research of Marizi (2019) the results show that audiovisual media is an effective medium to increase one's knowledge because the education provided is packaged in a unique, creative and innovative way.

The intelligence (IQ) of children is not completely influenced by heredity (nature), but also by stimulation (nurture). The influence of nurture will be much greater if done properly. Preparation of superior quality Human Resources (HR) itself can be started from an early age even in the womb (Aisyah in Haka et al., 2022). According to Seodjatmiko in Haka et al. (2022), the brain is an organ that plays a very important role in determining the intelligence of a child. From 8 to 14 weeks of pregnancy, the fetus's brain begins to develop. The brain is an important organ in the body that functions as a centre for control, thinking, emotion, creativity, intelligence and behaviour. Dr. David Chamberlain, an obstetrician from Boston University, United States, stated the results of his research showed that children who start learning from the womb have multiple intelligence abilities at school age. The same

is true of Dr. William Lilley from the University of Auckland in New Zealand, who asserted that youngsters who experience high levels of stimulation beginning in the womb will mature more quickly than those who experience low or no levels of stimulation. The earlier the stimulation is done, the greater the benefits for the child's development (Suri & Nelliraharti, 2019).

Communication is a sort of prenatal stimulation that involves sound. The fetus can hear what the mother is saying when she speaks to it, and as they converse, the fetus learns to identify the mother more and more. Communication that occurs early or even while the fetus is still inside the mother can help to deepen their emotional bond. Communicating with the fetus can help the mother feel as though the fetus is an actual part of her life, which will make it simpler for her to transition to her new role once the baby is born (Fannia et al., 2023). Knowledge of pregnant women about fetal growth is necessary for success in stimulation. Lack of counselling, information, and education (IEC) is one of the factors contributing to pregnant women's limited pregnancy knowledge (Ekayanthi & Suryani, 2019).

In the current situation providing face-to-face education will be at risk for the transmission of COVID-19. The success of an education depends on the learning components including learning media, the use of interesting media accelerates affective cognitive and psychomotor changes (Zakaria, 2017). Audiovisual media is one of the effective learning media for the health education process because it can stimulate the senses of hearing and sight and attracts more attention so that it is easy for respondents to remember (Zakaria, 2017). This is in line with Edgar Dale's cone theory, which describes how the technique and medium affect participants' ability to remember health education messages. One of the cone points claims that hearing and seeing can boost memory by up to 50%.

Audio visual media is a teaching aid that has the form of an image and makes a sound. Audio-visual media displays elements of images and sounds simultaneously when consuming messages or information. Audiovisual media provides a more realistic picture and improves memory retention because it is more interesting and easier to remember (Ningsih, 2021). Audiovisual media has many advantages including not being limited by distance and time, audiovisual in the form of video can also be played continuously as a learning medium, and the information displayed is also packaged as uniquely and attractively as possible to make it easier to remember and arouse the enthusiasm of respondents to get information so that information is easier accepted. The theory put forward by Daryanto is that video as an audiovisual medium in health education can strengthen the learning process as well as the entertainment value of the presentation. The motion shown can be in the form of a matching stimulus or the form of a response expected from the audience. Messages are conveyed more efficiently because moving images can communicate messages quickly and realistically. Therefore, audiovisual media can accelerate the understanding of messages in a more comprehensive manner. Messages are conveyed more effectively because audiovisual presentation makes the audience more concentrated (Karyaningtyas et al., 2020). In line with what was stated Meidiana et al. (2018) state that audiovisual media is commonly used to increase learning motivation or receive information that begins with curiosity, attention, and participation.

According to Anggreyenti S. et al., (2022), Audiovisual media is the easiest media to digest and is in accordance with the times, so it is intended that using this audiovisual material will help mothers know more and have better attitudes and behaviors. According to research results, it is stated that the sense of the eye transmits most of the knowledge to the brain around 75% to 87%, while the other senses transmit knowledge by 13% to 25%. Providing education with audiovisual media in the form of videos can demonstrate a more efficient absorption of information when employing both hearing and sight as opposed to just sight (Wardani & Kurniasari, 2017).

F. Rene Van de Carr, et al., that The Prenatal Enrichment Unit at Hua Chiew General Hospital, in Bangkok Thailand, led by Dr. C. Panthuraamphorn, has conducted a similar study on prenatal infants and the results concluded that: there is a critical period in infant development that starts at about five months before birth and continues for up to two years when brain stimulation and intellectual exercises can enhance the baby's abilities, prenatal stimulation can help develop a baby's orientation and effectiveness in coping with the outside world after he is born, babies who get prenatal stimulation can be better able to control their movements and are better prepared to explore and learn about the environment after birth, babies who are given prenatal stimulation are fast proficient speech, imitating sounds, saying first words, smiling spontaneously, turning to his parents' voices, being more receptive to music, and maturing into a person with stronger social skills (Miftahillah, 2016).

The implementation of interventions for pregnant women in *Bandengan* Village which was carried out online with the help of the Whatsapp application to distribute audiovisual media and Google forms to distribute questionnaires could be implemented properly. This is inseparable from good human resources so that they can make the most of technology. Therefore, it is important to adjust educational media with existing human resources.

Research Limitations

In this study, researchers had limited time so they did not investigate further changes in behavior in respondents. This is based on the theory of behavior change that is influenced by knowledge.

Conclusions

The conclusion from this study is that there is a relationship between education through audiovisual media and pregnant women's knowledge about fetal stimulation in the *Bandengan* Village based on a p-value finding of 0.000, with a description of pregnant women's behavior regarding fetal stimulation after receiving education of 100%. For future researchers, it is hoped that they can use other methods that are more perfect in the health education model. Pregnant women are expected to have the self-awareness to seek the best information for the growth and development of their babies, as well as health service providers to be able to provide optimal service to pregnant women to obtain a quality generation.

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