

THE CORRELATION OF EDUCATION TO DANGEROUS SIGNS OF PREGNANCY TRIMESTER USING AUDIOVISUAL MEDIA TO LEVEL KNOWLEDGE OF PREGNANT WOMEN IN THE 3rd TRIMESTER IN THE REGION TELAGA DEWA HEALTH CENTER WORK BENGKULU CITY

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Abstract

Background : Danger signs of pregnancy are symptoms that indicate that the mother and baby are in danger. If the danger signs of pregnancy are not detected early, it can cause problems for the mother and fetus, resulting in a risk of death. Pregnant women's knowledge of the danger signs in pregnancy will minimize obstetric emergencies. Therefore, there is a need for education regarding this matter to increase knowledge among pregnant women. **Method :** This study employed a pre-experimental design with a one-group pre-test and post-test approach. The sample consisted of 78 third trimester pregnant women selected through simple random sampling. Data collection involved pre-and post-intervention questionnaires, followed by univariate and bivariate analyse. **Result :** The results of the study showed that there was an increase in the knowledge of pregnant women in the third trimester after being given intervention using audiovisual media, previously there were (34.6%) respondents with good knowledge, (32.1%) with sufficient knowledge, (33.3%) with less knowledge and after being given the intervention it increased to (91.0%) respondents with good knowledge, and (9.0%) respondents with sufficient knowledge. The results of the bivariate test obtained a p-value of $0.001 < 0.005$, which means that audiovisual media can be an effective medium in increasing the knowledge of third trimester pregnant women in the working area of the Telaga Dewa Community Health Center, Bengkulu City. **Conclusion :** Audiovisual media is effective in increasing pregnant women's knowledge about danger signs in the third trimester.

Keywords: Audiovisual, Danger Signs of Third Trimester Pregnancy, Knowledge

INTRODUCTION

Maternal deaths in this indicator are defined as all deaths during pregnancy, childbirth and the postpartum period which are caused by pregnancy, childbirth and the postpartum period or their management, but not due to other causes such as accidents or incidents. Maternal mortality rate is all deaths within that coverage per 100,000 live birth (Ministry of Health of the Republic of Indonesia 2020).

Maternal Mortality Rate (MMR) can be defined as the number of maternal deaths in a certain period per 100,000 live births (KH) in the same period that occurred in women during pregnancy or within 42 days after the end of pregnancy, regardless of the duration and location of the pregnancy (Kemenkes RI, 2020).

According to the World Health Organization (WHO), MMR worldwide is at that figure in 2020 reaching 287,000 deaths (WHO, 2023), ASEAN is equivalent to 235/100,000 live births, in Indonesia in 2020 there were 189/100,000 live births and in 2023 the number of maternal deaths was 4,482 (Ministry of Health of the Republic of Indonesia, 2024; WHO 2023). Sub-Saharan Africa and South Asia accounted for approximately 87% (253,000) of estimated global maternal deaths in 2020. Sub-Saharan Africa alone accounted for approximately 70% maternal deaths (202,000), while South Asia accounted for about 16% (47,000) and the highest MMR in the world is in the country of South Sudan, namely as many as 1,200 per year. death by cause of maternal death high blood pressure during pregnancy (pre-eclampsia and eclampsia), bleeding, postpartum infections, and unsafe abortion (WHO, 2023).

The main cause of maternal death in

Indonesia in 2023 is Hypertension in pregnancy was 412 cases, obstetric bleeding as many as 360 cases and other obstetric complications as many as 204 cases (RI Ministry of Health 2023). The most common causes of maternal death in 2022 are hypertension in pregnancy with 801 cases, bleeding from other causes with 741 cases, heart disease with 232 cases, and other causes with 1,504 cases (Ministry of National Development Planning (PPN)/Planning Agency National Development, 2021). The maternal mortality rate in Bengkulu Province in 2023 will be 39 people (Provincial Health Service. Bengkulu, 2023). Maternal deaths in Bengkulu Province were caused by several other unknown factors, namely 13 cases, bleeding in 11 cases, hypertension in 10 cases, infection in 3 cases, and heart and blood vessel abnormalities in 2 cases. Bengkulu City is in 6th position in terms of the number of MMR which is quite high, namely 3 cases in 2023, the first position is Rejang Lebong Regency and the lowest is South Bengkulu Regency (Bengkulu Provincial Health Service, 2023).

