

Possible Role of Community Participation in Malaria Control and Prevention in Abia State, Nigeria

Abstract

Community engagement and participation has played a critical role in successful disease control and elimination campaigns in many countries. Although malaria is endemic in many parts of the country, the knowledge, attitude and practice of the community about the disease prevention and control options is far from perfect, and misconceptions and malpractices are common. The study conducted between January and April, 2016 was aimed at evaluating the **role of community involvement** towards malaria prevention and control. A cross-sectional approach was adopted through collecting data using pre-tested structural questionnaire. The information which included such variables like knowledge, attitude and practice of malaria control and prevention were adopted. **Other variables include community involvement in planning, supervision, monitoring, ITN distribution, training and practice of malaria prevention.** A total of 2000 fully completed questionnaires were retrieved consisting of **950** (47.5%) males and 1050 (52.6%) females. Majority of the respondents (94.8%) were literate with 64.9% married. The results further revealed a total of 1967(98.4%) who claimed they have a good knowledge of malaria as a disease. However, only 1657(82.9%) knew infected mosquito bite as the cause of malaria; although, some had misconceptions on the causes of malaria. Almost all the respondents correctly associated malaria with clinical symptoms of the disease. Majority of the respondents have good knowledge of environmental factors predisposing to malaria with 887(44.4%) for stagnant pool of water, bushes around the house was 764(38.2%) while refuse was 185(9.3%). However, 87(4.4%) had a misconception that cold weather is one of the factors that predisposes to malaria. **The result also revealed that community members were not involved in planning, supervision, monitoring and training of malaria control programmes. Only 1.5% of the respondents acknowledged participated in ITN distribution programmes. All respondents affirmed the availability of healthcare facilities in their communities; however only 63.8% claimed they use these facilities. Reasons for non-use include use of herbal medicine (62.0%) and self-medication (29.8%).** On preventive measures used, **insecticide-treated bed nets (ITNs)** had the highest percentage with 29.7%. Despite increased access to this intervention over time, the use of ITNs still remains low. All respondents claimed involvement in the monthly sanitation program. However, only a little percentage (1.3%) performs this exercise weekly. **Although various malaria interventions have emphasized community participation as a vital tool for effective malaria control and prevention, the issue on ground is that community members are not involved in the planning, supervision, monitoring, training and distribution of ITNs. Therefore, existing efforts must be strengthened and health education programmes intensified to improve community participation towards malaria prevention and control.**

Key words: Community participation, malaria prevention and control, Abia State

Introduction

Nigeria is one of the hardest hit of the countries in malaria-endemic countries of sub-Saharan Africa [1]. Malaria remains a major public health problem and its control poses a great challenge in Nigeria. One key factor in combating the burden of malaria is decreasing exposure to the disease, both by reducing vector populations and by lowering contact between humans and infected mosquitoes. Additionally, increasing people's use of healthcare facilities and anti-malarial drugs are important in decreasing malaria morbidity and mortality. Peoples knowledge and perception of malaria influence both prevention and treatment-seeking behaviors [2]. A study in Zimbabwe concluded that there is a significant relationship between people's knowledge of the causes of malaria and their preventive measures [3]. Local knowledge and perceptions of malaria are likely to influence the success of environmental management programs as well. If people have a comprehensive understanding of mosquito life cycle and habitat requirements, it is likely that they will be more effective in controlling the habitats to reduce mosquito population. The first step in the introduction of an environmental management campaign is to ensure that communities understand the processes of vector ecology, how the processes are linked to their surrounding micro-environment, and how performing management techniques will impact malaria in their community. If properly implemented, environmental management is a promising approach. It is a method that requires a community to take ownership, maintain through participation and cooperation, and sustain through continual education of community members [4].

