EFFECT OF FOUR- WEEK MALARIA AND RBM INITIATIVE EDUCATION AMONG A GROUP OF PREGNANT WOMEN IN ABAKALIKI, EBONYI STATE

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Abstract

Malaria is one of the most common and potentially the most serious infection occurring in pregnancy in many sub Saharan African countries. Lack of knowledge about the disease is a common finding in malaria endemic regions like Nigeria and this has been associated to lack of education about malaria. The study examined the effect of four week malaria education programme on knowledge of a group of pregnant women attending Redeemed Christian church of God Abakaliki. A total number of sixty-two pregnant women within the period of programme intervention participated in the study. Using the quasi-experimental design, pre-programme and post- programme tests were carried out to determine the impact of the programme on knowledge of malaria with respect to its cause, symptoms, mode of transmission and Roll Back Malaria(RBM) initiative as well as acceptance of Insecticide Treated Bed Net(ITN). Simple percentage was used to analyze data generated from the pre- test and post test respectively. Percentage scores of the post- test programme drastic improvement in the participants' malaria and RBM knowledge as well as ITN acceptance for malaria prevention during pregnancy compared to the pre-test programme. It was therefore recommended among others that the outcome of the programme suggests the need for the extension of such programme to more churches in the state

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Introduction

The danger posed by malaria to individual and community health cannot be over-emphasized. This is based on the report that the disease is the most widespread and persistent infection which affects humanity globally (Snow, Guema, Nour, Nujint, & Heuy, 2005). It threatens the lives of about 40% of the world's population – over 2.2 billion people (UNICEF, 2000). Malaria is a major killer disease in Africa (Mu, Duan, Makova, Huynh, Branch, Li, & Su, 2002) where the most dangerous species of the parasite plasmodium falciparum thrives (Alnwick, 2001; Kuti, Oluolabi & Makinde, 2006). In Nigeria, (Ebonyi state inclusive) malaria is already a serious health problem accounting for a quarter of all malaria cases in the 45 malaria endemic countries of Africa (WHO, 2008).

Malaria which WHO (2003) defined as a febrile illness characterised by fever and related symptoms can affect the lives of almost everyone across the continent. However, children under five and pregnant women have been reported as the most vulnerable groups due to their reduced levels of malaria immunity (Alnwick, 2001; Oluolabi & Makinde, 2006; WHO, 2008). Malaria is therefore the most common and potentially the most serious infection occurring in pregnancy in many sub Saharan African countries (Nwagha, Ugwu, Nwagha & Anyaehie, 2009). Pregnancy is particularly known to aggravate malaria through a non-specific hormone dependent depression of the immune system. This depression on the immune system suppresses anti-plasmodia activity during pregnancy (Okwa, 2003). Hence, due to reduced immunity occasioned by pregnancy, pregnant women are highly susceptible to malaria and often present more serious clinical episodes (Okoko, Enwere & Otamo, 2005). In Nigeria about 11% of all maternal deaths are attributed to malaria during pregnancy (Federal Ministry of Health, 2000).

Despite the grave consequences and high rates of the disease among the people, Govere, Durrheim, Grange, Mabuzaand & Booman (2000), revealed that many people (including pregnant women) still have poor knowledge about the disease. It was also revealed that confusion over symptoms of malaria and its preventive measures still exist among the populace. Lack of knowledge about malaria is a common finding in malaria endemic regions and this has been associated to lack of education about malaria (Society for Youth Awareness and Health Development (SYAHD), 2003). Nwimo & Omaka (2008) observed that education is a key factor in helping people to overcome their fears, ignorance and prejudices and also to reduce the spread of infectious diseases like malaria. Knowledge regarding malaria which women

are expected to possess abound. These among others include: the cause, symptoms, mode of transmission, consequences and prevention of the disease. WHO (2003) observed that malaria is caused by plasmodium species of which four are important in human infection namely: plasmodium falciparum, p.vivax, p.ovale, and p.malaria. Malaria parasite lives in the red blood cells and is transmitted by the female anopheles mosquito that usually bites in the night (WHO, 2003, Okwa, 2003). Some of its symptoms include; fever that is associated with cold and shivering, headache, pain in joints, vomiting, diarrhoea, and convulsions (SYAHD, 2003). Consequences of malaria in pregnancy include: anaemia, spontaneous abortion, and preterm abortion, foetal distress, congenital infection, and stillbirth, foetal death in the uterus, intrauterine growth restriction, low birth weight, and placental parasitaemia (Abasiattia, Etumana, & Umoiyoho 2009).

