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The Use of Effective Video Media in Enhancing Knowledge and Attitudes towards Malaria Prevention Among the Elderly

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Abstract: The number of elderly people worldwide increased by 221 million in 2022. This number is predicted to grow to 994 million in 2030. The elderly are a risk group with an age range of more than 65 years. Elderly age is usually characterized by a decline in bodily and physiological function, which causes the elderly to be less capable of adapting to disease exposures, including malaria. A preliminary study conducted in the Sentral Mimik Health Center's service area found that 13 respondents had low knowledge and attitudes regarding malaria prevention. At the same time, 1 other person showed sufficient knowledge and attitudes regarding malaria prevention in Mimika Regency. Purpose: This research aims to determine the effectiveness of education health using video educational media on the knowledge and attitudes of the elderly in preventing malaria at the Pasar Sentral Mimika Health Center in Mimika Regency. Method: This research employs Quasi Experimental design using Pretest-Posttest with control group design approach. The population in this study was 86 elderly people living in the Pasar Sentral Mimika sub-district. The sample size was 70 people divided into 2 groups, 35 in the intervention group and 35 in the control group, who were taken using simple techniques. Data were analyzed using a Paired t-test and multivariate analysis using the Manova test. Results: The distribution of the knowledge level among the elderly before the intervention was 3.88, and the average value after being given the intervention increased to 8.13. Meanwhile, the average attitude value distribution for elderly attitudes before the intervention was 13.58, and the average value after the intervention increased to 24.83. Conclusion: The average value of the elderly's knowledge level improved after receiving health education using video media in the intervention group at Pasar Sentral Mimika Health Center.

Keywords: Education; Elderly; Malaria; Video

Introduction

The elderly population worldwide increased by 221 million in 2022. This number is predicted to grow to 994 million in 2030. The elderly are a risk group with an age range of 65 and above. Elderly age is usually characterized by a decline in body and physiological function, which causes the elderly to be less capable of adapting to disease exposures, including malaria (Pany & Boy, 2020).

Permatasari et al. (2021) explained that the degenerative process in the elderly leads to a decline in the immune system, accompanied by anatomical changes and a reduction in physiological functions,

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which is further exacerbated by exposure to diseases. Aging is normal process that experienced by human. This condition causes many changes, both anatomical and physiological. A common change usually experienced is the reduction in organ function, which in turn affects the immune system of the elderly.

The hematopoietic and lymphatic systems protect the body from infection and disease. As individuals age, the functionality of these systems declines and become less effective. T and B cells are primary cells involved in defending against specific invaders; where T cells are responsible for cellular immunity and primarily respond to infections and pathogen invasions, while B cells function to produce antibodies. However, with aging, the functions and responsibilities of T and B cells diminish, leading to increased susceptibility to bacterial and virus (Gemini et al., 2021).

The immune response decreases with age. Repeated mutations can reduce the body's immune system's ability to recognize itself and cause damage. These mutations damage cell membranes that cause the immune system recognize itself and broke. This underlies the increased incidence of autoimmune diseases in the elderly. The decline in immune function among the elderly can result in a higher risk of exposure to various infectious diseases that impact a decrease quality of the elderly's health (Umamah & Fabiyanti, 2018).

Malaria is a contagious disease that can reduce productivity, result in financial losses, and significantly increase mortality rates (Sutarto & Cania, 2017). Parasites of the genus *Plasmodium* develop and live in the blood, causing malaria. It is typically transmitted to humans through the bite of an infected female *Anopheles* mosquito. Individuals with gastrointestinal disorders often experience influenza-like symptoms, including high fever, chills, and headaches. All age groups, both men and women, can be affected by this disease. Fever, headache, nausea, and chills are some signs and symptoms of malaria that can appear anywhere from 10 days to 4 weeks after infection. Those infected with malaria commonly suffer from nausea, vomiting, fever, chills, and headaches (Sepriyani et al., 2019; Supranelfy & Oktarina, 2021).

