# EFFECT OF HEALTH EDUCATION ON MOTHERS'PERCEPTION, KNOWLEDGE AND TREATMENT-SEEKING ON CHILDHOOD MALARIA IN URBAN AREA IN ANAMBRA STATE

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## 1. INTRODUCTION

McKenzie, Neiger and Thackery (2009) stated that health education is a profession of educating people about health. Areas within this profession encompass environmental health, physical health, social health, emotional health, intellectual health, and spiritual health, as well asexual and reproductive health education (United Nations Educational, scientific and Cultural Organization (UNESCO 2018). Public health education is an effective communication strategy for behavioural change (Park 2015). Educating the community members and providing information to mothers and caregivers will enable them to recognize malaria, assess its severity and take appropriate actions when the need arises World Health Organization (WHO 2016). In controlling and prevention of malaria, communication increases the knowledge of the role and benefits of Insecticide treated

nets (ITNs) in malaria prevention and an increased awareness of the danger signs of malaria and the importance of seeking early treatment for febrile children (WHO 2016)

Malaria remains a major public health problem in Nigeria and causes mortality and morbidity in children and adults, especially pregnant women and children (WHO 2016). It is caused by infection of red blood cells with protozoan parasites of the genus *Plasmodium* (WHO 2016). The parasites are transmitted into the human host through the bites of infected female *Anopheles* mosquitoes (WHO 2016). The five Plasmodium species that infect human, and are transmitted by *Anopheles* mosquitoes are *Plasmodium falciparum*, *Plasmodium vivax, Plasmodium ovale, Plasmodium malariae*a and *Plasmodium knowlesi* Arora DR and Arora BB (2010) The later rarely cause diseases in humans. Most deaths are caused by *Plasmodium falciparum* and *Plasmodium vivax* (WHO 2016). *Plasmodium falciparum* is the most lethal malaria parasite, the most prevalent on the African continent and responsible for most malaria related deaths (Park 2015) *Plasmodium vivax* has a wider distribution than *Plasmodium falciparum*, and predominates in many countries outside of Africa. When an individual is infected with malaria and the disease is not treated promptly with effective anti-malarial medicines, it can rapidly progress to severe illness and death (WHO 2016). The malaria parasite invades and ultimately destroys red blood cells, repeated infections can lead to severe anaemia which can be lethal( Arora DR and Arora BB 2010) *Plasmodium falciparum* can also cause cerebral malaria, in which small blood vessels in the brain are clogged by blood cells infected with malaria parasites (WHO 2016). Again, this can be lethal, and in those who survive cerebral malaria, there are often long-term neurological consequences (Park 2015) Immunity to malaria builds up gradually among those who are repeatedly infected and survive. Non-pregnant adults from areas of intense transmission are much less likely to become severely ill or die; however, they may have underlying asymptomatic infections and can thus be a

reservoir for malaria transmission. In areas with intense malaria transmission, those most susceptible to malaria are children aged under 5 years and pregnant women; two groups who have little or reduced immunity to the disease (WHO 2016). Thus, it is children under 5 and pregnant women living in sub-Saharan Africa who suffer the largest burden of malaria disease and mortality Park (2015) and WHO (2016).

In this region, malaria accounts for 10% of all deaths among children under-five in 2015.The first symptoms of malaria are non-specific and similar to the symptoms of a minor systemic viral illness They comprise: headache, lassitude, fatigue, abdominal discomfort, muscle and joint aches, usually followed by fever, chills, perspiration, anorexia, vomiting and worsening malaise Park (2015) and WHO (2016). Malaria is, therefore, frequently over-diagnosed on the basis of symptoms alone, especially in endemic areas like Nigeria, because of this non-specificity of symptomatology (WHO 2016)

The World Health Organiation (WHO) recommends protection for all people at risk of malaria with effective malaria vector control WHO (2016) According to WHO, if coverage of vector control interventions within a specific area is high enough, then a measure of protection will be conferred across the community thus the risk of malaria can be reduced through the use of insecticides treated mosquito nets and insect repellants, or with other mosquito control measures such as spraying insecticides and draining stagnant water Park (2015) and WHO (2016)

## 1.1 Research Report

What is already known

A lack of communication via education, knowledge and information, and access to effective interventions impeded the success of Roll Back Malaria (RBM) programmes. Effective

interventions against malaria are available, yet the burden persists, largely because most people at risk of malaria are unaware of the interventions that exist to control malaria and because they have little or no access to these interventions for various reasons, including those that are affordable WHO (2016).