In order for environmental management techniques to succeed in reducing the malaria burden, widespread community participation is essential. A threshold amount of stagnant water must be drained in order for mosquito populations to be significantly reduced in a community. This highlights the importance of viewing environmental-based malaria control as a collective action problem. In this situation, if majority of people in a community contribute a small amount of time to performing environmental management, the entire community will benefit from reduced malaria incidence. Collective action is important for other forms of malaria control as well, particularly those that focus on reducing vector populations. In Burkina Faso, the collective use of insecticide-treated nets reduced malaria incidence by 90% for all community members, even those not sleeping under the nets [5]. The high net usage was sufficient to decrease the number of malaria-infected mosquitoes enough so that malaria rates in the entire area were reduced .It is only with extensive participation from the community members that a significant reduction in mosquito and thus further malaria burden will be reduced.

Education programs have been used in many situations to increase community understanding and participation in malaria control activities. In India, one program used folk theaters to teach people about malaria control and prevention [6]. This activity led to a significant increase in knowledge and participation in bio-environmental malaria control activities. In Sri Lanka,

participatory exercises were conducted in the field to identify mosquito breeding sites [7]. An integrated vector management program in Kenya taught community volunteers how to identify larval mosquitoes using live specimens [8]. Additionally, the farmer field school is an important example of a successful integrated vector management education program targeting agricultural areas [9]. The field school curriculum includes participatory exercises to identify breeding habitats, sample and identify adult mosquitoes, observe larval mosquitoes, learn techniques for source reduction and suppression of mosquito breeding, and map the village to identify areas to focus coordinated environmental management efforts. All of the above programmes were all successful in increasing community knowledge and participation in effective malaria control techniques.

Roll back malaria (RBM) is a people-oriented program that emphasized community participation. The RBM strategy seeks to establish a social movement in which local communities, public and private sectors, all tiers of government and non-governmental agencies come together in a partnership and network to implement malaria control activities [10]. Participatory monitoring methods are one way for partners and participants to evaluate their own performance and see how this is affecting malaria incidence and death rates. Hence, it is important to keep community volunteers or support groups involved and this will make prevention and treatment practices sustainable. When sustainability is achieved, gains in malaria control and continued progress towards Roll Back Malaria (RBM) and Millennium Development Goals will be achieved. Thus community empowerment in all program phases and community participation will in no doubt yield desirable results in malaria control. Community participation in planning, implementation and monitoring will improve the control strategies. This study is aimed at evaluating community participation in malaria prevention and control in Abia State Nigeria.

Materials and Methods

Study Area: Abia state (figure 1) is located in the south eastern part of Nigeria. The State lies between latitude $4^{\circ} 45^1$ and $6^{\circ} 15^1$ North and longitude $6^{\circ} 30^1$ and $8^{\circ} 9^1$ East. The people of the state are very dynamic and are predominantly farmers, artisans and civil servants. Other ethnic groups also reside with the dominant Igbo speaking people. The State is prone to malaria because of its flooding nature during the rainy seasons with poor drainage system, resulting in the formation of temporary water bodies that promote the breeding of mosquitoes, the vector for malaria parasites.

Research Ethics: Ethical review and consent procedures were obtained from the Ethical Review Committee of the Department of Biology/Microbiology, Abia State Polytechnic, Aba. Permission was sought from the community leaders in each of the sampled communities and

right of individuals to participate or not was emphasized. Individuals who consented signed the consent forms.

Study Design and Data Collection: The study conducted between January and April, 2016, was designed to evaluate the involvement of community members in malaria prevention and control. A cross-sectional approach was adopted through collection of data using pre-tested structural questionnaire from community members. The information which included such variables like knowledge, attitude and practice of malaria prevention and control was presented in English language or interpreted in the local dialect for better understanding to the respondents. A modified APOC/WHO [11] Guide for community-directed treatment for ivermectin (CDTI) sustainability was used to obtain information on the community involvement in planning, supervision, monitoring, ITN distribution and training in malaria prevention and control. Two thousand six hundred questionnaires were administered with two thousand fully completed and returned. Given the magnitude and sensitive nature of the work and the need to generate adequate data, field assistants were used and trained on the importance of making relevant field observations, data collection and keeping accurate records. To realize the above, they were reminded of the importance of their role in the whole research objectives and the procedure of achieving the goals.

