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Effects of Health Education Intervention on Malaria Prevention Knowledge Among Women of Childbearing Age in Urban and Rural Communities in Anambra State

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Abstract

Nigeria is one of the nations with the highest rates of malaria, making it a significant public health concern. For this reason, this study aimed to ascertain how health education interventions affected the knowledge of women of childbearing age in Anambra State's rural and urban communities regarding malaria prevention. Awka South L.G.A. was the study's location. 1050 registered women of childbearing age from all indigenous town women's meetings in Awka South L.G.A. in Anambra State made up the study's population. 208 women in Awka South L.G.A., Anambra State, who were of childbearing age, made up the sample. The statistical software for social sciences version 25 (SPSS) was used to examine the study questions, providing means and standard deviation. Analysis of covariance (ANCOVA) was used to assess the hypotheses. The study's findings demonstrated that the experimental group's childbearing-age women scored higher on the mean knowledge of malaria prevention than the control group's women. In conclusion, since health education interventions on malaria prevention are beneficial in preventing the disease, they should be implemented in all other spheres of society. The government should also use the mass media to promote these interventions so that they can reach a wider audience.

Keywords: health education; intervention; malaria prevention; knowledge; women of childbearing age; urban and rural.

Introduction

Malaria is a deadly illness that is mostly seen in tropical nations. It is treatable as well as preventable. However, a case of simple malaria can develop into a severe form of the disease, which is frequently fatal without treatment, if it is not diagnosed and treated promptly. The bites of female Anopheles mosquitoes carrying the malaria virus are the only way for the disease to pass from one person to another. Human malaria can be caused by five different parasite species, with Plasmodium falciparum and Plasmodium vivax being the two most dangerous. Approximately 40 of the more than 400 species of Anopheles mosquitoes—known as vector species—can spread the illness. Some places have a higher risk of infection than others, depending on several variables, including the kind of mosquitoes that live there. Seasons can also affect it, with tropical regions seeing the highest risk during the rainy season [1].

A parasite is the cause of malaria, an illness spread by mosquitoes. A parasite that frequently infects a particular species of mosquito that feeds on human

blood causes malaria, a dangerous and occasionally lethal disease [2]. People who contract malaria usually have flu-like symptoms, high fevers, and chills. Malaria can be fatal, yet it is usually preventable in terms of illness and mortality. Untreated malaria can cause serious complications and even death. An estimated 241 million cases of malaria were reported globally in 2020, and 627,000 people—mostly children in sub-Saharan Africa—died from the disease. Travelers and immigrants returning from nations where malaria is spread, primarily from sub-Saharan Africa and South Asia, account for the great majority of cases.

Malaria can infect anyone, but those who reside in Africa are more susceptible than others. Malaria mortality is higher in pregnant women, elderly individuals, and young children [3]. Individuals who lack access to healthcare and live in poverty are more prone to experience disease-related problems. Africa accounts for about 90% of malaria mortality, with young children accounting for almost all the fatalities [4]. Children under the age of five were responsible for over 80% of malaria-related deaths in the area in 2020. Nigeria has one of the highest rates of malaria worldwide, making it a serious public health concern. Of the four African nations, Nigeria accounts for the largest percentage of malaria deaths worldwide (31.9%) [5]. It has also been said that a mosquito gets infected when it bites a person who has malaria. In the event that the mosquito bites another person, the parasite enters their bloodstream and grows there. Humans can contract malaria from five different kinds of malaria parasites. Rarely, pregnant women who have malaria may pass the illness on to their unborn children either before or during delivery. Although it is unusual, blood transfusions, organ donations, and hypodermic needles can all spread malaria. To eradicate malaria, a variety of programs, interventions, and tactics are used worldwide. The National Malaria Control Program (NMCP), the National Malaria Elimination Program (NMEP), the National Malaria Strategic Plan, and the most recent Nigeria End Malaria Council, which was established in August 2022, are some of the programs, strategies, and interventions that are currently in place in Nigeria and some other African nations to eradicate malaria. These are all methods to eradicate malaria in the nation [6]. The distribution of prophylactic medications and insecticide-treated bed nets to shield individuals from mosquito bites was proposed to lower the number of malaria cases. A vaccination against malaria has been suggested by the World Health Organization for children who reside in nations where the disease is prevalent. You may stay safe when traveling by using insecticides, bed nets, and protective clothes. Preventive medication can also be taken before, during, and following a trip to a high-risk location. Common medications used to treat malaria have caused resistance in several malaria parasites [7].

