

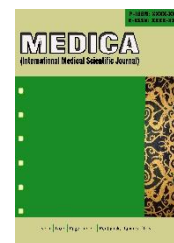
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The Effect of Education Using Audiovisual Media on Mothers' Knowledge about *Japanese Encephalitis* Immunization

Rosmaniah¹✉, Rakhmawati¹, Oon Fatonah Akbarini¹

¹ Department of Midwifery, Politeknik Kesehatan Kementerian Kesehatan Pontianak, Pontianak, West Kalimantan, Indonesia

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Abstract

Japanese Encephalitis (JE) is a viral disease and a leading cause of encephalitis worldwide. Immunization represents the most effective primary prevention strategy to protect individuals and reduce disease transmission. This study aimed to analyze the effect of audio-visual educational media on mothers' knowledge regarding JE immunization in the working area of the Parit Timur Community Health Center. This quantitative study employed a pre-experimental design using a one-group pretest–posttest approach. A total of 66 mothers with toddlers were selected through accidental sampling. Data were analyzed using the Wilcoxon signed-rank test. The results demonstrated a significant improvement in mothers' knowledge following the educational intervention. Prior to the intervention, knowledge scores ranged from 6 to 10, with a median of 8.00. After the intervention, scores increased to a range of 10 to 15, with a median of 14.00, indicating a median difference of 7.00. The Wilcoxon test yielded a p-value of <0.001, confirming a statistically significant difference between pretest and posttest scores. In conclusion, education using audio-visual media has a significant effect on improving mothers' knowledge regarding JE immunization in the working area of the Parit Timur Community Health Center.

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Corresponding Author:

✉ Rosmaniah

Department of Midwifery, Politeknik Kesehatan Kementerian Kesehatan Pontianak, Pontianak, West Kalimantan, Indonesia

Email: rosmaniah@gmail.com

1. INTRODUCTION

Japanese Encephalitis (JE) is a vector-borne zoonotic viral disease and a leading cause of encephalitis globally. The JE virus is transmitted from animals to humans through mosquito vectors and has spread widely across tropical and subtropical regions. JE infections occur in almost all Asian countries and have begun to expand to other regions due to the movement of infected vectors (Kementerian Kesehatan Republik Indonesia, 2023). According to the World Health Organization (WHO), there are approximately 68,000 clinical cases of Japanese Encephalitis reported annually worldwide, with around 24 countries in Southeast Asia and the Western Pacific categorized as high-risk areas. The disease is endemic across Asia, including Japan, the Philippines, Taiwan, Korea, China, Indochina, Thailand, Malaysia, India, and Indonesia. It is estimated that Asia alone accounts for 35,000 JE cases each year, with a mortality rate of 20–30% among children aged 1–15 years. Furthermore, WHO and CDC identify Indonesia as one of the four Asian countries endemic for the Japanese Encephalitis Virus (JEV) (World Health Organization, 2015; World Health Organization, 2024).

In Indonesia, JE cases are primarily identified through surveillance of Acute Encephalitis Syndrome (AES) confirmed by laboratory testing. Surveillance data from 2014 to 2021 reported 143 confirmed JE cases across 11 provinces, with the highest incidence in Bali (77 cases), followed by West Kalimantan (28 cases), D.I. Yogyakarta (13 cases), and East Nusa Tenggara (12 cases) (Garjito et al. 2018; Dinas Kesehatan Kota Yogyakarta, 2024). The majority of cases (85%) occur in children under 15 years old, indicating a high vulnerability in this age group. In West Kalimantan, as of August 2023, there were 4 confirmed JE cases with 1 reported death (Dinas Kesehatan Kalimantan Barat, 2023). Clinically, most JE infections are asymptomatic or present with nonspecific flu-like symptoms; however, severe encephalitis may develop after an incubation period of 4–14 days, particularly in children, with symptoms such as fever, irritability, vomiting, diarrhea, and seizures (Prasetyo, 2018).

Prevention of JE is primarily achieved through vaccination, as treatment is largely supportive and focused on managing symptoms and preventing complications. WHO recommends JE vaccination for populations in endemic areas, including Indonesia, as well as for travelers to such regions (World Health Organization, 2024). In Indonesia, JE vaccination has been included in the Indonesian Pediatric Society (IDAI) immunization schedule since 2017, administered at 12 months and repeated at 24 months to 3 years of age; however, it has not yet been implemented as a nationwide routine program and is limited to endemic areas (Prasetyo, 2018). Despite its importance, immunization coverage in Indonesia remains suboptimal. According to the Indonesian Health Profile (2021), the national coverage of complete basic immunization in 2020 was 83.3%, which is below the Strategic Plan target of 92.9% (Tribakti et al., 2023).