What this study adds?

Determining the effect of health education on mothers perceptions, knowledge and treatment-seeking behaviour on childhood malaria in an urban area could be relevant to increase community awareness of the problem as well as the importance of early diagnosis and prompt treatment of malaria.

## 2. MATERIALS AND METHODS

### 2.1.    Study Area:

This study was carried out in urban local government areas in Anambra State, South-Eastern Nigeria. Anambra State is situated on a generally low elevation on the eastern side of the River Niger. It has a total land area of 4,844km$^2$,The state is made up of 21 LGAs, 177 communities and 330 wards Anambra states Government strategic health development plan (2010-2015).

Awka South is an urban LGA in Anambra Central senatorial district of Anambra State. It is made up of nine towns namely, Amawbia, Awka, Ezinato, Isiagu, Mbaukwu, Nibo, Nise, Okpuno and Umuawulu. Its headquarters is in Amawbia and it has 20 political wards and 25 PHCs. It has a land size of 172.209km$^2$ and a total population of 189,654 persons comprising 96,902 males and 92,752 females according to the NPC (2006).

Onitsha North Local Government Area is an urban LGA in Anambra North senatorial district of

Anambra State. It has 15 political wards and 13 PHCs. It has a land size of 42,599 km2 with a

population of 125,918 persons, comprising of 61,588 males and 64,330 females according to the

2006 population census NPC (2006).

## 2.2    STUDY POPULATION

This comprised of mothers living in Awka South and Onitsha North Local Government Areas.

### 2.2.1 Inclusion Criteria

Only mothers or female caregivers who have lived in the area for at least 12 months and currently
having children of  under-five years of age ie (0-5 years) living with them were included in the
study.

### 2.2.2 Exclusion criteria

Mothers or female caregivers whose under-five years old children were not living with them at the

time of the study and also mothers that are visitors were not included in the study.

## 2.3    STUDY DESIGN

The study was an experimental community-based before and after study with control. The study

was carried out in three phases – Pre-intervention, Intervention and 3-months post intervention

phases.

## 2.4.    Sample Size Determination:

The minimum sample size to determine the effect of health education on mother's knowledge and

treatment seeking behaviour on childhood malaria in urban area in Anambra State, that is

significant at 5% confidence level with a power of 90% was calculated using the formula for comparing two proportions.

### 2.5.    Sampling Technique:

Multi-stage sampling technique was used to enroll respondents into this study. Anambra State is made up of three senatorial zones (Anambra North, Anambra South and Anambra Central), 21 LGAs (7 urban and 14 rural) and 330 wards.

Stage1:From the seven urban LGA two were selected through simple random sampling by balloting( Awka South and Onitsha North)

Stage 2: From each of these selected LGAs, two wards were selected through simple random sampling by balloting. Thus from Awka South, Awka 1 (Nkwelle) and Awka 3 (Umudioka) and Onitsha North, woliwo layout and Ogbe umuonicha were selected.

Stage 3: From each of these selected wards, Participants from each ward were selected from the population using WHO modified cluster sampling technique (EPI method). A two day work-through was conducted by the research team to determine the number of streets; counting a total number 0f 26 streets at Nkwelle and Umudioka wards which made it possible to select minimum of thirteen (13) eligible participants from each street. The same was done for Woliwo layout and Ogbeumuonicha wards counting 22 streets which made it possible to select a minimum of fifteen (15) eligible participants from each street.

We stood on the location near the centre of each ward and used bottle spin with minimum of 3 cycle rotation to determine the start-off point: by noting the direction of the mouth- end of the bottle. Eligible participants were then selected at random in each cluster along the chosen direction from the centre of the ward to its boundary.

Stage 4: Equal number of questionnaires (a minimum of one hundred and sixty four) was allocated

to each of these selected wards and all consenting mothers who met the inclusion criteria were

recruited into the study until the sample size was met.

## 2.6    METHOD OF DATA COLLECTION

### 2.6.1   Pre-intervention activities.

 A semi-structured, pretested, interviewer-administered questionnaire adopted and adapted from

the National Demographic Health Survey and from previous studies, NPC (2013) were used as

instrument for data collection, the instrument was in sections and was administered to all

participants. Before the resumption of the main study, the questionnaire was pre-tested among

fifty (50) mothers in Ihialla Local Government Area.