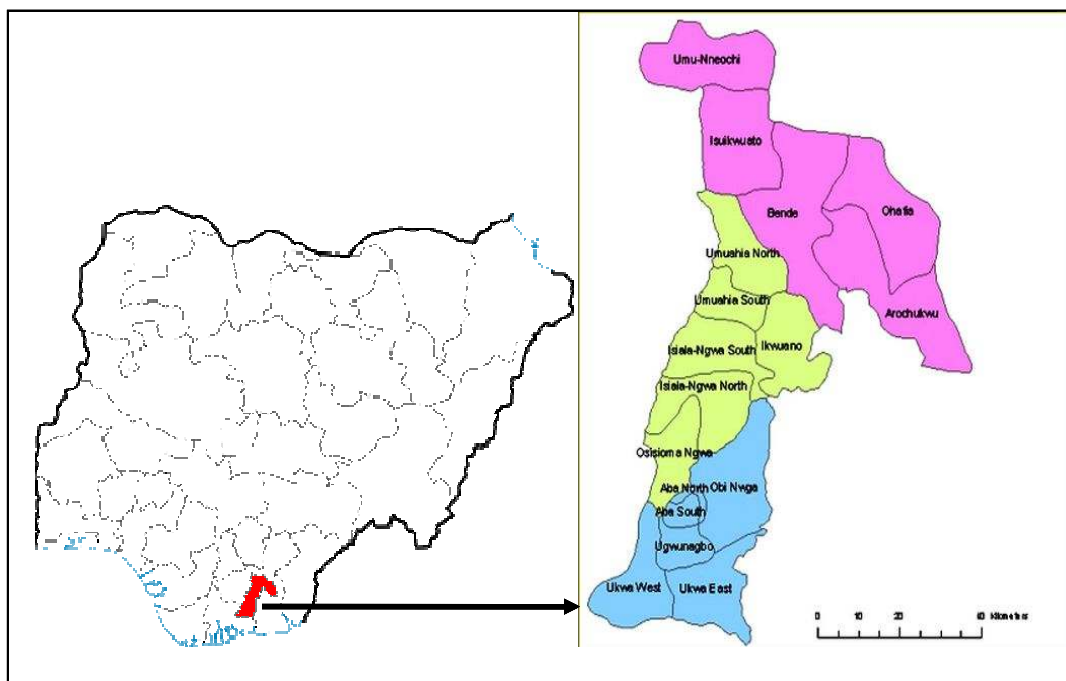


Figure 1: Map of Abia State, Nigeria [12]

Results

The socio-demographic characteristics of the respondents are shown in Table 1. A total of 2000 fully completed questionnaires were retrieved consisting of 950 (47.5%) males and 1050 (52.6%) females. Based on age, 30-39 years were 25.1%. This was closely followed by age group 10-19 and 20-29 years with 19.6% and 19.4% respectively. On the educational status, majority (94.8%) had at least primary education. On occupational status, farmers were more predominant (26.9%) and closely followed by students with 26.3% and then the traders (22.1%); the married were more (64.9%) than the singles (35.1%).

Variables	Number Sampled	Percentage sampled (%)
Age Sex		
Male	950	47.5
Female	1050	52.6
Age (years)		
10-19	392	19.6
20-29	388	19.4
30-39	501	25.1
40-49	343	17.2
≥ 50	376	18.8
Educational Status		
Primary	508	25.4
Secondary	815	40.8
Tertiary	572	28.6
None	105	5.3
Occupation		
Trading	441	22.1
Farming	538	26.9
Artisan	134	6.7
Student	525	26.3
Civil servant	362	18.1
Marital Status		
Single	702	35.1
Married	1298	64.9