One of the key determinants influencing immunization coverage is maternal knowledge. Mothers play a central role in ensuring children receive complete immunization, and their level of knowledge significantly affects immunization uptake. Insufficient knowledge may lead to misconceptions and low participation in immunization programs, increasing the risk of disease occurrence in children. Conversely, adequate knowledge can improve adherence to immunization schedules and contribute to reducing Infant Mortality Rate (IMR) while enhancing community health status (Sari, Basuki, & Triastuti, 2017; Setyaningsih, 2019). Health education is therefore essential to improve knowledge and awareness. Previous studies have shown that health education can significantly increase knowledge about JE (Fitriani, Susanti & Sari, 2018; Sukmandari,

2019). However, there is still a research gap regarding the effectiveness of specific educational media, particularly audio-visual media, in improving maternal knowledge about JE immunization, as such approaches have not been widely explored.

The selection of appropriate educational media plays a crucial role in ensuring effective information delivery. Audio-visual media, such as videos, combine auditory and visual elements, making them more engaging and easier to understand compared to conventional methods (Ak et al. 2021; Munir 2017). Preliminary findings from a field study conducted on December 6, 2023, revealed that mothers lacked knowledge about JE immunization, including its benefits and purpose. In addition, immunization coverage in the study area was only 48.7% (192 out of 394 targets), indicating a significant gap between target and achievement. Based on these findings, the novelty of this study lies in the application of audio-visual media as an educational intervention to improve maternal knowledge regarding JE immunization in a local endemic setting. Therefore, this study aims to analyze the effect of education using audio-visual media on mothers' knowledge about Japanese Encephalitis immunization in the working area of the Parit Timur Community Health Center.

2. METHOD

This study employed a quantitative approach using a pre-experimental design with a one-group pretest–posttest without a control group. This design was used to assess the effect of an intervention by comparing respondents' knowledge before and after the educational program.

The study population consisted of all mothers who had children aged 9 months to less than 15 years and had received Japanese Encephalitis (JE) immunization in the working area of the Parit Timur Community Health Center. A total sample of 66 respondents was included in the study. The sampling technique used was accidental sampling, in which respondents who met the inclusion criteria and were available during the data collection period were selected.

Primary data were collected directly from respondents using a structured questionnaire. The instrument was designed to measure mothers' knowledge regarding Japanese Encephalitis immunization, covering basic understanding, benefits, schedule, and prevention aspects. The questionnaire was tested for validity and reliability prior to data collection. Reliability testing using Cronbach's alpha produced a value of 0.853 (>0.60), indicating that the instrument was reliable and suitable for use in this study.

Data analysis was conducted using univariate and bivariate analysis techniques. Univariate analysis was used to describe the distribution of respondents' characteristics and knowledge scores, while bivariate analysis was used to determine differences in knowledge before and after the intervention. The Wilcoxon signed-rank test was applied as the data were not normally distributed, with a significance level set at $p < 0.05$.

This study obtained ethical approval from the Ethics Committee of the Pontianak Ministry of Health Polytechnic with ethics approval number 321/KEPK-PK.PKP/VI/2024, ensuring that all research procedures complied with ethical standards involving human participants.

3. RESULTS AND DISCUSSION

Table 1. Characteristics of Respondents Based on Age, Education, Occupation, and Number of Children.

Characteristics	Category	n	%
Mother's Age	20–35 years	50	75.8

	>35 years	16	24.2
Education	Elementary School	18	27.3
	Junior High School	14	21.2
	Senior High School	29	43.9
	Higher Education	5	7.6
Occupation	Housewife	56	84.8
	Farmer	8	12.1
	Civil Servant	2	3.0
Number of Children	1 child	18	27.3
	2 children	29	43.9
	≥3 children	19	28.8
Total		66	100

Table 1 shows the characteristics of respondents in the study. The majority of mothers were aged 20–35 years (75.8%), indicating that most respondents were in the optimal reproductive and productive age group. Based on education level, the largest proportion had completed senior high school (43.9%), suggesting a moderate educational background that may influence the acceptance of health information.