### 2.6.2   Intervention activities

A coin was tossed to select the intervention group which resulted to be Awka south LGA then

Onitsha north LGA the control group.

> The intervention consisted of a structured educational training curriculum and programme
>
> based on course content and training guideline/manual adapted from the national malaria
>
> control programme for the management of malaria in Nigeria (WHO)

### 2.6.3 Post-intervention

 3 months post-intervention evaluation was carried out to determine the change on mothers

perceptions, knowledge, treatment seeking behaviour and management of childhood malaria by

re-administering the same questionnaire administered to all the participants at the baseline. .

Evaluation of the effects of training was done using standardised scores for the various variables

during analysis. The responses of respondents to perception and knowledge questions was scored.

## 2.7   DATA MANAGEMENT

### 2.7.1 Measurement of variables

The main outcome variable for this study was the perception, knowledge and treatment-seeking behavior adopts by mothers of under-five on childhood malaria. It was the dependent variable and was assessed by nothing if there is any difference in the mothers response at baseline and 3-months after health education intervention. Outcome variables were perceived causes of malaria, signs and symptoms, preventive measures used, and treatments sought for the last malaria episode

The independent variables was health education on malaria which could be enhanced by good communication, dissemination of information, and advocacy.

## 2.8   DATA ANALYSIS

Descriptive and inferential statistics were used to analyze the data obtained from the study. Research hypotheses were tested using the inferential statistics. Frequencies were generated for detection of errors. Data was summarised using mean, standard deviation and proportions. Chi-square test was used for test of associations. The p-value was set at 0.05 level of significance.

Question was coded either 1 or 0 for easy analysis.  All scores summed. Respondents having scores of $\geq 50\%$ of the total score were classified as having good perception and knowledge. Those having scores $< 50\%$ were classified as having poor perception and knowledge.

## 3   RESULTS AND DISCUSSIONS

Six hundred and fifty six mothers of under-five years of age children completed the questionnaire at the commencement of the study. These respondents were in two groups-the control and experimental (intervention) groups. The control group had 328 respondents (50% of the total number of participants); 308(93.9) of them were available to complete the questionnaire after the 3- month of intervention period. The experimental group had 328 respondents (50% of the total number of participants); 304(92.7) of them were available to complete questionnaire after 3-month intervention period. The socio-demographic characteristics of mothers in both the experimental and control group at baseline are shown in the table 3.1.

**Table 3.1: Socio-demographic characteristics of the participants**

| Variable | | Intervention (%) n = 328 | Control (%) n = 328 | Total (%) N = 656 | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|
| **Mother's Age** | < 20 | 18 (5.5) | 36 (11.0) | 54 (8.2) | 6.718 | 0.081 |
| | 20 – 29 | 158 (48.2) | 144 (43.9) | 302 (46.0) | | |
| | 30 – 39 | 112 (34.1) | 110 (33.5) | 222 (33.8) | | |
| | >39 | 40 (12.2) | 38 (11.6) | 78 (11.9) | | |
| **Highest Level of Education** | NFE | 21 (6.4) | 34 (10.4) | 55 (8.4) | 4.710 | 0.196 |
| | Primary | 87 (26.5) | 96 (29.3) | 183 (27.9) | | |
| | Secondary | 166 (50.6) | 151 (46.0) | 317 (48.3) | | |
| | Tertiary | 54 (16.5) | 47 (14.3) | 101 (15.4) | | |
| **Religion** | Christianity | 300 (91.5) | 308 (93.9) | 608 (92.7) | 4.803 | 0.144 |
| | Muslim | 18 (5.5) | 17 (5.2) | 35 (5.3) | | |
| | Traditional | 10 (3.0) | 3 (0.9) | 13 (2.0) | | |
| **Ethnicity** | Igbo | 288 (87.8) | 301 (91.8) | 589 (89.8) | 3.210 | 0.385 |
| | Hausa | 30 (9.1) | 22 (6.7) | 52 (7.9) | | |
| | Yoruba | 8 (2.4) | 4 (1.2) | 12 (1.8) | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Others | 2 (0.6) | 1 (0.3) | 3 (0.5) | | |
| **Marital status** | Single | 17 (5.2) | 22 (6.7) | 39 (5.9) | 1.240 | 0.877 |
| | Married | 224 (68.3) | 223 (68.0) | 447 (68.1) | | |
| | Separated | 12 (3.7) | 11 (3.4) | 23 (3.5) | | |
| | Divorced | 54 (16.5) | 48 (14.6) | 102 (15.5) | | |
| | Widowed | 21 (6.4) | 24 (7.3) | 45 (6.9) | | |