The morbidity and mortality rates of pregnant women can be prevented if the mother is pregnant and their families are able to recognize the danger signs of pregnancy and try to seek health help (Agustini, 2022; Hutabarat & Lestari, 2017). Danger signs of pregnancy are those signs Indicates dangers that may occur during pregnancy or the antenatal period. Pregnant women really need to know this especially those that threaten the safety of the mother and fetus during pregnancy, the minimum things that pregnant women need to know to recognize the danger signs of pregnancy are bleeding, reduced fetal movement, stomach ache and severe

headache (Carlos et al, 2020; Hurin'in&Agustina, 2025). Signs the danger of pregnancy is an indication that shows potential danger during pregnancy or before delivery that may occur maternal death (Erniawati et al, 2022). Recognize the danger signs of pregnancy such as vaginal bleeding, hyperemesis gravidarum, preeclampsia and eclampsia, premature rupture of the ketubah, severe headaches, visual disturbances, swelling of the face and hands, abdominal pain, and decreased movement the fetus is very important (Aprilia and Ramadhan, 2020; Hurin'in&Damayanti, 2023).

The importance of knowledge about health support the formation of a good attitude towards things that can be improved health. Knowledge about health will also support the formation of independent healthy behavior. Suryani and Kursiah (2020) stated behavior Good health (47.1%) is formed more from good knowledge than bad knowledge (34.9%).

Action or effort which is carried out to increase mothers' knowledge about signs The dangers of pregnancy during pregnancy are health education. Based on the research results of Rosilawatiresa, et al (2023), it is known that the research results show the average knowledge of pregnant women increased from 58.52 before education to 81.88 after education, with grades $p=0.0001$ which shows that there is an influence of education on knowledge. This shows a significant increase in the knowledge of pregnant women after attending educational classes, which shows the effectiveness of the program.

METHOD

This research used a pre-experimental one-group pre-test and post-test design which was carried out from March to April

2025. This research focused on 78 pregnant women who were selected using the Slovin formula with data collection techniques using simple random sampling techniques in the working area of the Telaga Dewa Community Health Center, Bengkulu City.

This research categorizes levels knowledge into three groups: good, sufficient, and poor. The research instrument uses a checklist questionnaire adopted from Santi Iswidayanti (2021) which has gone through validity and reliability tests. This research was declared ethically appropriate according to the seven 2011 WHO standards which are in line with the 2016 CIOMS Guidelines and are valid from 22 January 2024 to 22 January 2025, with ethical exceptions. Number No. 3036/UN25.8/KEPK/DL/2025 issued by the Faculty of Dentistry, Jember University, East Java.

Statistical data was analyzed using SPSS version 23.0. Univariate analysis describes the frequency distribution, while bivariate analysis determines the relationship between education and level of knowledge. From the results of the normality test using the Kolmogorov-Smirnov method, it was found that the data was not normally distributed. Because the significant value during the normality test was $0.001 (<0.005)$. Test The analysis used is a non-parametric test, namely the Wilcoxon test signed ranking test. Data processing includes four stages, namely: verifying the completeness of the questionnaire (editing), data coding, data input into Excel and SPSS (entry), and carrying out the final inspection (cleaning).

RESULT AND DISCUSSION

Among the 78 pregnant women who were research respondents, there were respondents who met the inclusion and

exclusion criteria. Of the 78 pregnant women who were respondents before being given the intervention, 27 respondents (34.6%) had a good level of knowledge, 25 respondents (33.1%) had a fair level of knowledge, 26 respondents (33.3%) had a fair level of knowledge, and after being given the intervention there were 71 respondents (91.0%) respondents had good knowledge and 7 respondents (9.0%) knowledgeable respondents Enough.