Malaria is highly preventable. WHO, (2004) recommended three main preventive measures for malaria during pregnancy which pregnant women should know. These include the use of Insecticide Treated Bed Net (ITN), Intermittent Preventive Treatment (IPT) and Prompt and Effective Case Management (WHO, 2004). These are the tripod principles of the *Roll Back* Malaria (RBM) prevention programme of Nigeria. IPT consists of administration of curative dose of an efficacious anti-malarial drug to be given at least twice during the second and third trimesters of pregnancy and is routinely scheduled during antenatal clinic visits regardless of whether the woman is infected or not. ITN on the other hand, is reported to be the most reliable of all current feasible interventions for malaria control (Lengler, 2000). This is because they are the only strategy to be used during the first trimester of pregnancy when IPT is not applicable and most drugs are contraindicated (Cottrel, May & Barro, 2005). All these information regarding malaria are important knowledge which every pregnant woman must possess for effective implementation of malaria intervention programmes and to ensure safe motherhood.

This programme aimed at determining the impact of four- week malaria education on knowledge of malaria among a group of pregnant women in Abakaliki, Ebonyi state. Research report shows that pregnant women register late for antenatal care and that prevalence of malaria parasitaemia in the state is high using the standard of WHO definition ((Nwonwu, Ibekwe, Ugwu, Obareze, & Nwagbara 2009). Again, according to Agu and Nwojiji (2005) there are low levels of awareness of the cause of malaria among mothers, and poor treatment seeking behaviour which is manifested in low level use of health facilities. This state of affair is not friendly especially with a developing state like Ebonyi. Consequently, good health of

members of the populace is paramount to its overall speedy development. Minnesota Health Improvement Partnership Social Conditions and Health Action Team (2010) observed that good health is the bedrock for social and economic development and that knowledge is a crucial element in the improvement and education of a disease-troubled group and attainment of self reliance.

Sharma, Bhasin and Chaturvedi (2007) reported that malaria morbidity and mortality could be reduced through community participation which in turn depends on people's knowledge, and preventive practices. Education in part is known to enhance knowledge and practice. Thus educational campaigns aimed at informing pregnant women on the dangers of malaria and the potential benefits available to expectant mothers has much impact on malaria control (Agu and Nwojiji, 2005; Jima, Reithminger, Kachur, and The Ethiopian MIS Working group, 2007; Iriemenam, Dosunmu, Oyibo., and Fagbenro-Beyioku, 2011). It is against this background that the researcher embarked on the present intervention programme

Purpose of the Study

The study aimed at examining the effect of malaria and Roll Back Malaria initiative education on knowledge of malaria among a group of pregnant women in Abakaliki, Ebonyi state. Specifically, it examined:

1. The cause of malaria among a group of pregnant women in Abakaliki;
2. The mode of malaria transmission among a group of pregnant women in Abakaliki;
3. Signs and symptoms of malaria among a group of pregnant women in Abakaliki;
4. Consequences of malaria in pregnancy among a group of pregnant women in Abakaliki;
5. RBM Initiative among a group of pregnant women in Abakaliki and;
6. Acceptance of ITN among a group of women in Abakaliki

METHODOLOGY

Participants and Setting

The programme was designed for all pregnant women attending Redeemed Christian Church of God Ebonyi province. A total number of 62 pregnant women attending the church in various parishes participated in the programme which lasted for four weeks. The venue of the programme was Redeemed Christian Church of God Chapel of Restoration Model Parish Azuiyokwu Abakaliki. Permission to use the women in the programme was granted by the pastor in charge of the area.

Programme Content

The programme comprised of two parts - theoretical and practical sessions. The

theoretical part of the programme included: pre and post assessment of the women's knowledge of malaria and RBM initiative as well as acceptance of ITN as a malaria preventive measure during pregnancy. Teachings and discussions on major malaria concepts namely, causes, mode of transmission, symptoms, consequences and the RBM Initiative were conducted. The practical part included demonstration on the use of ITNs. Three teaching methods were used: lecture, discussion, question and answer methods. ITN manual which contains, self-explanatory pictures of ITN and its application were distributed to the women.

Programme intervention

Week one

The first week of the programme comprised a data collection activity (pre-programme test). A simple self-constructed instrument was used to obtain data on knowledge of malaria and acceptance of ITNS among the women. The instrument was presented to the women on individual basis. After the data collection activity, preliminary teaching on malaria concepts began.