In terms of occupation, most respondents were housewives (84.8%), indicating that the majority of mothers were not formally employed and may have more direct involvement in child care and health decision-making at home. Regarding the number of children, the highest proportion had two children (43.9%), reflecting a relatively low to moderate fertility pattern among respondents.

Table 2. Effect of Audio-Visual Education on Mothers' Knowledge about Japanese Encephalitis Immunization.

Knowledge	n	Median	Min–Max	SD	p-value
Before intervention	66	8.00	6–10	0.982	0.000
After intervention	66	14.00	10–15	1.136	
Median difference		7.00			

Table 2 shows that there was a significant increase in mothers' knowledge after the audio-visual educational intervention. Before the intervention, the median knowledge score was 8.00 (range 6–10). After the intervention, the median increased to 14.00 (range 10–15), with a median difference of 7.00 points.

The Wilcoxon signed-rank test yielded a p-value of 0.000 (<0.05), indicating a statistically significant difference between pretest and posttest knowledge scores. This result confirms that education using audio-visual media has a significant effect on improving mothers' knowledge regarding Japanese Encephalitis immunization in the working area of the Parit Timur Community Health Center.

DISCUSSION

The results of this study showed that the respondents' knowledge about Japanese Encephalitis (JE) immunization increased after the provision of education using audio-visual media. Before the intervention, the lowest knowledge score was 6, the highest was 10, and the median was 8.00. After the intervention, the lowest score increased to 10, the highest to 15, and the median rose to 14.00. These findings indicate a clear improvement in respondents' knowledge following the educational intervention, suggesting that audio-visual media is effective in enhancing understanding of JE immunization among mothers.

The increase in knowledge was observed in almost all respondents after watching

the audio-visual educational material. In this study, knowledge refers to mothers' understanding of JE immunization, including its definition, objectives, diseases that can be prevented, benefits of immunization, immunization schedules according to child age, and the number of required doses. This improvement suggests that structured and visually engaging health education can facilitate better cognitive absorption of information among mothers.

The occupation of respondents may also have contributed to immunization-related behavior and knowledge acquisition. Most respondents were housewives, totaling 56 individuals (84.4%). Housewives generally have more flexibility to attend integrated health service posts (*posyandu*), which serve as primary access points for maternal and child health services. Regular attendance at *posyandu*, including participation in immunization activities, vitamin A distribution, and health counseling, indirectly increases mothers' exposure to health information. Trust in health services and habitual attendance further strengthen participation in such programs, thereby enhancing knowledge (Hijani, Nauli, & Zulfitri, 2014; Priskusanti, Ekawati, & Sabina, 2018).

In general, individuals with higher knowledge tend to develop better cognitive frameworks that support healthier behaviors. Increased knowledge is expected to foster positive attitudes and practices related to disease prevention, including complete immunization for children. Experience and empirical evidence indicate that behavior based on knowledge is more sustainable compared to behavior not supported by adequate understanding. Therefore, improving maternal knowledge is a key strategy in increasing JE immunization coverage and supporting child health outcomes.

Audiovisual media used in this study served as a health promotion tool delivering information through video-based communication. This aligns with the theory that knowledge acquisition is influenced by the information received, which can be obtained through both formal and informal education. Formal education is gained through schooling, while informal education can be obtained through training or health education activities. The use of audio-visual media strengthens message delivery by combining visual and auditory stimuli, thereby improving comprehension and retention.

These findings are consistent with previous studies conducted by (Ningsih, Trinawindu, & Ari 2018; Sukmandari, 2019), which reported that health education significantly influences knowledge levels regarding JE before and after intervention. The use of simple, clear, and visually engaging educational materials enhances understanding and communication effectiveness. In addition, Jayanti, Mahalini, and Utama (2021) reported that mothers in Denpasar had generally good knowledge regarding JE immunization, with an average correct response rate of 65%. Furthermore, (Handayani & Angellina, 2023) stated that JE vaccination provides protective effects against infection, and although mild side effects such as pain, redness, and swelling may occur, the benefits of immunization outweigh the risks.

The statistical analysis using the Wilcoxon test yielded a p-value of 0.000 (<0.05), indicating a statistically significant effect of audio-visual education on mothers' knowledge regarding JE immunization. This confirms that the intervention effectively improved respondents' understanding in the study area.