Tabel 1 . Characteristics of Respondent Frequency Distribution Based on Age, P Education, Occupation, and Parity of Pregnant Women in the Work Area of Telaga Dewa Community Health Center, Bengkulu City

Characteristics	n (samples)	Presentase
1. Age		
<20 Years	2	2,6%
20-35 Years	71	91,0%
>35 Years	5	6,4%
Total	78	100,0%
2. Education		
Basic education	2	2,6%
Secondary education	13	16,7%
Upper education	63	80,8%
Total	78	100,0%
3. Employment		
Doesn't work	57	73,1%
work	21	26,9%
Total	78	100,0%
4. Parity		
Primigravida	20	25,6%
Multigravida	58	74,4%
Total	78	100,0%

Analysis of data from 78 pregnant women respondents in the Telaga Dewa Community Health Center Work Area, Bengkulu City shows that the characteristics of the respondents based on age shows that most of the respondents are aged 20-35 years is (91.0%). Based on the level of education, the majority are in upper education (high school-university high) as much as (80.8%). Based on work mostly are in the non-working category, namely (73.1%). Meanwhile, based on how many pregnancies (gravida) some are Most of the respondents were in the multigravida category (74.4%).

Based on the characteristics of the respondents, the majority (91.0%) were aged 20-35 years. Age is something that has an influence on a person's understanding and thinking patterns. The older one gets, the more one's grasping power and thinking patterns develop, so that one will get it easy to receive information (Darsini, et al. 2019).

The level of education is one of the main factors influencing a person's perceptions and actions, because knowledge plays a direct role in shaping behavior (Putri, et al. 2023). In this study the majority (80.8%) of respondents had upper education (high school-university). The level of education will influence an individual's perception of cognitive abilities, an individual's cognitive abilities will increase if they are often used for activities and completing tasks in the form of

puzzles or problem solving (Egyita, et al. 2024).

In this study the majority (73.1%) of respondents did not work. According to Mubarak (2011, in Fuadi, 2021), work is one of the factors that influences a person's level of knowledge. Work is an activity carried out to fulfill daily needs. Through the work environment a person can obtain it experience and knowledge, either through direct means or through other indirect means (Fuadi, 2021). Work is an activity that needs to be done to support personal and family life. In general, work often takes time but also benefits from experience and knowledge, both directly and indirectly (Aryanti and Yesi, 2018).

In this study the majority (74.4%) of respondents fell into the multigravida category. Parity is the number of pregnancies that have produced fetuses capable of living outside the womb (F. Safitri, et al. 2021). Paritas can share a mother's experiences Regarding pregnancy, this can give rise to cognitive processes (acquisition of knowledge) and the competencies (abilities) that will be possessed influence the mother's level of knowledge and behavior during pregnancy (Munawaroh, et al. 2019). In this study the majority of respondents (74.4%) respondents were included in the multigravida category.

Based on the results of research conducted by Heryanti, C.S.M (2022), at the Tulung Selapan Community Health Center in 2020,

researchers assume that parity can influence mothers' knowledge, especially about Danger signs of pregnancy, this is caused by increasing maternal parity, thus allowing mothers to get more experience and good information from health workers when carrying out antenatal care examinations, Experience facing childbirth, or other experiences can increase the mother's knowledge about the danger signs of pregnancy. A mother's personal experience can be used as an effort gain some knowledge.

Tabel 2 . Educational Relationship Danger Signs of Pregnancy Trimester III Using Audiovisual Media to Level Knowledge of Pregnant Women in Third Trimester

Data analysis of 78 pregnant women respondents in the Telaga Dewa Community Health Center Work Area, Bengkulu City showed that there were 27 respondents. knowledgeable before providing education using audiovisual media and there were 71 respondents who had good knowledge after being given education using audiovisual media. In the sufficient category, before education was provided using audiovisual media, there were 25 respondents and after education was provided using audiovisual media, there were 7 respondents who were quite knowledgeable. Meanwhile, 26 respondents were less knowledgeable before being given education using audiovisual media and after being given audiovisual media there were

no less knowledgeable respondents. The results of the bivariate test using the Wilcoxon sign rank test obtained a p-value of $0.001 < 0.005$, meaning that there was a relationship between education on the danger signs of pregnancy in the third trimester using audiovisual media and the level of knowledge of pregnant women in the third trimester. Telaga Dewa Community Health Center working area, Bengkulu City.

