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Original Research

COMMUNITY PARTICIPATION AND UTILIZATION OF MALARIA PREVENTION METHODS IN BUKOBA DISTRICT -TANZANIA

[1]BONAMAX Mbasa; [2]RAPHAEL Ndaro Jettah & [3]ALBINO Tenge

[1]Department of Regional Planning, Institute of Rural Development Planning Lake Zone Centre, Mwanza, [2]Department of Population Studies, Institute of Rural Development Planning-Dodoma-Tanzania & [3]Department of social science, University of Dodoma

Corresponding Author's Email: rndaro@irdp.ac.tz

Abstract

Community participation is increasingly being advocated as an important pillar in enhancing the utilization of malaria prevention methods and essential for reducing malaria incidences among community members. However, the persistent high incidences of malaria cases and limited uses of malaria prevention methods among community members raise concerns about the effectiveness and perception of methods and the appropriateness of the participation approaches applied. This study investigated community participation and utilization of malaria prevention methods in the Bukoba District. Specifically, the study examined the perception, uses and preferences of Malaria prevention methods in the study area; analyzes the incidence of malaria cases in the study area and among users of various methods and examines the approaches applied in Malaria prevention. A total of 403 households proportionally randomly sampled from four Villages were used in this study. Methods of data collection were household survey, key informant interview and focus group discussion. Techniques of data analysis were measures of central tendency, descriptive statistics of frequencies and cross tabulation, Independent sample T-test and One-Way-Analysis of Variance (ANOVA). Results indicated that there was lower utilization of malaria prevention methods; the methods are perceived negatively among households; incidences of malaria cases varied significantly across methods with higher prevalence among users of traditional methods. The participation approaches used were insufficient and mostly manipulative. It is recommended that the full participation of community members should be carried out for the program to achieve the required objectives.

Keywords: Participation; Community Participation, Malaria Prevention Methods, Bukoba district, Malaria incidences

Introduction

Community participation is increasingly being recognized as an essential tool for hastening and enhancing utilization of malaria prevention methods (Whittaker & Smith, 2015). The idea is centred on the Knowledge that, community members are more knowledgeable than outsiders about their values, needs, preferences, and their dynamics (World Bank, 2014; Zakus & Lysack, 1998). As a result of this, many health practitioners and development stakeholders emphasize the involvement of community members in any intervention aimed to address and successful prevention and elimination of Malaria infection (Whittaker & Smith, 2015; USAID, 2019). The 1978 Alma ata declaration put forward that, people have a right and duty to participate individually and collectively in the planning and implementation of their health care (Gillam, 2008; Walley et al., 2008).

Experience in participation drawn from many African countries have shown that community participation delivers positive outcome not only in disease prevention but also in service delivery and natural resource conservation (Tenge *et al.,* 2005). A study by Zulu *et al.,* (2005) in Zimbabwe, found a positive relationship between community participation and improved health outcomes, even in resource-poor communities and clinics. In Zambia, Baez and Barron (2006) found that community participation improved the health situation of HIV-affected families through the provision of health information, food and medicine during home visits. In South Africa, community participation has been formalized in the National Health Act 61 of 2003 with provisions for establishing hospital boards, district health councils and health committees as a link between health services and the communities they serve (Republic of South Africa, 2004).

Tanzania recognizes the importance of community participation in achieving its health-related objectives and has adopted the policy of Decentralization by Devolution (D by D) as well as undertaking several reforms in the health sector (Masanyiwa, 2014; URT, 2008). The D by D and reforms undertaken in health sectors demand among others, adequate participation of people in making major decisions on matters affecting their lives (Simbila, 2011; URT, 2008; URT, 2010). To ensure the effective participation of people in health-related matters, health committee has been established in all local government authorities to ensure that people participates in health-related matters either directly or through their representation.

Bukoba District has been among the district identified as a malaria-prone area and therefore targeted for implementation of the Integrated Malaria Vector Control Program. The program claimed the participation of people in malaria prevention and control. It involved the free distribution of insect-side treated nets (ITN), indoor residual spray as well as the destruction of mosquito breeding sites and was implemented in the district since 2008. Up to 2018, an estimated 73,700 living houses out of 75,991 in 4 divisions, 29 wards, 94 villages and 515 hamlets of Bukoba District Council had been sprayed with Indoor Residual Spraying (IRS). This exercise went along with emphasizing the community to destroy the mosquito breeding sites. Despite such initiatives, the cases of malaria infections increases from 19,290 in 2018 to 60,909 in 2019 (Bukoba District Council, 2019; National Malaria Control Program, 2018/2019; TACAIDS ; ZAC; NBS ; OCGS; ICF International, 2013; USAID, 2016). Along with this, there has been a noted decline in preference for the use of these methods.