**Statistically significant ( p ≤ 0.05 )**

**Table 3.2: Socio-demographic characteristics s of the participant contd**

| Variable | | Intervention (%) n = 328 | Control (%) n = 328 | Total (%) N = 656 | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|
| **Occupation** | Unemployed | 39 (11.9) | 36 (11.0) | 75 (11.4) | 10.628 | 0.030 |
| | Farmer | 12 (3.7) | 7 (2.1) | 19 (2.9) | | |
| | Artisan | 22 (6.7) | 8 (2.4) | 30 (4.6) | | |
| | Civil servant | 126 (38.4) | 121 (36.9) | 247 (37.7) | | |
| | Trader | 129 (39.3) | 156 (47.6) | 285 (43.4) | | |
| **Relationship to child** | Mother | 268 (81.7) | 281 (85.7) | 549 (83.7) | 12.266 | 0.020 |
| | Step mother | 30 (9.1) | 27 (8.2) | 57 (8.7) | | |
| | Aunt | 2 (0.6) | 2 (0.6) | 4 (0.6) | | |
| | Grand parent | 16 (4.9) | 14 (4.3) | 30 (4.6) | | |
| | Guardian/ Caregiver | 12 (3.6) | 4 (1.2) | 16 (2.4) | | |

**Statistically significant (p ≤ 0.05)**

**Table 3.3: Child's characteristics**

| Variable | | Intervention (%) n = 328 | Control (%) n = 328 | Total (%) N = 656 | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|
| Child's age | 0-11months | 166 (50.6) | 144 (43.9) | 310 (47.3) | 12.826 | 0.012 |
| | 12- 23 months | 68 (20.7) | 49 (14.9) | 117 (17.8) | | |
| | 24-35 months | 48 (14.6) | 77 (23.5) | 125 (19.1) | | |
| | 36- 47months | 21 (6.4) | 25 (7.6) | 46 (7.0) | | |
| | 48- 59months | 25 (7.6) | 33 (10.1) | 58 (8.8) | | |
| Child's gender | Male | 171 (52.1) | 159 (48.5) | 330 (50.3) | 0.878 | 0.390 |
| | Female | 157 (47.9) | 169 (51.5) | 326 (49.7) | | |
| Child's Position | 0-11months | 90 (27.4) | 108 (32.9) | 198 (30.2) | 17.855 | 0.001 |
| | 12-23months | 116 (35.4) | 77 (23.5) | 193 (29.4) | | |
| | 24-35months | 80 (24.4) | 74 (22.6) | 154 (23.5) | | |
| | 36-47months | 30 (9.1) | 41 (12.5) | 71 (10.8) | | |
| | 48-59months | 12 (3.7) | 28 (8.5) | 40 (6.1) | | |
| Number of Under-5 Children | One | 310 (94.5) | 310 (94.5) | 620 (94.5) | 0.000 | 0.999 |
| | Two | 10 (3.0) | 10 (3.0) | 20 (3.0) | | |
| | Three | 8 (2.4) | 8 (2.4) | 16 (2.4) | | |
| Household size (mean ± SD) | | 4.523 ± 1.086 | 4.713 ± 1.317 | 4.628 ± 1.209 | - 1.812 | 0.070 |

**SD = Standard deviation**

Table 3.4 : Categories of Perception among the participants

| Study Time | Perception Category | INTERVENTION GROUP (%) | CONTROL GROUP (%) | Test value | p-value |
|---|---|---|---|---|---|

| Baseline | Good Perception | 267 (81.4) | 291 (88.7) | 6.910 | 0.011 |
|---|---|---|---|---|---|
| | Poor Perception | 61 (18.6) | 37 (11.3) | | |
| | Total | 328 (100.0) | 328 (100.0) | | |
| | | | | | |
| 3 Months After | Good Perception | 286 (92.9) | 243 (79.9) | 21.795 | 0.001 |
| | Poor Perception | 22 (7.1) | 61 (20.1) | | |
| | Total | 308 (100.0) | 304 (100.0) | | |