In accordance with the pretest results of third trimester pregnant women in the working area of the Telaga Dewa Community Health Center, Bengkulu City with a total of 78 respondents, it shows that the level of knowledge about the danger signs of pregnancy in third trimester pregnant women before education

Knowledge Level	Pre-test (n=78)	Post-test (n=78)	P-value
Good	27 (34,6%)	71 (91,0%)	0,001
Enough	25 (32,1%)	7 (9,0%)	
Not Enough	26 (33,3%)	0 -	
Total	78 (100,0%)	64 (100,0%)	

was carried out the use of audiovisual media is still lacking, namely (33.3%). In line with research conducted by Muhamad et al, (2022) regarding the influence of audiovisuals on pregnant women's knowledge about exclusive breastfeeding at the Telaga Community Health Center, Gorontalo Regency on the 34th. There were (52.9%) respondents whose knowledge was still lacking. In line with research conducted by Sindi, et al (2022) Effectiveness of audiovisual information regarding danger signs of

pregnancy. Knowledge of pregnant women in independent midwife practice place Choirul Mala, Palembang City in 2021, as many as 30 respondents (73.3%) had insufficient knowledge before education was carried out using audiovisual media. This may be influenced by several things, respondents have never received education about the danger signs of pregnancy, so there are still non-pregnant respondents who have a good understanding of this condition.

According to research results, knowledge of pregnant women after being given education using audiovisual media has increased, namely (91.0%) the majority of respondents have good knowledge. In line with research conducted by Anggi, et al (2022), in the Purwantoro 1 Community Health Center working area, after being given education using audiovisual media, knowledge of pregnant women increased by (94.7%), meaning there was significant development in the new information received.

The results of this study show that there is a relationship between education using audiovisual media and increasing pregnant women's knowledge about the danger signs of pregnancy in the third trimester. Based on the results, the p-value of 0.001 is smaller than $\text{sig} < 0.05$, meaning that before and after the intervention there is a difference knowledge of the danger signs of third trimester pregnancy. The majority of respondents' knowledge

before being given a good education was lacking (33.3%), then after being given the education there was an increase in knowledge (91.0%).

This research is supported by Sukarsih and Rachmawati, (2023) who shows changes in optimal knowledge about conditions before and after intervention using audiovisual media. Muarofah independent midwife practice place, Surabaya, where an assessment is carried out before education is provided. The majority of respondents had poor knowledge (57.6%) after that. Based on educational knowledge, most of the respondents were good (88.1%), which means there is an influence from education using audiovisual media. towards increasing knowledge.

Sindi, et al (2022) prove the knowledge of pregnant women increased after being given education using audiovisual media, The research was conducted on 30 respondents including (73.3%) mothers pregnant women whose knowledge is lacking, and after being given education using audiovisual media (100%) pregnant women are very knowledgeable. So education uses audiovisual media proven to increase pregnant women's knowledge about the signs danger of pregnancy. Strengthened by research conducted by Anggraini, et al (2020) in Cinta Rakyat Village with 42 respondents, pregnant women stated this before being given intervention There are (21.4%) pregnant women

who use audiovisual media less knowledgeable, after being given intervention using audiovisual media increases knowledge by (95.20%) knowledgeable.

Education is an activity effort to provide information or knowledge about certain things to improve knowledge in society (Umasugi, 2021). Success in providing education can be supported by several supporting factors, including being able to use media as an internal tool to inform the message you want to convey (Rahmawati and Silaban, 2021). Providing audiovisuals in the form of videos about the danger signs of pregnancy for pregnant women is one way increase knowledge, so that pregnant women can quickly make decisions when you encounter danger signs of pregnancy. The use of audiovisual media in health promotion is considered more effective in conveying information to pregnant women compared to using methods such as lectures or discussions without the help of media (Sukarsih, et al. 2023).