Siregar (2015) explains that a lack of public awareness regarding malaria prevention contributes to the severity of the disease, which includes complications such as coma, severe anemia, hypoglycemia, shock, acute renal failure, malaria-induced hemoglobinuria, jaundice (malaria billiosa), and even death. *World Health Organization* WHO (2022) reported that global malaria cases increased from 245 million in 2020 to 247 million in 2021. According to data from the Indonesian Ministry of Health (2022), malaria cases in Indonesia are quite high with a 36.29% increase from 2021 (304,607 cases) to 415,140 cases in 2022. Papua itself contributed 89% of these cases or 369,483 malaria cases and has not achieved malaria elimination. Papua Province has 5 districts that have quite high malaria cases, including Mimika Regency with 77,379 malaria sufferers, Jayapura City with 27,436 malaria sufferers, Jayapura with 17,676 malaria sufferers, while the Malaria case report from the Mimika Health Office in 2022 indicated 132,547 cases.

The rise of malaria cases, particularly in Mimika, can be attributed to multiple factors, including poor knowledge and attitudes towards malaria prevention. Magdalena et al. (2020) stated in Blosom's theory that knowledge or cognitive is the fundamental level for the formation of human attitudes and behavior, an individual's cognitive abilities determine their attitudes and responses to issues, an excellent cognitive level is indirectly forming good individual attitudes and behavior, including those related to knowledge and attitudes about diseases.

Research conducted by Putra et al. (2022) explains that community knowledge and attitudes greatly influence the incidence of malaria in a region, in her research it shows good knowledge regarding preventing malaria that occurs, good knowledge about malaria prevention fosters positive attitudes towards supporting and implementing malaria prevention measures in their environment, so that enabling comprehensive malaria prevention efforts.

Significant social knowledge does not always influence how people behave. Behavior is influenced by various factors, not just their level of understanding. A lack of knowledge about malaria transmission causes less confidence in understanding the disease's transmission process, thereby influencing people's attitudes and behaviors, so it is important to provide education to increase people's knowledge about malaria prevention (Ilmawati et al., 2017; Sandy & Ayomi, 2018).

Jarona (2021) reported research conducted in Pir 3 Village Arso District Keerom Regency, revealed a relationship between knowledge and the incidence of malaria. People with poor knowledge are at higher risk of contracting malaria. Good public knowledge about malaria will influence society's behavior in addressing malaria cases in Papua, as behavior is very closely linked to the level of society's knowledge.

Rizki et al. (2022) demonstrated that effective and appropriate health education using audiovisual media such as videos has been proven to increase public knowledge following video-based education. Material presented via video makes people understand the material better, as they can both see and hear the information being explained directly. Moreover, education provided via video can accurately depict environmental conditions relevant to the society's experience.

Isnaini et al. (2019) research on pregnant women dealing with malaria proves that video-based education improved society's behavior compared to before the education was provided. Video is one of the appropriate educational media for providing knowledge about a disease to the public. This finding aligns with Zanuma et al. (2021) research that showed an increase in knowledge and attitudes after after video-based education is implemented compared to before.

The Mimika Regency Government has implemented a malaria elimination program integrated with the central government program down to the Health Center level. The Sentral Mimika Health Center has conducted preventive steps including community outreach using leaflets and pamphlets. However, malaria cases continue to rise annually, indicating the ineffectiveness of the current educational methods employed by the government in Mimika Regency.

Utilizing video as an educational medium is a promising approach to improving community knowledge and attitudes toward malaria prevention in Mimika Regency. Husna et al. (2022) found that video-based education is particularly effective because it allows researchers to illustrate environmental conditions realistically, besides, presenting material with video can also insert images, text, and animation. It can increase attention and impression for the target of counseling.

A preliminary study conducted at the Sentral Mimika Health Center working area found that 13 respondents had low knowledge and attitudes regarding malaria prevention, while one had adequate knowledge and attitudes regarding malaria prevention in Mimika Regency. Therefore, to address the malaria issue effectively, it is crucial to implement appropriate prevention measures and provide continuous education to the society about malaria, including functions and how to use insecticide-treated nets through video media by healthcare workers. Based on the background description above, it is essential to conduct research on "The Effectiveness of Health Education Using Video Media on the Knowledge and Attitudes of the Elderly in Malaria Prevention at Pasar Sentral Mimika Health Center".