The national malaria control program in Nigeria has adopted an integrated malaria control strategy that includes case management, integrated vector control, which includes indoor residual spraying (IRS), larviciding, and long-lasting insecticide nets, as well as community health education. The nine strategic directions of the NMCP (National Malaria Control Program) include increasing the community's capacity to identify, prevent, and control malaria. Addressing the problem of malaria and its impact on the community will greatly benefit from the implementation of an efficient health education intervention program on malaria prevention. Health education initiatives that give people more control over their own environments and health can help avoid malaria in the first place. The teaching-learning process is a dynamic experience that involves interacting with people to acquire knowledge. It can be planned as an event or as an intervention program. A collection of program components or tactics known as an intervention is intended to alter behavior or enhance the health of a community [8].

One tactic for carrying out programs for illness prevention and health promotion is health education. Learning opportunities on health-related subjects are offered via health education. Strategies for health education are customized for the people they are intended for. Target audiences receive knowledge on specific health subjects, such as the risks and advantages to their health, as well as tools to encourage behavior change and build capacity in a suitable environment. Lectures, seminars, workshops, webinars, seminars, and classes are a few examples of health education activities [9].In order to enhance health literacy and cultivate life skills that promote both individual and community health, health education encompasses intentionally designed learning experiences that involve communication.Effective health education interventions, according to research, are predicated on a thorough comprehension of the behaviors being addressed and the environment in which they occur.Involving the community in all stages of program development, from planning to implementation to assessment, is one of the most

important components of health education initiatives [10].A comparative study on health education interventions for malaria prevention could take into account a number of parameters, such as the childbearing mother's occupation, age, parity, and level of knowledge.

A person's theoretical or practical understanding of a subject, what is known in a particular field, facts and information, or awareness or familiarity obtained through experience of a fact or circumstance can all be considered knowledge. The state or act of knowing, familiarity, awareness, or comprehension acquired via study or experience is known as knowledge. While occupation is an activity that childbearing women participate in, age is the chronological age of the women to be used in the study as well as the amount of time that a person or thing has existed. A deadly infection spread by mosquitoes, malaria can cause anemia and jaundice (yellow coloration of the skin and eyes) due to the loss of red blood cells. If the disease is not identified and treated promptly, it can potentially be fatal. The infection can worsen and result in kidney failure, convulsions, mental disorientation, coma, and even death if left untreated.One of the tactics to be employed in the nation's efforts to eradicate malaria is the inclusion of health education.In order to ascertain the impact of a health education intervention on the understanding of women of childbearing age regarding malaria prevention in a few chosen areas in Anambra state, the researcher wishes to carry out a study [11].

Without timely diagnosis, appropriate treatment, and health education, a case of uncomplicated malaria can develop into a severe form of the disease, which is frequently fatal if left untreated. Malaria is a potentially lethal illness. Nigeria is one of the nations with the greatest prevalence of malaria, making it a serious public health concern, particularly for women of childbearing age (WCBA). The National Malaria Control Program (NMCP), the National Malaria Elimination Program (NMEP), the National Malaria Strategic Plan, and the recently established Nigeria End Malaria Council are just a few of the numerous strategies and interventions that have been implemented to eradicate the high prevalence of malaria among this group in the nation. Addressing the problem of malaria and its impacts on women of childbearing age as well as the community will greatly benefit from the implementation of an efficient health education intervention program on malaria prevention. Health education programs that enable childbearing women to better manage their own environments and health can help avoid malaria in the first place [12].

The government and non-governmental organizations' efforts would be in vain, though, if appropriate health education on malaria prevention is not given to childbearing women, regardless of how successful those programs, methods, and interventions are. Given the significance of health education in preventing malaria, the researcher aims to ascertain how health education interventions affect the knowledge of women of childbearing age on malaria prevention in a few chosen villages in Anambra State.

Materials and Methods

Area of the Study

The area of the study was Awka South Local Government Area of Anambra State. The area was created in 1989 in the Awka Local Government Area. It is bounded in the North by Awka North Local Government Area, in the East by Oji River Local Government Area of Enugu State, and on the South by Anaocha Local Government Area of Anambra State. The land area is 170km2; with a population of 250,900 people. It is made up of nine towns. Communities in the area include Awka (HQ), Amawbia, Ezinato, Isiagu, Mbaukwu, Nibo, Nise, Okpuno and Umuawulu. Awka is a town in Awka South Local Government Area; Awka south LGA has both urban and rural settlements.

Population of the study

The population of the study was 1050 registered women of childbearing age in all the indigenous town women's meetings in Awka south L.G.A. of Anambra State.