The use of film-based audio-visual media in this study was chosen because it is considered an effective method for increasing knowledge and influencing behavior change. Health promotion media function as tools to deliver health messages to target audiences through various formats, including print, electronic, and outdoor media, with the aim of improving knowledge and encouraging positive behavioral changes (Kumalasari 2020). In this study, the video duration was approximately 3 minutes and 51 seconds and

was shown during posyandu activities. Although audiovisual media has limitations such as dependency on technical skills and equipment, its visual and auditory elements make it more engaging, especially when combined with animation and supportive audio.

According to (Kumalasari 2020), the selection of appropriate media is a crucial component in health communication because it significantly influences public perception and belief formation. In this study, audiovisual media was well received by respondents because it was relatively new and attracted their curiosity. This novelty factor increased respondents' attention and engagement during the educational session.

The researcher assumes that the more appropriate and attractive the educational media used, the higher the level of knowledge improvement among the community regarding JE immunization. In the study area, health education was previously conducted mainly through lectures and occasionally supported by leaflets; however, these methods were not consistently applied and lacked visual engagement. The introduction of audiovisual media in this study proved to be more effective, as evidenced by the increase from predominantly low knowledge levels in the pretest to good knowledge levels in the posttest.

This study concludes that education using audio-visual media has a significant and positive effect on increasing mothers' knowledge about Japanese Encephalitis immunization. The improvement in knowledge is influenced by the effectiveness of visual and auditory learning media, respondents' sociodemographic characteristics, and the accessibility of health education through posyandu services. Audio-visual media proves to be a more engaging and effective educational tool compared to conventional methods such as lectures and printed leaflets.

This study has several limitations. First, the research design used a pre-experimental one-group pretest–posttest without a control group, which limits the ability to compare results with a non-intervention group. Second, the sampling technique used accidental sampling, which may reduce the generalizability of the findings. Third, the study measured knowledge only in the short term immediately after the intervention, so long-term retention of knowledge was not assessed. Finally, external factors such as prior exposure to health information and variations in individual learning ability were not fully controlled.

4. CONCLUSION

This study concludes that education using audio-visual media has a significant effect on increasing mothers' knowledge about Japanese Encephalitis immunization in the working area of the Parit Timur Community Health Center. Knowledge levels among mothers improved after the educational intervention, indicating that audio-visual media is an effective method for health education in enhancing maternal understanding of JE immunization.

REFERENCES

- Ak, M. F., Darmayani, S., Nendissa, S. J., Arifudin, O., Anggaraeni, F. D., Hidana, R., ... & Handayani, F. S. (2021). *Pembelajaran digital*. Bandung: Widina Bahkti Persada Bandung.
- Dinas Kesehatan Kalimantan Barat. (2023). *Profil Kesehatan Provinsi Kalimantan Barat 2022*. Pontianak: Dinas Kesehatan Kalimantan Barat.
- Dinas Kesehatan Kota Yogyakarta. (2024). *Pencanganan Imunisasi Japanese Encephalitis di Kota Yogyakarta*. Yogyakarta: Dinas Kesehatan Kota Yogyakarta.
- Fitriani, F., Susanti, M.M., & Sari, N.M.D.F., (2018). *Pengaruh Pendidikan Kesehatan Terhadap Tingkat Pengetahuan Ibu Tentang Imunisasi Dasar Pada Bayi Usia 0-12*