Method

Research Design

This study employs a quasi-experimental design with a Pretest-Posttest using control group design approach. This research will conduct observations twice, before (pre-test) and after (post-test), on two groups, the intervention group and During the Pre-test, a test will be given using a research questionnaire to measure the uniformity or homogeneity of the data. Following this, the Health Service will provide intervention regarding malaria prevention material using Video Media at the Pasar Mimika Health Center for the intervention group. The following is a research design model using Quasy experimental Pretest-Posttest Design (Nursalam, 2021).

Population and Sample

The population in this study comprises 86 elderly people living in the Pasar Sentral Mimika area. The sampling technique in this research used simple random sampling, where samples are randomly selected from the population without paying attention to the strata. So that the sample can represent the characteristics of the population and the sample is selected. The sample size for this study was 70 people, divided into 2 groups, 35 people in the intervention group and 35 people in the control group. In this research, the intervention and control groups will be given health education using video media, starting with a pretest measurement, followed by the intervention, and a posttest is carried out after the intervention is complete.

Research Location and Time

The study will be conducted from August 22 to September 09, 2023, at the Pasar Sentral Health Center in Mimika Regency, after obtaining a letter of ethical approval from the Ethics Commission of the Faculty of Nursing, Muhammadiyah University of Jakarta, with No.1104/F.9-UMJ/VII/2023.

Data Analysis

Bivariate analysis to determine the effectiveness of health education using video media on the knowledge and attitudes of the elderly at the Pasar Sentral Mimika Health Center using the Paired t-test with SPSS software. The paired t-test (pre-post) test the difference between 2 means of paired data from 1 sample. The assumptions that must be met to carry out this test include normally distributed data, has a minimum interval scale, and paired data. If the assumptions are not met, it is necessary to carry out an alternative test, which is used if the data is not normally distributed that is the Wilcoxon Sign rank test, and the multivariate test in this study uses the Manova test. The Manova test is a further statistical analysis of the bivariate test, which measures the effect of two data means simultaneously.

Results and Discussion

Result

Distribution of Respondents based on Sociodemographic Characteristics

Descriptive characteristics of research respondents can be seen in Table 1.

Table 1. Frequency Distribution of Respondents based on Sociodemographic Characteristics based on Gender, Age, Education, Occupation (n = 35)

Variable	Control Group		Intervention Group	
	Amount	Percentage %	Amount	Percentage %
Gender				
Man	18	51.4	14	40
Woman	17	48.6	21	60
Age				
60-69 Years Old	29	82.9	32	91.4
≥70 Years Old	6	17.1	3	8.6
Education				
No Formal Education	11	31.4	2	5.7
Elementary School	11	31.4	16	45.7
Junior High School	5	14.3	6	17.1
Senior High School	6	17.1	8	22.9
Bachelor's Degree	2	5.7	3	8.6
Occupation				
Housewife	16	45.7	18	51.4
Farmer	13	37.1	9	25.7
Private Employee/	3	8.6	4	11.4
Entrepreneur	2	5.7	2	5.7
Bike Taxi Driver	1	2.9	2	5.7

Based on Table 1, the distribution shows that the majority of respondents in the intervention group are female, totaling 21 individuals (60%), while the majority in the control group are male, totaling 18 individuals (51.4%). The age distribution of respondents in the intervention group is mostly 60-69 years old, with 32 individuals (91.4%), and in the control group, the majority is also 60-69 years old, with 29 individuals (82.9%). The highest level of education among the intervention group is primary school graduates, with 16 individuals (45.7%), while in the control group, the majority has no formal education, with 11 individuals (31.4%). The occupation distribution in the intervention group shows that the majority are housewives, with 18 individuals (51.4%), and in the control group, the majority are also housewives, with 16 individuals (45.7%).

Elderly Knowledge

Description of the elderly's knowledge level about malaria prevention before and after intervention for both the intervention and control groups can be seen in Table 2.