Table 2 shows the community Knowledge, attitude and perception of malaria. A total of 1967 (98.4%) claimed they had good knowledge of malaria as a disease. However, 1657(82.9%) knew mosquito bite as the cause of malaria. On the symptoms of malaria 38.7% claimed they usually have fever while 16.7% and 16.2% respectively claimed headache/body ache and chills/rigors as their own symptoms of malaria. On the frequency of attacks, 782(39.1%) claimed they usually have malaria every 3 months; 444(22.2%) claimed monthly while 62(3.1%) claimed yearly. On community knowledge of Environmental factors predisposing to malaria, stagnant pool of water was 887(44.4%), bush was 764(38.2%) while cold weather was 87(4.4%).

Table 2: Community Knowledge, Attitude and Perception of Malaria

Variable	Number of respondents	Percentage of respondents (%)
Community knowledge of malaria as a disease		
Yes	1967	98.4
No	33	1.65
Community knowledge of the causes of malaria		
Bite from infected mosquito	1657	82.9
Poor environmental hygiene	194	9.7
Cold weather	84	4.2
Poor personal hygiene	26	1.3
	39	2.0
Community knowledge of the Symptoms (multiple answers allowed)		
Chills and rigor	323	16.2
Headache/body ache	333	16.7
fever	774	38.7
vomiting	285	14.3
Loss of appetite	148	7.4
Bitter taste	165	8.3
Joint pains	113	5.7
cough	114	5.7
weakness	145	7.3
Frequency of Malaria Attack		
weekly	105	5.3
monthly	444	22.2
Every 3 months	782	39.1
Every 6 months	607	30.4
Yearly	62	3.1

Community knowledge of Environmental factors predisposing to malaria (multiple answers allowed)

Stagnant pools of water	887	44.4
refuse	185	9.3
bush	764	38.2
Cold weather	87	4.4

The assessment of community involvement in malaria prevention and control is shown in Table 3. The result revealed that community members were not involved in planning, supervision, monitoring and training. Only 30(1.5%) claimed they participated in ITN distribution.

Table 3: Assessment of Community involvement in Malaria Prevention and Control

Participation Indicator	Response	Number (%) N=2000
Community involvement in planning	Yes	nil
	No	2000(100)
	Don't	nil
Community involvement in supervision	Yes	nil
	No	1939(97.0)
	Don't	61(3.0)
Community involvement in monitoring	Yes	nil
	No	100
	Don't	nil
Community involvement in ITN distribution	Yes	30(1.5)
	No	1970(98.5)
	Don't	nil
Community involvement in Training	Yes	nil
	No	100
	Don't	nil

Table 4 shows the availability and usage of healthcare facilities by community members. All the respondents acknowledged the availability of healthcare facilities; however, only 63.8% claimed usage.

Table 4: Availability and Usage of Healthcare Facilities by Community members

Availability of Healthcare Facilities	Number	Percentage (%)
Yes	2000	100
No	nil	nil
Use of Healthcare Facilities		
Yes	1276	63.8
No	724	36.2

Reasons for non-usage of healthcare facilities are shown in Table 5. Out of 724 respondents who claimed non-usage of health facilities, 449(62.0%) claimed they use herbal medicine, 216(29.8%) claimed they use self-medication while 29(4.0%) claimed no reason.

Table5: Reasons for Non-usage of Healthcare Facilities by Community members

Reasons	Number (%)
Not usually sick	18(2.5)
Too far from home	12(1.7)
Self-medication	216(29.8)
Use of herbal medicine	449(62.0)
No reason	29(4.0)

Table 6 shows community involvement and home management methods used in malaria control. Out of 2000 respondents interviewed, 593(29.7%) claimed they use ITNs, 545(27.3%) claimed they use door/window netting, 312(15.6%) claimed they use insecticides while 87(4.4%) claimed they have no protective measures. All the respondents claimed involvement in the monthly environmental sanitation programs. However, only 142(7.1%) and 25(1.3%) claimed they carry out this sanitation exercise twice a month and weekly respectively. On specific tasks handled in the sanitation program, 1204(60.2) claimed involvement in bush clearing, 1091(54.6%) claimed involvement in drainage of gutters while 588(29.4%) claimed involvement in clearing refuse dumps.