Week two

Teachings on malaria in pregnancy continued. The women were taught malaria facts such as its cause, mode of transmission, symptoms, and preventive methods. Concerning prevention, emphases were laid on the three cardinals of the Rollback Malaria initiative which is the use of ITN, IPT and effective case management. However other methods of prevention were also generally taught. Such other measures included avoidance of stagnant water around the home, sanitation of the environment, clearing mosquito breeding ground, and Indoor Residual Spraying IRS (SYAHD, 2003). Both lecture and discussion methods were used to convey these malaria concepts to the women. This was done to raise the women's malaria knowledge as well as develop positive attitude towards acceptance and practice of preventive measures.

Week three

Malaria concepts, which were introduced in week two, were briefly rehearsed with the women. Questions were also asked to determine whether they still remembered what they were taught. After this initial rehearsal, the women were taught how to use the ITN. The researcher demonstrated and re-demonstrated the practical use of the ITN to the women. Then each woman was given an opportunity to demonstrate the skill until perfection. Women who quickly grasped the technique helped in demonstrating the techniques to the other women. Also, a poster illustrating the various steps of the use of the net were photocopied and distributed to the women to serve as a reminder for ease of reference

Week four

The practical demonstration of the use of ITN which began in the third week continued and was concluded. At the end of the exercise a post-programme test (using the same instrument as in the pre-programme test) was conducted among the women to determine whether there was a change in their knowledge of malaria in pregnancy and acceptance of ITNS. The programme was concluded with singing and dancing, as well as eating and drinking.

Research Design

The quasi-experimental design was adopted for the study. This involved one group pre-test and post test programme.

Instrumentation for Data Collection

A questionnaire comprised six sections (A-F and designed by the researcher) was the sole instrument for data collection. While sections A, C, and D contained five questions each (with "yes" or "no" option) on knowledge of the cause, symptoms, and consequences of malaria respectively, sections B and F comprised four items each. These items focused on malaria mode of transmissions and acceptance of ITNS respectively. Finally section E contained eleven items related to the RBM Initiate package. Three experts in health education validated the instrument. The reliability of the instrument was ascertained through test retest of the instrument a group of women who were not part of the main study. This yielded a reliability coefficient of .72 employing Spearman Brown reliability computation. $1-\frac{6\sum D^2}{N(N^2-1)}$

Data generated from the completed questionnaire were analyzed using percentages. Thus, percentage was used to analyze both correct and incorrect responses for each item. In order to describe the participant's level of knowledge, Okafor (1997) modified criteria for describing level of knowledge was adopted. In this regard, a score of 0-20% was considered 'very low' level knowledge, 21-39% 'low', 40-59% 'average', 60-80% 'high', and above 80% 'very high' level of knowledge.

Results

Table 1: Frequency and Percentage Distribution of Women's Pre-test and Post-test on Knowledge on the Cause of Malaria s (N)

Causes of Malaria Items	Pre-test		Post-test	
	Correct Response	Incorrect Response	Correct Response	Incorrect Response
Oily foods cannot cause malaria	10(16)	52(84)	57(92)	5(8)
Malaria is caused by a mosquito parasite	37(60)	25(40)	62(100)	0(0)
Exposure to sun light cannot causes malaria	2(3)	60(97)	62(100)	0(0)
Much of egusi soup cannot cause malaria	34(55)	28(45)	61(98)	1(2)
Stress is not a cause of malaria	0(0)	62(100)	59(95)	3(5)
Total	17(27)	45(73)	60(97)	2(3)

** Figures in parenthesis indicate percentage score*

Table 1 shows that before the programme (pretest) women had high (60%) knowledge of mosquito parasite as a cause of malaria. Table also reveals that during the pretest women had very poor knowledge of the fact that oily foods (16%), exposure to sun light (3%) and stress (0%) cannot cause malaria. However after the programme their knowledge of mosquito parasite as a cause of malaria increased from high (60%) to very high(100%) level of knowledge. Further the post-test reveals that is conceptions on the cause of malaria with respect to oily foods, egusi, sunlight and stress reduced from 84%, 97%, 45%, and 100% to 8%, 0%, 2%, and 3% respectively after the programme.