Table 2. Descriptive Statistics of Respondents Based on Elderly Knowledge Levels Before and After Intervention and Control

Group	Knowledge	Min-Max	Mean	Std. Dev
Intervention	Pretest	1-9	4.23	2.102
	Posttest	5-10	7.37	1.308
Control	Pretest	1-9	4.29	2.023
	Posttest	1-7	3.69	1.510

Based on Table 2 shows that the average knowledge level of the elderly after the intervention was higher (7.37 ± 1.308 SD) compared to before the intervention (4.23 ± 2.102 SD). In contrast, the control group's knowledge level did not show significant changes, with scores of 4.29 before the intervention and 3.69 after the intervention.

Elderly Attitudes

The description of elderly attitudes toward malaria prevention before and after the intervention for both the intervention and control groups can be seen in Table 3.

Tabel 3. Distribution of Responses Based on Attitudes Before and After the Intervention and Control

Group	Attitude	Min-Max	Mean	Std. Dev
Intervention	Pretest	10-20	14.51	2.628
	Posttest	20-30	24.80	2.621
Control	Pretest	7-17	11.51	2.628
	Posttest	7-17	11.71	2.420

Based on Table 3 above shows that the average attitude score in the intervention group was 14.51 at pretest, and it increased to 24.80 after the intervention. In the control group, the average score was 11.51 at pretest and 11.71 at posttest.

Analysis of the Impact of Video Media on Elderly Knowledge

The impact of video media on elderly knowledge was analyzed using a T-test to assess the difference in knowledge levels before and after the intervention. The results of the T-test analysis are presented in Table 4.

Table 4. Paired T-test of Elderly Knowledge

Knowledge	n	Mean	Std. Deviasi	CI 95%	P-Value
Pretest	35	4.23	2.102	-3.794 -2.491	0.000
Posttest	35	7.37	1.308		
Control Group					
Knowledge	n	Mean	Std. Deviasi	CI 95%	P-Value
Pretest	35	4.29	2.023	-0.98 - 1.298	0.090
Posttest	35	3.69	1.510		

Based on Table 4 shows that the results of the paired T-test analysis indicate a significant increase in the average score (p-value = 0.000) between before (pretest) and after (posttest) giving intervention that means there is an effect of health education using video media on the elderly's knowledge about malaria prevention at the Pasar Sentral Mimika Health Center, Mimika Regency.

Analysis the Impact of Video Media on Elderly Attitudes

The impact of video media on elderly attitudes was analyzed using a T-test to assess the difference in attitudes before and after the intervention. The results of the T-test analysis are presented in Table 5.

Table 5. Paired T-Test for Elderly Attitudes

Attitude	n	Mean	Std. Deviation	CI 95%	P Value
Pretest	35	14.51	2.628	-10.286 -9.873	0.000
Posttest	35	24.80	2.621		
Control Group					
Attitude	n	Mean	Std. Deviation	CI 95%	P Value
Pretest	35	11.51	-461	2.628 -2.420	0.128
Posttest	35	11.71	061		

Based on the data in Table 5 shows that the results of the bivariate analysis using the Paired T-Test indicate that the average attitude of the elderly before the intervention improved and a P-Value of 0.000 < α=0.05 was obtained, which means there is an effect of providing health education using video media on the attitudes of the elderly regarding malaria prevention at the Pasar Sentral Mimika Health Center.

Multivariate Analysis

The multivariate analysis in this study used manova to examine the effects and differences knowledge and attitudes between the intervention and control groups, and the manova test results can be seen in Table 6.

Table 6. Multivariate Test

Effect		Value	F	Sig.
Elderly	Pillai's Trace	0.880	244.663[b]	0.000
	Wilks' Lambda	0.120	244.663[b]	0.000
	Hotelling's Trace	7.303	244.663[b]	0.000
	Roy's Largest Root	7.303	244.663[b]	0.000

Table 6 shows that based on the results of the multivariate analysis using manova above, a Wilks' Lambda value of 0.000 < α=0.05 was obtained, which means there is an effect of providing health education with video media on the level of knowledge and attitudes of the elderly in the intervention group regarding malaria prevention at the Pasar Sentral Mimika Health Center."