- Bulan Di Desa Lajer, Penawangan Kabupaten Grobogan. *The Shine Cahaya Dunia D-III Keperawatan*, 3(1), 1-8. Retrieved from <https://ejournal.annurpurwodadi.ac.id/index.php/TSCD3Kep/article/view/46>
- Garjito, T. A., Widiarti, Anggraeni, Y. M., Alfiah, S., Tunggul Satoto, T. B., Farchanny, A., Samaan, G., Afelt, A., Manguin, S., Frutos, R., & Aditama, T. Y. (2018). Japanese encephalitis in Indonesia: An update on epidemiology and transmission ecology. *Acta tropica*, 187, 240–247. <https://doi.org/10.1016/j.actatropica.2018.08.017>
- Handayani, L., & Angellina, S. (2023). Pengaruh imunisasi Japanese Encephalitis (JE) Terhadap Respon Imun Memory dan Keamanan pada Anak usia 9 bulan sampai 15 tahun: Sistematik Review. *Jurnal Kebidanan*, 13(2), 103-115. <https://doi.org/10.33486/jurnalkebidanan.v13i2.231>
- Hijani, R., Nauli, F.A., & Zulfetri, R. (2014). Hubungan pengetahuan ibu tentang imunisasi terhadap kelengkapan imunisasi dasar pada balita di wilayah kerja Puskesmas Dumai Kota Kelurahan Dumai Kota. *Jurnal Online Mahasiswa Program Studi Ilmu Keperawatan Universitas Riau*, 1(1),1-9. Retrieved from <https://jom.unri.ac.id/index.php/JOMPSTIK/article/view/4116>
- Jayanti, N.M.A.D., Mahalini, D.S., & Utama, I. M.G.D.L. (2021). Tingkat Pengetahuan Ibu Tentang Imunisasi Japanese Encephalitis Di Denpasar Bali Tahun 2019. *Jurnal Medika Udayana*, 10(11), 45-48.
- Kementerian Kesehatan Republik Indonesia. (2023). *Pedoman Teknis Pelaksanaan Imunisasi Ensefalitis Jepang (JE)*. Jakarta: Kementerian Kesehatan Republik Indonesia.
- Kumalasari, E.A., Oktariani, M., & Rahmawati, N. (2020). Pengaruh Pendidikan Kesehatan Media Audiovisual Terhadap Tingkat Pengetahuan Ibu Tentang Imunisasi Measles Rubella (MR) Di Posyandu Desa Bangkleyan Blora. *Skripsi*. Surakarta: Fakultas Ilmu Kesehatan, Universitas Kusuma Husada Surakarta. Retrieved from <https://eprints.ukh.ac.id/id/eprint/570/>
- Munir, M. (2017). *Digital Learning*. Bandung: Alfabeta.
- Ningsih S.I.A.S., Trinawindu, I.B.K., & Ari, I.A.D.K. (2018). Sosialisasi Imunisasi JE (*Japanese Encephalitis*) Oleh Dinas Kesehatan Provinsi Bali Melalui Desain Komunikasi Visual. *Karya Ilmiah*. Denpasar: ISI Denpasar.
- Prasetyo, D. (2018). *Mengenal Japanese Encephalitis*. Jakarta: IDAI Indonesian.
- Prisusanti, R. D., Ekawati, M. D., & Sabina, S. (2018). Hubungan Pengetahuan Ibu Balita Tentang Imunisasi Terhadap Kelengkapan Imunisasi Dasar Pada Balita di Posyandu Melati Desa Tambakasri Kecamatan Sumbermanjingwetan Kabupaten Malang. *Wijaya Kusuma Malang Journal*, 2(2), 34-42.
- Sari, D., Basuki, S., & Triastuti, N.J. (2017). Hubungan Pengetahuan Ibu Tentang Imunisasi Dasar Dengan Kelengkapan Imunisasi Dasar Bayi Di Wilayah Kerja Puskesmas Bendo Kabupaten Magetan. *Biomedika*, 8(2), 6-12. <https://doi.org/10.23917/biomedika.v8i2.2910>
- Setyaningsih, P. H. (2019). Hubungan pengetahuan ibu tentang imunisasi dasar dengan kelengkapan imunisasi dasar di wilayah kerja Puskesmas Larangan Utara Kota Tangerang. *Edu Dharma Journal: Jurnal penelitian dan pengabdian masyarakat*, 3(2), 44-55. <https://doi.org/10.52031/edj.v3i2.6>
- Sukmandari, N. M. A. (2019). Pendidikan Kesehatan Tentang Japanese Encephalitis Berpengaruh Pada Tingkat Pengetahuan Siswa Sekolah Dasar Di Canggu, Bali. *Jurnal Medika Usada*, 2(2), 47-53. Retrieved from <http://ejournal.stikesadvaitamedika.ac.id/index.php/MedikaUsada/article/view/44>

- Tribakti, I., Nelwetis, N., Noflidaputri, R., Diniayuningrum, A., Aji, R., & Syakurah, R. A.,...& Jayatmi, I. (2022). *Vaksin dan imunisasi*. Padang: PT Global Eksekutif Teknologi.
- World Health Organization. (2015). Japanese Encephalitis Vaccines: WHO position paper. *Weekly Epidemiological Record*, 90(09):69–88. Retrieved from <https://www.who.int/publications/i/item/japanese-encephalitis-vaccines-who-position-paper>
- World Health Organization. (2024). *Japanese Encephalitis*. Geneva: World Health Organization. Retrieved from: <https://www.who.int/news-room/fact-sheets/detail/japanese-encephalitis>