**Table 3.5: Distribution of total knowledge of malaria by the participants**

| Variable | BASELINE | | | | 3-MONTHS LATER | | | |
|---|---|---|---|---|---|---|---|---|
| | Intervention (%) | Control (%) | Test-value($x^2$s) | p-value | Intervention (%) | Control (%) | Test Value($x^2$) | p-value |
| **Category of knowledge** | | | | | | | | |
| **GOOD** | 258 (78.7) | 321(97.9) | 58.400 | 0.001 | 308 (100.0) | 291 (95.7) | 13.457 | 0.001 |
| **POOR** | 70 (21.3) | 7 (2.1) | | | 0 (0.0) | 13 (4.3) | | |
| **Total Knowledge (mean±S.D)** | 11.80 ± 1.81 | 16.61 ± 2.34 | -29.390 | 0.001 | 17.7 ± 1.35 | 13.63 ± 1.84 | 31.772 | 0.001 |

**Statistically significant ($p \leq 0.05$)**

3.6 DISCUSSION

This community based intervention study was carried out to determine the effect of health education of mothers perception, knowledge and treatment-seeking behaviour on childhood malaria in the urban area of Anambra state.

In this study population, respondents in both groups did not differ significantly from each other in their age and level of education at baseline. Majority of the respondents were Christians, this is to be expected in view of the consideration of the findings from the NDHS (2013) which shows that Anambra State is predominantly made up of Christians. Even though majority of the respondents in both groups were Christians, there were higher proportion of traditional worshippers in the intervention group in this study. Majority of the respondents in this study were Ibos also majority were married. Majority of the respondents in this study were traders. This is to be expected in view of the consideration that Anambra State is a highly commercialized state with big main market and several other markets located all over the state. This finding is also consistent with reports by NDHS (2013) which stated that majority of the respondents in Anambra State are engaged in sales and services. However, statistically significant differences ($p < 0.05$) existed in the occupation between the intervention and control group in this study and this could be possibly due to the different job opportunities that present therein.

There was a statistically significant difference ($p < 0.050$) in the relationship of the mother to child. There was a significant difference in the age and position of the children whom their mothers were interviewed. This difference may likely have affected the outcome of my experiment but it was not among the variables measured in this study. So I suggest that further study should be carried out on this to determine if these factors affects ways health education

intervention affects mothers perception, knowledge and treatment seeking behavior on childhood malaria.

There was no statistical significant difference in child's gender, number of under-5 and the mean house hold size.

Generally the percentage of good perception increased significantly among the intervention group from 81.4% to 92.9% after 3-months. Perceptions about malaria in the urban areas can be improved significantly by adequately empowering caregivers with appropriate malaria health education intervention at intervals for a long and persistent period of time to effect change in their perceptions.

Generally, the mean knowledge score in experimental group was $11.8 \pm 1.81$ and control $16.61 \pm 2.34$ at the baseline, but after 3-months in experimental group $17.77 \pm 1.35$ and control $13.63 \pm 1.84$. it shows that there is a decrease in mean knowledge of the participants 3-months after the intervention which could be attributed to the fact that maybe the respondents that were lost on attrition were among the people that had good knowledge in the control group or it could be as a result of misunderstanding or misinterpretation of what malaria is all about, therefore more and persistence health education on malaria is suggested to be given to all mothers at intervals to increase their in depth knowledge on malaria like its causes, mode of transmission, ways of prevention, treatment and so on.

The strength of this study lies in the fact that it is a community based study and this allows all the mothers of under five in the urban communities in Anambra State who met with the inclusion criteria to participate. However, this study is limited in that it did not a include fathers who had under five children in the study area and this resulted to a selection bias. More research therefore needs to be conducted in order to accommodate this and provide more evidence for policy making.

## 4.0 CONCLUSION

This study has shown that mother's perception, knowledge and treatment seeking behaviour on childhood malaria in Ogbeumuonitsha, Army barracks, Nkwelle Awka and Umudioka Awka was generally high before the intervention which could be attributed to the high level of education in the urban communities also it had shown that statistical significant differences existed generally in their perception, knowledge and treatment- seeking behaviour on childhood malaria among the experimental group whereas control group showed varied significant differences which could be attributed to attrition loss or their misconceptions about malaria in under-five.

## CONSENT AND ETHICAL APPROVAL

Ethical approval for this study was obtained from the Nnamdi Azikiwe University Teaching Hospital Ethical Committee, (NAUTHEC) Nnewi Anambra State. Informed consent was obtained from every participant before the administration of questionnaire. The purpose of the study was explained to the participants, they were assured of the anonymity of their identity and the confidentiality.

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