Discussion

Description of the Characteristics of the Elderly (Gender, Age, Education, and Occupation) at the Pasar Sentral Mimika Health Center, Mimika Regency

Based on the results of this research, it is known that the largest gender distribution of respondents in intervention group is female for about 21 people (60%). The age distribution of the largest respondents was 60-69 years, about 32 people (914%). The highest level of education distribution was elementary school education with 16 people (45.7%). The occupational distribution of the largest number of respondents was housewives, 18 people (51.4%). Meanwhile, in the control group, the largest gender was male, 18 people (51.4%), the largest distribution of education was no formal education and elementary school, each is about 11 people (31.4%), and the largest occupation was as a housewife, 16 people (45.7%).

Research by (Herawati & Deharnita, 2019) the characteristics of the elderly are mostly aged > 65 years, namely 87.3%, most of them are male (63.6%), with the highest level of education being low (90.0%). Based on age, to (Indonesian Ministry of Health, 2019) states that the elderly age category is divided into two groups: pre-elderly (50-59 years) and elderly (≥60 years).

According to Law No. 13 of 1998 on Elderly Welfare, the definition of elderly person is defined as

someone who has reached the age of 60 years or older. Elderly individuals are those undergoing the aging process, characterized by a decline in physical resilience, making them increasingly susceptible to diseases that can lead to mortality. The Ministry of Health categorizes the elderly into three groups: early elderly (55-64 years), elderly (≥65 years), and high-risk elderly, those over 70 years of age (Respati, 2010).

The elderly population is individuals aged 60 years and older. In the elderly, there will be a process of gradual loss of the tissue's ability to repair itself or replace and maintain its normal function so that it cannot withstand infections and repair the damage that occurs (Arisjulyanto, 2017).

Research by Sulistyarini et al. (2016) shows that the frequency distribution of elderly based on the gender of respondents shows that the highest distribution is women with 25 respondents (78.1%) compared to men. According to Rokhayati et al. (2022) Regarding gender, the average incidence of malaria is often found in men. This is because a large number of men do activities at night, whether for work or just to spend time with friends. This was also found in the results of several studies conducted in 2020 in different regions, stating that the factors that influence the incidence of malaria are also influenced by gender, where the proportion of infections is higher in men than in women.

Gender refers to the biological differences between males and females from birth. Biological differences and functions between males and females are distinct and not interchangeable, and their functions remain the same as men and women on earth Gender is the difference between men and women biologically from birth. Men and women have different natural characteristics, one of them is personality traits. Men are seen as more aggressive, analytical, competitive, dominant, resolute, independent, and less emotional. Females are generally perceived as more affectionate, gentle, sensitive, emotional, dependent, and compliant (Pambudi et al., 2021).

Research by Surti et al. (2017) investigated the education levels of the elderly and found that nearly half had only completed primary school, with 15 respondents (37.5%). The elderly are categorized based on their formal education levels, primary school, junior high school, senior high school, and higher education. The higher level of education that elderly people have, the higher their knowledge about healthy living, thus encouraging them to fulfill their physical activities better (Notoatmodjo, 2010). This study observed that elderly individuals with primary school education are more prevalent, yet those who meet their physical activity needs tend to be more self-reliant. This might be attributed to knowledge acquired from informal education, in addition to formal education. Besides the Informal education, knowledge can also be obtained along with experiences and information from media and close contacts. So that enables elderly to independently meet their physical needs because they already have information about the benefits of doing physical activity which can increase the strength and density of the elderly's muscles and bones and make the elderly's body feel healthy.

Based on research by Talombo et al. (2018) found that a low level of education in malaria patients (36 individuals, 75%) is associated with a higher risk of malaria. The odds ratio obtained is 6.111, indicating that individuals with lower education levels are 6.11 times more at risk of contracting malaria This result has a significant relationship supported by the p-value, namely $p < 0.05$ ($p = 0.000$). According to (Notoatmodjo, 2018), higher education will increase respondents' knowledge about the importance of health around the home. Conversely, lower education levels correlate with a reduced awareness of environmental health risks and a reluctance to seek information about malaria.