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REFERENCE

- Anggraini, S. A., Siregar, S. & Dewi, R., 2020. Pengaruh media audio visual terhadap tingkat pengetahuan dan sikap pada ibu hamil tentang pencegahan stunting di desa Cinta Rakyat. *Jurnal Ilmiah Kebidanan Imelda*, 6(1), pp.26-31. Diunduh tanggal 26 Mei 2025. Tersedia dari: https://jurnal.uimedan.ac.id/index.php/Jurnal_Kebidanan/article/view/379
- Anggi, S. N. S., 2022. Efektivitas audio visual education (Ave) terhadap tingkat pengetahuan anemia pada ibu hamil Di Wilayah Kerja Puskesmas Purwanto: Doctoral dissertation, Universitas Kusuma Husada Surakarta. Diunduh tanggal 26 Mei 2025. Tersedia dari: <http://eprints.ukh.ac.id/id/eprint/3412>
- Aprilia, K. & Ramadhan, P., 2020. Peningkatan Pengetahuan Ibu Hamil tentang Tanda Bahaya Kehamilan Melalui Penyuluhan. *Jurnal Pengabdian Bidan Nasuha*, 1(1), pp.7-11. Diunduh tanggal 17 Januari 2025. Tersedia dari: <https://journal.ruangeduberjaya.com/index.php/JMBK>
- Aryanti, Y., 2018. Umur, pendidikan, dan pekerjaan dengan pengetahuan ibu hamil tentang tanda bahaya kehamilan trimester III di BPM Choirul Mala dan BPM Zuniawati Palembang tahun 2017. *Cendekia Medika*, 3(2), pp.72-79.
- Carlos, J. & Carvalho, R., 2020. Pre-eclampsia / Eclampsia. *Rev Bras*

- Ginecol Obstet, 41. Diunduh tanggal 25 Januari 2025. Tersedia dari: <https://doi.org/10.1055/s-0039-1687856>
- Darsini, Fahrurrozi, & Cahyono, E. A., 2019. Pengetahuan: Artikel Review. Jurnal Keperawatan, 12(1), p.97. Diunduh tanggal 26 Mei 2025. Tersedia dari: <https://e-journal.Ippmdianhu. /view/96>
- Dinas kesehatan Provinsi Bengkulu .2023. *Profil Kesehatan*
- Egyita, S. D., Primadhamanti, A. & Safitri, E. I., 2024. Hubungan usia, pekerjaan dan pendidikan pasien terhadap tingkat pengetahuan ibu di Puskesmas Wilayah Lampung Tengah. Jurnal Ilmiah Wahana Pendidikan, 10(6), pp.196-204. Diunduh tanggal 26 Mei 2025. Tersedia dari: <https://doi.org/10.5281/zenodo.10642605>
- Erniawati, E. et al., 2022. Penyuluhan kesehatan tentang tanda bahaya pada kehamilan di kelurahan Bontoramba Kabupaten Jeneponto. JCS, 4(2), pp.1-7. Diunduh tanggal 19 Januari 2025. Tersedia dari: <https://jcs.aktabe.ac.id/index.php/jurnal/article/download/45/52/221>
- Heryanti, C. S. M., 2022. Hubungan paritas dan pendidikan dengan pengetahuan ibu hamil tentang tanda bahaya kehamilan di Puskesmas Tulung Selapan tahun 2020. Jurnal Kesehatan dan Pembangunan, 12(24), pp.30-39. Diunduh tanggal 26 Mei 2025. Tersedia dari: <https://ejurnal.stikesmitraadiguna.ac.id/index.php/jkp/article/download/165/129/919>
- Hurin'in, N. M., & Agustina, R. (2025). Perbedaan Efektifitas Rebozo dan Gymball terhadap Penurunan Intensitas Nyeri Punggung Ibu Hamil Trimester III. *Jurnal Ilmiah Kesehatan*, 18(1), 1-11.
- Hurin'in, N. M., & Damayanti, T. Y. F. (2023). Edukasi Pemanfaatan Terapi Komplementer Jahe dalam Asuhan Kebidanan untuk Mengurangi Mual Muntah Ibu Hamil. *Jurnal Pengabdian Masyarakat-PIMAS*, 2(1), 59-66.
- Kemenkes RI, 2020. Profil Kesehatan Indonesia Tahun 2020. Jakarta: Kementerian Kesehatan Republik Indonesia.
- Mubarak, D. H. A. Z., 2020. Penelitian Kuantitatif dan Statistik Pendidikan. zakimu.com.
- Muhamad, Z. N., Pratama, A. & Lakadjo, S., 2022. The effect of audio-visual danger signs of pregnancy knowledge of pregnant mothers in work area Public Health Center Tilange. ABDIMAS: Jurnal Pengabdian Masyarakat, 5(2), pp.2871-2874. Diunduh