Table 6: Community Involvement and Home Management Methods used in Malaria Control

Community Home Management Methods (HMM) used to prevent malaria		
Use of ITN	593	29.7
Use of insecticides	312	15.6
Use of mosquito coil	60	3.0
Use of door/window netting	545	27.3

Use of antimalarial drugs	243	12.2
Use of repellent cream	14	0.7
Wearing long sleeves	112	5.6
Burning of local plants	34	1.7
None	87	4.4

Community Participation on environmental sanitation

Yes	2000	100
No	-	-

Frequency of Environmental sanitation

Once a month	1833	91.7
Twice a month	142	7.1
Every week	25	1.3

Specific Tasks on Community Environment sanitation program (multiple answers allowed)

Clearing of bush around the surrounding	1204	60.2
Clearing of refuse dumps	588	29.4
Drainage of gutters	1091	54.6

Discussion

The present study evaluates the possible roles of community participation in malaria control and prevention in Abia State, Nigeria. The study revealed that majority of the sampled population (98.4%) claimed knowing malaria as a disease. However, 82.9% claimed having knowledge of infected mosquito bite as the cause of malaria. This result corroborates with the findings of some authors like Ayelew [10], Bamidele et al [11] and Ezeigbo et al [12] where majority of the respondents claimed knowing infected mosquito bites as the cause of malaria. Majority of the respondents have good knowledge of the symptoms, with fever being the most frequent symptom (38.7%). On the environmental factors predisposing to malaria, stagnant pools of water (44.4%) and bush around the surrounding (38.2%) were more frequent. Thus having a good knowledge of these factors is a determinant to the success or failure of malaria control programs. The peoples perception and understanding of malaria will determine the extent to which they can prevent and/or treat malaria, and their acceptance and usage of malaria control interventions. Thus, malaria prevention must go hand in hand with community participation.

The study also revealed that the community members were not involved in planning, supervision, monitoring and training. Only 1.5% of the sampled population claimed involvement in ITN distribution. Distribution systems designed by the community themselves will greatly improve control programmes. Since community designed systems provided more opportunities for community involvement, they appear to have greater potential for optimal control. The community involvement will determine the extent to which they can prevent and/or treat malaria,

and their acceptance and usage of malaria control interventions. Thus, malaria prevention must go hand in hand with community participation.

Although healthcare facilities were available, only 63.5% of the respondents claimed usage. Major reasons for non-usage of the healthcare facilities include the use of herbal medicine and self medication. On home management methods used to prevent malaria, ITNs was more prominent (29.7%), closely followed by door/window netting (27.3%). However, a small percentage (4.4%) still claimed they do not use any preventive measures (4.4 %). A similar study by Chilaka [13] in 5 African countries in a Roll Back Malaria Initiative program, found the practical reality of community engagement in malaria control to be still generally low. Thus, despite the efforts of the Roll Back malaria initiatives on the use of ITNs, only 29.7% of the population claimed usage. The use of the preventive measures is definitely affected by community's definition of their priorities regarding health and the illness and the degree to which individuals think they can personally control or prevent the illness. No matter how sound a preventive approach might be, if individuals do not see the merits of a particular approach or if competing needs are prioritized higher, the preventive approaches will fail to some degree.

All the respondents claimed they participate in the monthly sanitation exercise. Surprisingly, only 1.3% claimed carrying out the exercise every week. The specific tasks handled by the sampled communities centered on clearing the bush around the surrounding (60.2%), draining the gutters (54.6%) and clearing the refuse (29.6%). It is therefore recommended that community members should be encouraged to carry out the sanitation of their environment more frequently than the monthly approved sanitation exercise.