Sample and sampling Techniques

The sample of the study was 208 registered women of childbearing age in in all the indigenous town women's meetings' in Awka South L.G.A of Anambra State. Multistage sampling technique was used to generate samples of the study. At first stage the nine towns were sampled and simple random sampling without replacement was used to select four villages. Second

stage one community was selected from each town selected making it four communities two of the communities were used as control group while the remaining two were used as experimental group. Proportionate sampling technique was used to determine the number of women of childbearing age that will response to the test item.

Instrument for data collection

The instrument for data collection was a test instrument on Effects of Health Education Intervention on Malaria Prevention knowledge Test (EHEIMPT). The instrument was developed by the researcher based on experience, interviews and following review of related literature. The close-ended instrument was in two sections (A and B). Section "A" contained items on personal data of the respondents, (i.e. age, location, parity, occupation and level of education). Section "B" was the knowledge test items containing 25 items on Malaria Prevention yes or no options will be used as the response option.

Validation of the Instrument

Content and face validity of the instruments was established with the help of five experts, two from the Department of Human Kinetics and Health Education, one from the Department of Educational Foundation with emphasis on Measurement and Evaluation, all from Nnamdi Azikiwe University Awka one Nurse and one Medical Doctor from Nnamdi Azikiwe university Medical center Awka . The validators examined the content of the knowledge test questionnaire items. In order to achieve better validation, copies of the questionnaire, and purpose of study, research questions, hypotheses and lesson plan were also given to them. They were requested to look at their level of clarity, appropriateness of the language used and ability of the instrument to elicit adequate information in relation to the purposes of the study, research questions and hypotheses. The validators' suggestions were put into consideration in the production of the final copy of the instrument.

Reliability of the Instrument

The test items of the (EHEIMPT) were assessed for reliability using 20 women of childbearing age from a community in Onitsha south Local Government Area of Anambra State. These women of childbearing age were not part of the study population. However, they were used for the reliability because they share similar characteristics with the women of childbearing age in Awka south Local Government Area. The instrument was administered to the women by the researcher on face-to-face basis and was collected on the spot.

The data collected from the women was used to determine the reliability of the instruments.

Only women of childbearing age were included

Only women who attended all the sessions were included

Method of data collection

A letter of transmittal was collected from the Head of Department Human Kinetics and Health Education Nnamdi Azikiwe University Awka to allow the researcher gain entry into the various women meetings in the communities for data collection. Permission to conduct the study was requested from the various women leaders. Verbal consent was used to obtain permission from the women leaders of the various meetings to be used. The instrument was administered for pre-test by the researcher on the first day before the intervention programme began. The researcher reads the questions one after the other to make sure that no woman was lagging behind and were moving at the same pace. It was translated in English and Igbo for better understanding.

At the end of the intervention programme, copies of the same instrument were served to the women. This time, the items were reshuffled and administered to the women and data was collected.

Method of Data Analysis

The data collected was analyzed using statistical package for social sciences version 25 (SPSS). Means and standard deviation were used to answer research questions. The differences between the pre-test mean and the post-test means were regarded as the mean differences scores. Also, analysis of covariance (ANCOVA) was used to test all the hypotheses stated in the study at 0.05 level of significance. When the post-test score is higher than the pre-test score, there is a mean gain but when the pre-test score is higher than the post-test, there is a mean loss.

Results

Health Education Intervention	Pre-test			Post-test			*Mean Difference*
	n	*M*	SD	n	*M*	SD	
Experimental	52	12.81	2.73	52	19.19	.97	6.38
Control	52	13.04	3.65	52	15.50	2.56	2.46
Total	104	12.92	3.21	104	17.35	2.68	

Table 1: *Pretest and Posttest Mean and Standard Deviation Scores on knowledge of Malaria Prevention of Women of Childbearing Age Exposed to Health Education Intervention and Those in Control Group.*

Table 1 shows that the pretest and posttest mean scores on knowledge of malaria prevention of women of childbearing age exposed to health education intervention (experimental group) were 12.81 and 19.19 while that of control group were 13.04 and 15.50 respectively. These indicate a mean difference of 6.28 for the experimental and a mean difference of 2.46 for the control group. The mean differences for both groups show that experimental group was 3.92 points ahead of those in control group in knowledge of malaria prevention.

Group	Location	Pre-test			Post-test			*Mean Difference*
		n	*M*	SD	n	*M*	SD	
Experimental	Urban	26	12.88	3.00	26	18.69	1.01	5.81
	Rural	26	12.73	2.49	26	19.69	.62	6.96
Control	Urban	26	14.85	3.61	26	16.04	3.10	1.19
	Rural	26	11.23	2.72	26	14.96	1.78	3.73

Table 2: *Pretest and Posttest Mean and Standard Deviation Scores on knowledge of Malaria Prevention of Women of Childbearing Age by Group and Location.*

The result presented in Table 2 shows that the pretest and posttest mean scores on knowledge of malaria prevention of women of childbearing age in urban areas exposed to health education intervention (experimental group) were 12.88 and 18.69 with mean difference of 5.81 while those of their counterpart in control group were 14.85 and 16.10 respectively, with a mean difference of 1.19.