Table 2: Frequency and Percentage of Pre-test and Post-test on Malaria Mode of Transmission of Malaria (N = 62)

Items	Pre-test		Post-test	
	Correct Response	Incorrect Response	Correct Response	Incorrect Response
Mosquito can transmit malaria to a human being through its bite	34(55)	28(45)	62(100)	0(0)
It can be transmitted through mother to unborn baby.	30(48)	32(52)	60(97)	2(3)
It can be transmitted through blood transfusion.	40(67)	22(35)	61(98)	1(2)
Malaria cannot be transmitted through Contaminated water	21(34)	41(66)	57(92)	5(8)
Total	31(50)	31(50)	60(97)	2(3)

* Figures in parentheses indicate percentage score

Table 2 reveals that during the pretest the women had average knowledge of mosquito bite (55%), and mother to unborn baby (48%) as malaria modes of transmission. They also had low knowledge (34%) of the fact that malaria cannot be transmitted through contaminated water. After the programme, the post test result shows that women's knowledge appreciated to 100, 97, 98, and 92 percent respectively for all the items. More so, the total score of the women's knowledge of malaria mode of transmission increased from average (50%) to very high level (97%)

Table 3: Frequency and Percentage of Pre-test and Post-test on Knowledge of Malaria Symptoms(N = 62)

Items	Pre-test		Post-test	
	Correct Response	Incorrect Response	Correct Response	Incorrect Response
Severe head ache shows that one has malaria	33(53))	29(42)	62(100)	0(0)
Fever shows that one has malaria.	33(53)	29(47)	62(100)	0(0)
Vomiting is common in malaria.	26(42)	36(58)	60(97)	2(3)
Body Pain is another indication of malaria	45(73)	17(27)	62(100)	0(0)
Loss of appetite is common in malaria	57(92)	5(8)	60(97)	2(3)
Total	39(63)	23(37)	61(98)	1(2)

* Figures in parentheses indicate percentage score

Table 3 shows that the women before the programme had average knowledge of head ache (53%), fever (53%), vomiting (42%) and high knowledge of loss of appetite (92%) and body pain(73%) as symptoms of malaria during pregnancy. After the programme however, their knowledge of malaria symptoms increased in all the items. There was also an increase in the total score from 39% in the pretest to 98 percent in the post test.

Table 4: Frequency and Percentage Distribution of Pregnant Women's Knowledge of Consequences of Malaria (N = 62)

Items	Pre-test		Post-test	
	Correct Response	Incorrect Response	Correct Response	Incorrect Response
Malaria in pregnancy causes low birth weight babies	30(48)	32(52)	61(98)	1(2)
Malaria in pregnancy causes jaundice in new babies	29(47)	33(53)	55(89)	7(11)
Malaria in pregnancy causes abortion.	18(29)	44(71)	58(94)	4(6)
Malaria during pregnancy can lead to maternal anemia	22(35)	40(65)	59(95)	3(5)
Malaria during pregnancy can lead to death of the mother	30(48)	32(52)	60(97)	2(3)
Total	26(42)	36(58)	59(95)	3(5)

* Figures in parentheses indicate percentage score

Table 4 shows that before the programme (pre-test) women demonstrated average knowledge of low birth weight (48%), abortion (29%) and anemia (35) as consequences of malaria during pregnancy. Their knowledge of the consequences of malaria in pregnancy with respect to abortion (29%) and anemia (35) were low respectively. However after the programme (post-test) the level of women's knowledge of the consequences of malaria in pregnancy improved tremendously for all the items. Again while the overall score was 42 % in the pre-test, the post-test showed an overall score of 95%.

Table 5: Frequency and Percentage of Pre-test and Post-test on RBM Initiative (N = 62)

Items	Pre-test		Post-test	
	Correct Response	Incorrect Response	Correct Response	Incorrect Response
RBM is an initiative for the prevention of malaria in pregnancy	4(6)	58(94)	61(98)	1(2)
ITN use is one of the components of RBM	4(6)	58(94)	60(97)	2(3)
ITN means insecticide treated bed Net	25(40)	37(60)	58(94)	4(6)
Pregnant women should always sleep Under ITN	32(52)	30(48)	62(100)	0(0)
Long lasting ITNs are always better than short lasting ITNs	30(48)	32(52)	60(97)	2(3)
IPT means Intermittent preventive treatment	6(10)	56(90)	57(92)	5(8)
IPT involves the administration of full, curative malaria treatment in at least monthly intervals during pregnancy	6(10)	56(90)	59(95)	3(5)
After 16 weeks of pregnancy every pregnant mother should receive IPT from her doctor	3(5)	59(92)	60(97)	2(3)
IPT is to be given to pregnant mothers during antenatal	4(6)	58(94)	55(89)	7(11)
Prompt and early case management is the third component of theRBM Initiative	3(5)	59(95)	62(100)	0(0)
Prompt malaria treatment during pregnancy prevents future malaria occurrence	5(8)	57(92)	58(94)	4(6)
Total	11(18)	51(82)	59(96)	3(4)

* Figures in parentheses indicate percentage score

* *ITN* = Insecticide treated bed net

Table 6 indicates that prior to the programme women demonstrated very low knowledge of RBM as a malaria preventive initiative for pregnant women (6%). They also demonstrated very low knowledge of the meaning of IPT (6%) and effective case management as a component of RBM,. The pretest result further shows that women's overall knowledge of RBM initiative was very low (18%). After the programme, the post test result

shows that women's knowledge of the three components of RBM improved in all the items with an overall score of 96 percent indicating a very high level of knowledge.