Conclusion

Roll back malaria (RBM) emphasized community participation in the control of malaria. Hence, it is important to keep community volunteers or support groups involved in malaria prevention. This will make the prevention and treatment practices sustainable. When sustainability is achieved, gains in malaria control and continued progress towards Roll Back Malaria (RBM) and Millennium Development Goals will be achieved. Thus community empowerment in all program phases and community participation will in no doubt yield desirable results in malaria control. Unless individuals in the community are involved in programme development, planning and execution, even the best-designed prevention strategies might not be effective. Community participation in planning, implementation and monitoring will improve the control strategies.

References

1. Jimoh A, Sofola O, Petu A, Okorosobo T. Quantifying the economic burden of malaria in Nigeria using the willingness to pay approach. Cost effectiveness Resour Allocation, 2007, 5(6), 1428-1754.
2. Minja H, Schellenberg JA, Mukasa O, Nathan R, Abdulla S, Mponda H, Tanner M, Lengeler C, Obrist B. Introducing insecticide-treated nets in the Kilombero Valley, Tanzania: the relevance of local knowledge and practice for an information, education and communication (IEC) campaign. Trop Med Int Health, 2001, 6(8): 614-623.

3. Vundule C, Mharakurwa S. Knowledge practices and perceptions about malaria in rural communities of Zimbabwe: Relevance to malaria control. *Bulletin of the World Health Organization*, 1996, 74: 55-60.
4. Opiyo P, Mukabana WR, Kiche I, Mathenge E, Killeen GF, Fillinger U. An exploratory study of community factors relevant for participatory malaria control on Rusinga Island, Western Kenya. *Malaria Journal*, 2007, vol. 6, Article 48.
5. Carnevale P, Robert V, Boudin C, Halna JM, Pazart L, Gazin P, Richard A, Mouchet J. (1988). Control of malaria using mosquito nets impregnated with pyrethroids in Burkina Faso. *Bulletin de la Societe de Pathologie Exotique*, 1988, 81: 832-846.
6. Ghosh SK, Patil RR, Tiwari S, Dash AP. A community-based health education program for bio-environmental control of malaria through folk theatre (kalajatha) in rural India. *Malaria Journal*, 2006, 5:123
7. Yasuoka J, Levins R, Mangione, TW, Spielman A. Community-based rice ecosystem management for suppressing vector anophelines in Sri Lanka. *Transactions of the Royal Society of Tropical medicine and Hygiene*, 2006, 100: 995-1006.
8. Mukabana WR, Kannady K, Kiama GM, Ijumba JN, Mathenge EM, Kiche I, Nkwengulila G, Mboera L, Mtasiwa D, Yamagata Y, Schayk IV, Knols BGJ, Lindsay S W, Castro MC, Mshinda H, Tanner M, Fillinger U, Killeen GF. Ecologists can enable communities to implement malaria vector control in Africa. *Malaria Journal*, 2006, 5:9. Available on: <http://www.malariajournal.com/content/5/1/9>
9. Vanden-Berg HVD, Knols BGJ. The farmer field school: a method for enhancing the role the role of rural communities in malaria control? *Malaria Journal*, 5, 3.
10. Aluko JO, Oluwatosin AO. Utilization of insecticide –treated nets during pregnancy among postpartum women in Ibadan, Nigeria: a cross-sectional study. *BMC Pregnancy and child birth*, 2012, 12:12. <http://www.biomedcentral.com/1471-2393-12-21>.
11. APOC/WHO (2004). Guidelines for conducting an evaluation of the sustainability of CDTI Projects. APOC Management, September 2004 revised version. <http://www.who.int/apoc/publications/guidelinesevaluationabilitycorrectedversionsept04.pdf>. Assessed 5 March, 2016.
12. https://commons.wikimedia.org/wiki/File:Abia_State_Nigeria. Retrieved 15 March, 2016.

307 13. Chilaka MA. Ascribing quantitative value to community participation : a case study of
308 the Roll Back Malaria (RBM) initiative in five African countries. Public Health, 2005,
309 119(11) : 987-994.

310