On the other hand, those in rural communities in experimental groups had pretest and posttest scores of 12.73 and 19.69 with a mean difference of 6.96. Their counterpart in control group had 11.23 and 14.96 respectively, and a mean difference of 3.73. The mean differences suggest that, although those in rural area in the experimental group had slightly higher mean difference compared to the urban, both urban and rural women in the experimental group had better knowledge of malaria prevention than those in urban and rural areas in the control group.

Group	Parity	Pre-test			Post-test			Mean Difference
		N	*M*	SD	N	*M*	SD	
Experimental	0-1	7	12.00	2.77	7	19.57	.79	7.57
	2-3	20	13.10	2.65	20	19.15	.75	6.05
	4-5	25	12.80	2.84	25	19.12	1.17	6.32
Control	0-1	23	13.04	3.54	23	15.22	2.70	2.18
	2-3	15	13.53	3.54	15	16.07	2.49	2.54
	4-5	14	12.50	4.13	14	15.36	2.50	2.86

Table 3: *Pretest and Posttest Mean and Standard Deviation Scores on knowledge of Malaria Prevention of Women of Childbearing by Group and Parity.*

The result presented in Table 3 shows that for the experimental group, the pretest and posttest mean scores on knowledge of malaria prevention of women of childbearing age within 0-1 parity level were 12.00 and 19.57, those within 2-3 parity were 13.00 and 19.15; and pretest and posttest for women within 4-5 were 12.80 and 19.12 respectively. The difference between the pretest and posttest for the three levels of parity were 7.57, 6.05 and 6.32.

For the control group, the pretest and posttest scores were 13.04 and 15.22, 13.53 and 16.07, and 12.50 and 15.36 for parity levels 0-1, 2-3 and 4-5 respectively. Their mean differences were 2.70, 2.49 and 2.50. When these were juxtaposed with those of experimental group, it was observed that 0063the different parity levels in the experimental had better knowledge of malaria prevention than all the parity levels in the control group.

Discussion

The study's results demonstrated that, following exposure to the educational intervention, the experimental group's mean knowledge of malaria prevention had increased among women of childbearing age, as evidenced by their pretest and posttest mean scores. The study of [13] found that caregivers exposed to a comprehensive health education program had good knowledge as compared to caregivers in the control group, which may indicate that education on malaria prevention helped them better understand what it takes to prevent malaria, in contrast to the women in the control group who were not exposed to the intervention.

According to the study's findings, which considered the location of the women of childbearing age, the mean difference indicated that, following the health education intervention, women in the rural and urban experimental groups had good knowledge about preventing malaria; however, the urban women in the same experimental group had better knowledge than the rural women [14]. The disparities might be due to the urban setting, where they have access to electricity and various media outlets, as well as signs that may contain information on various malaria prevention techniques. These could help them learn more about malaria prevention and support them throughout the program. The results of [15], which showed that moms in urban areas knew more than mothers in rural areas, corroborated these findings.

Based on the various parity levels of the women of childbearing age, the study's results revealed that women with parity levels 2-3 had higher pretest and posttest scores (experimental group) than women with parity levels 0-1, 4-5, and 0-1. Additionally, compared to women of childbearing age in the control group, women in the experimental group generally had higher mean knowledge scores. Experience in the community and during prenatal care may be the basis for this conclusion. During the intervention program, these additional insights would also assist students comprehend how to prevent malaria. [16,17]. According to the adjusted mean score, the experimental group's childbearing women of varying parity levels also knew more about preventing malaria prior to the intervention program [18,19,20,21].

In comparison to the control group, the experimental group's mean scores on the pretest and posttest on their understanding of malaria prevention among women of childbearing age were higher.

Conclusion

One effective way to teach individuals how to prevent malaria on their own is through health education. In a few chosen areas in Anambra State, the study assesses the impact of a health education program on the understanding of women of childbearing age on malaria prevention. According to the mean score on knowledge of malaria prevention, the results of this study have demonstrated that health education interventions have enhanced the knowledge of women of childbearing age regarding malaria prevention. Additionally, based on every characteristic utilized in the study, the experimental group's childbearing-age women knew more than the control groups. Given the efficacy of this intervention, other potential diseases may benefit from health intervention programs as a more effective means of lowering the prevalence of sickness in our society.

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