Table 6: Acceptance of ITN among the Pregnant Women (N = 62)

	Pre-test		Post-test	
Item	**Yes**	**No**	**Yes**	**No**
Do you have ITN	15 (24)	47 (76)	55(89)	7 (11)
Will you like to have an ITN	13 (21)	49 (79)	60 (97)	2 (3)
Do you make use of your ITN always	3 (5)	59 (95)	48 (77)	14 (23)
Do you like ITN for the prevention of malaria	4 (6)	58 (94)	48 (77)	14 (23)
Total	9 (15)	53 (85)	53 (85)	9 (15)

* Figures in parentheses indicate percentage score

* *ITN* = Insecticide treated bed net

Table 6 presents the pretest and post test result of the acceptance of ITN among the women.

Before the programme table reveals that only 24%, 21%,, 5% and 3% of the women had ITN, would like to have ITN , made use of their ITN always, and liked ITN as a means of malaria prevention. However after the programme the percentage of these women rose to 89%, 97%, 77% and 77% respectively for those that had ITN, would like to have ITN, made use of their ITN always, and liked ITN as a means of malaria prevention.

Discussion

Drawing from the outcome of the programme, the exercise was very successful and rewarding. There was an improvement in the women's knowledge of malaria with respect to its cause, mode of transmission, symptoms, consequences in pregnancy and Roll Back Malaria initiative (RBM). The pre-test scores on tables 1, 2, 3, 4 and 5 reveal that women's level of malaria knowledge with respect to the cause, ,mode of transmission, symptoms, consequences in pregnancy and RBM initiative were 27%, 50%, 63, 42% and 18% respectively . However these scores after the programme (post-test) rose to 97%, 97%, 98%, 95% and 96% respectively. Another important finding from the programme is the practical change in behaviour with respect to the acceptance of ITN among the women. In table 6 only 5% of the women made use of their nets always before the programme. After the programme the percentage of those that used the net always rose to 77%. The total outcome of the programme confirms the

assertion of Ssengozi and Mukumbi (2010) who stated that enhanced malaria prevention education as an integral component of ITN distribution programmes could help promote the use of malaria prevention methods and stem malaria infection. It also agrees with the report of Dike, Onwujekwu, Ojukwu Ikeme, Uzochukwu & Shu (2006) which observed that increased availability of ITN accompanied by concerted health promotion and education campaigns does improve net usage. The outcome of the programme is also a total vindication of Enato, Okhamafe & Okpere (2007) who recommended that efforts should be made to improve anti-malarial intervention during pregnancy, through improved educational measures at the antenatal clinics, focused policies including mass media, net subsidy, non-government organizations and women's groups.

Further, the improved malaria knowledge and consequent willingness to use ITN among the women collaborates the assertion that perception about malaria, perceived susceptibility and beliefs about its seriousness are important preceding factors for decisions to take preventive and curative actions against the disease (Rakhshani , Ansari Moghadam, Alemi ,& Moradi , 2003). Again the successful use of the church and its members for the programme suggests that churches are increasingly becoming promising venues to reach communities regarding health matters. Omaka (2007) stated that the church has unique advantages that can be utilized for effective health promotion programmes. The church according to this author is already an organized system and has well established groups that can be targeted for health promotion.

Conclusion

Based on the outcome of the programme and discussions thereof the following conclusions are made: The women before the programme had limited knowledge concerning malaria during pregnancy. Women also before the Programme demonstrated limited knowledge of the RBM initiative and a reluctant attitude in the use of ITN. However the malaria education programme improved the women's knowledge of malaria with respect to its cause, mode of transmission, signs and symptoms, dangers to pregnancy and the RBM initiative. It also made a remarkable improvement in the women's knowledge of the use and acceptance of ITNs.

Recommendations

1. It is recommended that the programme should be continued and extended to other women groups in the state. The Provision of such programme would help make malaria awareness an important issue among pregnant women who apparently are more

vulnerable to the disease.

2. Periodic follow up of the same participants in the present study might be necessary to identify the effect of time on the retention of the adopted knowledge.
3. The outcome of this programme suggests the need for the extension of such programme to more churches in the state.
4. Health educators should give priority to church-based health promotion.

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