Sir et al. (2016) this research shows that there is a relationship between education and malaria incidence. Adequate education tends to be associated with sufficient knowledge. This is because an individual's level of education can reflect their ability to comprehend and understand issues. Furthermore, understanding of these issues can shape an individual's attitudes, and being influenced by the environment will produce real behavior as a reaction. The risk of malaria in individuals with lower education levels are greater than those with higher education. Therefore, cross-sector cooperation with the Department of Education is necessary to improve public education through out-of-school programs where people are taught about malaria and its prevention.

Education is conscious and planned effort to create a learning atmosphere and process so that learners actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble character, and skills necessary for themselves, society, nation, and state (Law No. 20 of 2003). The goal of education is the development of individual potential that benefits both personal life and all Indonesian citizens. To achieve this goal, there needs to be a deliberate, planned, and structured effort that includes guidance, teaching, and training efforts. These efforts can be realized in family, school, and society environments, commonly referred to as formal, informal, and non-formal education (Pristiwanti et al., 2022).

Education is a learning process acquired by every individual (student) to enable human (student) to understand, comprehend, and mature, and able to make humans (students) have more critical thinking.

Education is an ongoing process of adjustment for humans who have developed physically and mentally, and who are free and aware of God, as manifested in the intellectual, emotional, and human nature of humans (Rahman et al., 2022).

Meanwhile almost of elderly are self-employed, with 18 respondents (45.0%). Elderly who are self-employed tend to appear more energetic compared to those who work as farmers or in other similar occupations. This is because self-employed elderly individuals often want to showcase their ability to engage in physical activities, motivating them to continue such activities even as they reach the Elderly age range (60-74 years) (Surti et al., 2017).

Based on Alim et al. (2020) research result shows that the majority of malaria patients visiting the Denemani Health Center in 2018 were private employees, with 410 cases (63%). Meanwhile, the lowest number were those without employment, with 15 cases (2.3%). This is attributed to fewer outdoor activities compared to those who work. Research by Fien Lumolo et al. (2015) found that the most common occupations among respondents were farmers, motorcycle taxi drivers, and livestock keepers, with 114 respondents (60.6%). These jobs are performed outdoors, often extending into the night, increasing the likelihood of contact with Anopheles mosquitoes. Non-residential jobs or those with high mobility are at greater risk for malaria, such as medical personnel, military staff, missionaries, miners, and others. Plantation workers moving from non-endemic to endemic areas lack immunity to diseases in new areas, thus facing a higher risk of malaria. Similarly, workers brought from other regions are also at risk of contracting malaria. Local socio-cultural and economic environments significantly affect the extent of contact between humans and vectors. Risky occupations such as farming, fishing, motorcycle taxi driving, and other similar jobs increase contact between human and vectors.

Individuals working in forested areas are at risk of contracting malaria because forests are habitats for high-density populations of Anopheles mosquitoes. The presence of dense vegetation reduces sunlight penetration to the ground surface, creating a shaded and humid environment. This condition provides an ideal resting place for mosquitoes and breeding place for mosquitoes where there is stagnant water under the bushes (Alim et al., 2020). Individuals working in forested areas are at risk of contracting malaria because forests are habitats for high-density populations of Anopheles mosquitoes. The presence of dense vegetation reduces sunlight penetration to the ground surface, creating a shaded and humid environment. This condition provides an ideal resting place for mosquitoes and serves as a breeding ground, particularly where water accumulates beneath the vegetation (Alim et al., 2020).

According to Notoatmodjo (2018), work is a routine activity carried out of obligation and responsibility for oneself, others, or a company, without harming anyone. The definition of work is often associated with earning money or generating income. This perception is not entirely incorrect, as the money earned through work is used to meet basic needs and buy what they want. Work in economic studies is an element of production, reflecting the physical and intellectual effort an individual contributes to production activities.

The Impact of Health Education through Video Media on Knowledge about Malaria Prevention at Pasar Sentral Mimika Health Center

The results of this study show that the average value of the elderly's knowledge level after the intervention was higher (7.37 ± 1.308 SD) compared to before the intervention (4.23 ± 2.102 SD). Meanwhile, the control group's knowledge scores remained relatively unchanged, with pre-test and post-test scores of 4.29 and 3.69, and the Paired T-Test analysis showed that the average value had increased significantly (p-value=0.000) between before (pretest) and after (posttest) the intervention was given, indicating that health education through video media positively impacts elderly knowledge about malaria prevention at Pasar Sentral Mimika Health Center, Mimika Regency.