- tanggal 27 Mei 2025. Tersedia dari: <https://journal.umtas.ac.id/Abdimas/article/view/2792>
- Munawaroh, A., Nugraheni, S. A. & Rahfiludin, M. Z., 2019. Pengaruh edukasi buku saku terhadap perilaku asupan zat besi ibu hamil terkait pencegahan anemia defisiensi besi. *Jurnal Kesehatan Masyarakat (e-Journal)*, 7(4), pp.411-419. Diunduh tanggal 25 Mei 2025. Tersedia dari: <https://ejournal3.undip.ac.id/index.php/jkm/article/view/24806>
- Putri, P. C., Fitriani, W. N. & Wahyuni, I. S., 2023. Faktor-faktor yang berhubungan dengan pengetahuan ibu hamil tentang tanda bahaya pada kehamilan di TPMB bdn dan Kristiningrum, S.TR.Keb Depok. *Indonesian Journal of Midwifery Scientific*, 2, pp.1-10. Diunduh tanggal 27 Mei 2025. Tersedia dari: <https://www.slims.khj.ac.id/index.php/ijm/article/view/58>
- Rahmawati, E. & Silaban, D. T. S., 2021. Pengaruh Media Video Terhadap Peningkatan Pengetahuan Ibu Hamil Anemia. *Journal Of Midwifery Science*, 1(1), pp.1-10. Diunduh tanggal 27 Mei 2025. Tersedia dari: <https://ojs.ukb.ac.id/index.php/jms/article/view/289>
- Rosilawati, R. and Rahayu, K., 2022. Pengaruh edukasi kelas ibu hamil terhadap pengetahuan ibu tentang deteksi dini resiko kehamilan di Wilayah kerja puskesmas Rengasdengkok. *Journal Of Midwifery*, 11(2), pp.201-206. Diunduh tanggal 1 Oktober 2024. Tersedia dari: <https://www.researchgate.net/publication/373511528>
- Safitri, F., Husna, A. & Sakdiah, R., 2021. Analisis faktor yang berhubungan dengan kejadian anemia pada ibu hamil di Wilayah Kerja Puskesmas Padang Tiji Kabupaten Pidie. *Journal of Healthcare Technology and Medicine*, 7(1), pp.2615-109. Diunduh tanggal 26 Mei 2025. Tersedia dari: <https://jurnal.uui.ac.id/index.php/JHTM/article/download/1404/715>
- Safitri, F., Husna, A. & Sakdiah, R., 2021. Analisis faktor yang berhubungan dengan kejadian anemia pada ibu hamil di Wilayah Kerja Puskesmas Padang Tiji Kabupaten Pidie. *Journal of Healthcare Technology and Medicine*, 7(1), pp.2615-109. Diunduh tanggal 26 Mei 2025. Tersedia dari: <https://jurnal.uui.ac.id/index.php/JHTM/article/download/1404/715>
- Sindi, D. P., Mediarti, D. & Hindun, S., 2022. The Effectiveness Of Audiovisual About Danger Signs Of Pregnancy With

- Pregnant Women's Knowledge. Journal of Maternal and Child Health Sciences (JMCHS), 2(1), pp.27-31. Diunduh tanggal 18 Januari 2025. Tersedia dari: <https://jurnal.polttekkespalembang.ac.id/index.php/JMCHS/article/view/1179>
- Sukarsih, R. I., Ainiyah, N. H. & Rizkiyah, Z., 2023. Pengaruh Promosi Kesehatan Melalui Audio Visual Terhadap Pengetahuan Tanda Bahaya Kehamilan. Sinar Jurnal Manajemen Bisnis dan Kesehatan (JMBK), 1(3), 2025. Tersedia dari: <https://journal.ruangedu.berjaya.com/index.php/JMBK>
- Suryani & Kursiah, W. N., 2020. Hubungan pengetahuan dengan perilaku masyarakat dalam membuang sampah di sungai Sago Pekanbaru. Dinamika Lingkungan Indonesia, 7(1), pp.58-61. Diunduh tanggal 10 Oktober 2024. Tersedia dari: <https://www.researchgate.net/publication/373511528>
- World Health Organization. 2023. Monitoring Health For the Sdgs, Sustainable Development Goals. Geneva: World Health Organization; 2021. Licence: CC BY-NC-SA 3.0 IGO*