Husna et al. (2022) stated that from this activity, it can be concluded that video education influences people's knowledge about health. Because the video messages are easy to understand, respondents also find them helpful material. Every respondent agreed that instructional video content could be applied in daily life. Additionally, all respondents agreed that the content was straightforward to understand. Respondents' answers showed that the duration of the video was appropriate, and the content was interesting and on target.

This research is also in line with research by Rizki et al. (2022) which reported a significant increase in society compliance with malaria prevention measures after educational video interventions, thus enhancing respondents' adherence to malaria prevention protocols.

Another study conducted by Saragih et al. (2022) stated that video media is an effective medium for providing public health counseling and education. This is in line with the SOR theory coined by Skinner, which posits that organisms respond based on stimuli. In this case, the presence of video media provides a stimulus for respondents that resulted in increased knowledge after viewing.

According to Mulyadi et al. (2018), Health education can increase respondents' inadequate

knowledge. A key element of health education is using media tools to stimulate as many senses as possible. When communicating using video, the message becomes more interesting. Visual and auditory messages are also easier to understand because they are shorter. This research shows that health education significantly improves respondents' understanding positively. Real-world experiences can be transformed into learning objectives through media use in health education.

Research by Arisjulyanto et al. (2024) reported that after education and counseling were carried out in Sentani District, Papua, the society could identify malaria symptoms early if they appeared, and public awareness of malaria recurrence increased. This study suggests involving community leaders in educational and outreach initiatives. It also suggests that outreach activities should be carried out regularly to increase community involvement and foster a sense of personal commitment to malaria prevention.

Also supported by Isnaini et al. (2019), There was a change in behavior regarding malaria prevention after providing video intervention, with a p-value of 0.004. Video media is very effective in increasing people's knowledge and self-awareness regarding malaria prevention.

As what Magdalena et al. (2020) stated that the respondent's mastery of the cognitive domain includes the respondent's actions, which are proven by knowledge, such as knowledge and thinking skills. Respondents' knowledge can be determined from developing their knowledge or understanding, so it shows that individuals with strong cognitive abilities can remember a theory they have obtained more strongly, including knowledge about malaria prevention that respondents gained from health education through video media.

This research concludes that providing health education using video is an effective educational method in increasing the elderly's knowledge regarding malaria prevention; Video or audiovisual media provide education with easy-to-understand explanations and practical examples related to daily life so that It is easy for the elderly to understand the education provided at Pasar Sentral Health Center, Mimika Regency.

The Impact of Health Education through Video Media on Elderly Attitudes towards Malaria Prevention at Pasar Sentral Mimika Health Center

The results of this study show that the average attitude score in the pretest intervention group was 14.51, and the average score after being given the post-test intervention increased to 24.80. The control group in the pretest was 11.51, and the post-test was 11.71. The bivariate analysis results using the Intervention Paired T Test experienced an increase. They obtained a P value of $0.000 < \alpha=0.05$, which means providing Health Education with video media positively influences elderly attitudes towards malaria prevention at Pasar Sentral Mimika Health Center.

This study aligns with Rizki et al. (2022), which found that respondent compliance with malaria prevention measures significantly improved after an educational video intervention. Positive attitudes towards compliance greatly influence behavior and adherence to malaria prevention following video media interventions.

Mayasari et al. (2012) stated that the results of the analysis showed an increase in positive attitudes about malaria. The positive attitude of respondents increased after being given video intervention, which is also in line with changes in respondents' knowledge. Attitude is an individual's response to a stimulus or object; it is not an action yet.

According to Isnaini et al. (2019), providing education through video media encourages curiosity and fosters positive attitudes. Besides offering an efficient learning method in a shorter time, video content enhances retention, influences respondent attitudes, and directly affects their behavior in preventing malaria. Based on Sari et al. (2020) research found that when people receive information through video media, their attitudes and knowledge improve. The conclusion is that malaria health promotion using video media, tailored to society characteristics such as language, visual media, and communicator attitudes, can enhance community understanding of malaria. Researchers concluded that when creating video content, it is essential to consider several factors to ensure the content is accurate and suitable for educational use. To ensure the message is easily understood, video materials should be modified and adapted to respondent characteristics. Health teaching media should be visual with minimal textual content.

Bloom's taxonomy theory states that attitude change is marked by changes in respondents' knowledge and characterized by the willingness to respond or realize something that aligns with societal values. Alternatively, it can also be said that responding is an attitude that shows active participation in involving oneself in a particular phenomenon and reacting to it in some manner. This can be exemplified by attitudes towards malaria prevention with answering, assisting, proposing, compromising, liking, welcoming, supporting, approving, demonstrating, reporting, selecting, stating, sorting, and refusing to participate in malaria prevention (Ulfah & Arifudin, 2023). The conclusion of this study is that health education using video media is highly effective in improving elderly attitudes towards malaria prevention

in the operational area of Pasar Sentral Health Center, Mimika Regency.

The Impact of Health Education Using Video Media on Knowledge and Attitudes towards Malaria Prevention at Pasar Sentral Mimika Health Center

Based on the results of the multivariate analysis with the Manova test above, the Wilks' Lambda value was 0.000<α=0.05, which means that there was an influence of providing Health Education using Video Media on the level of knowledge and attitudes of the elderly in the intervention group regarding malaria prevention at Pasar Sentral Mimika Health Center.

Husna et al. (2022) stated that from this activity, it can be concluded that video education influences people's knowledge about health. Because the video messages are easy to understand, respondents also find them helpful material. Every respondent agreed that instructional video content could be applied in daily life. Additionally, all respondents agreed that the content was straightforward to understand. Respondents' answers showed that the duration of the video was appropriate, and the content was interesting and on target.

This research is also in line with research by Rizki et al. (2022), which reported a significant increase in community compliance with malaria prevention measures after educational video interventions. Thus, respondents' compliance with preventing malaria protocols. Another research conducted by Saragih et al. (2022) also stated that video media is an effective tool for public health education, consistent with Skinner's SOR theory, which posits that organisms respond based on stimuli. In this context, video media provided a stimulus that resulted in increased knowledge after viewing.

This research is also in line with Rizki et al. (2022) which found that respondent compliance with malaria prevention measures significantly improved after an educational video intervention. Positive attitudes towards compliance greatly influence behavior and adherence to malaria prevention following video media interventions.

Mayasari et al. (2012) stated that the analysis showed increased positive attitudes about malaria. Respondents' positive attitudes increased after being given video intervention, which also aligns with changes in respondents' knowledge. Attitude is an individual's response to a stimulus or object; it is not an action yet. According to Isnaini et al. (2019), providing education using video media encourages the desire to know and forms a positive attitude. Besides offering an efficient learning method in a shorter time, video content enhances retention, influences respondent attitudes, and directly affects their behavior in preventing malaria.

Conclusion

Based on the research results and discussion presented above, it can be concluded that the majority of respondents in the intervention group were aged 60-69 years j (91.4%), were female (60%), had at least 45.7% primary school education, and worked as housewives 51.4. The majority in the control group was aged 60-69 years old 82.9%, half were men 51.4%, and 45.7% worked as housewives. The distribution of the elderly's knowledge level before the intervention was 3.88, and the average value after the intervention increased to 8.13. Meanwhile, the average attitude value distribution for elderly's attitudes before the intervention was 13.58, and the average value after the intervention increased to 24.83. The average knowledge level of the elderly improved significantly after being given health education using video media in the intervention group at Pasar Sentral Mimika Health Center. The average attitude value of the elderly increased after being given Health Education using video media in the intervention group at Pasar Sentral Mimika Health Center. There is a significant effect and difference in knowledge and attitudes towards malaria prevention after being given health education using video media at Pasar Sentral Mimika Health Center, Mimika Regency. These results indicate that the use of video educational media as a tool in health education has great potential to increase the knowledge and attitudes of the elderly in malaria prevention efforts. Therefore, it is recommended to continue integrating this approach into public health programs in the area to achieve more effective disease prevention goals.

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