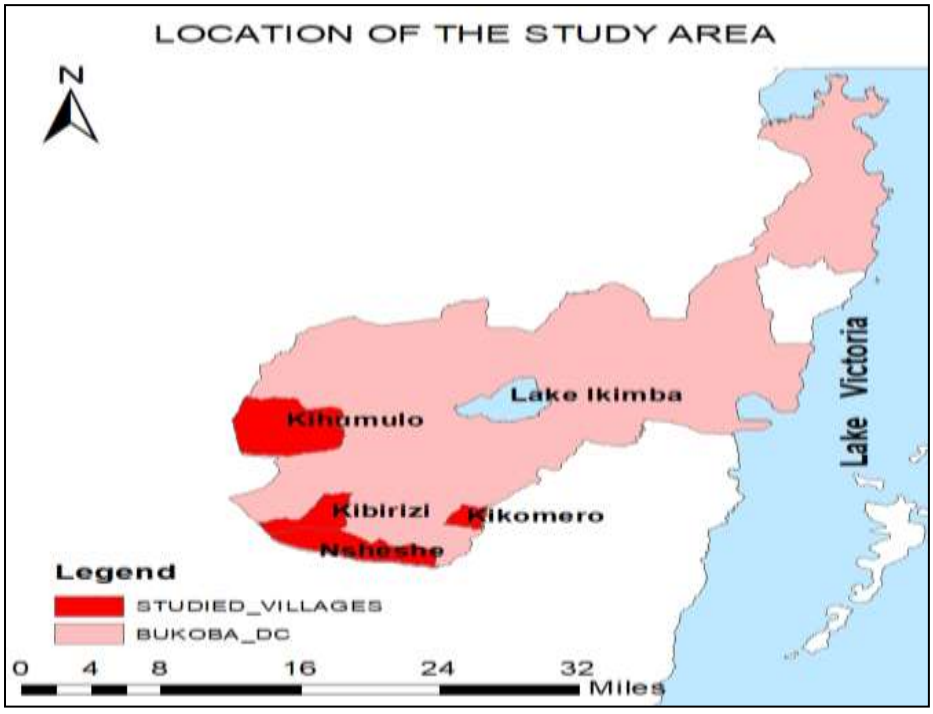
The persistent high incidences of malaria cases and limited preferences in the uses of the suggested methods among people provide twofold implications; either the methods applied in malaria prevention methods are ineffective, or the participation approaches applied were not

appropriate. However, information to unfold accurately the reasons for such a scenario is scanty in the study area. This study, therefore, investigates community participation and utilization of malaria prevention methods in Bukoba District. Specifically, the study examines the reception, uses and preferences of Malaria prevention methods in the study area; analyzes the incidence of malaria cases in the study area and among users of various methods and examines the approaches applied in Malaria prevention.

Material and Methods

Study Area

This study was conducted in Bukoba District. The district is one among the districts forming the Kagera region. Others being: Bukoba Urban; Kyerwa; Muleba; Misenyi; Ngara; Karagwe and Biharamulo. The district has been purposively selected for this study over other districts in the country due to several reasons, including; its location within a Malaria-endemic region having the highest malaria prevalence of 41 per cent relative to other regions in the lake zone area. other regions, namely: Geita; Kigoma; and Mara, have Malaria prevalence of 38 per cent and 19 per cent, respectively (URT, 2016). Secondly, the district has been preferred for this study over other districts in the region because it is the only area where the Integrated Malaria Vector Control program was conducted after having noticed the highest prevalence of malaria cases.



Target Population and Sampling Frame

The target population for this study was all households in Bukoba District. The sampling frame consisted of a list of households identified by household head names from the selected villages. This frame was collected from the village executive officers of the studied villages.

Sampling and Sample Size

A total of 403 households selected randomly from four villages involved in this study. This sample size was estimated based on Yamane formula(Yamane, 1967) which was then enlarged by 4% to allow for adjustment for non-response, hence making the final sample to be 403 respondents (Masanja, 2018).

$$n = \frac{N}{1+Ne^2} + \frac{4}{100}\left(\frac{N}{1+Ne^2}\right)$$

Where;

n = Sample size.

N = Total number of households in Bukoba District (ie.,

e = Precision (0.05)

Proportional random sampling was used to obtain respondents from each village. Sampling began by listing all wards in the District. Then, four wards were selected randomly in order to ensure each ward is given equal chance to be included in the sample. From each selected ward, a village was selected randomly, making a total of four villages. Then a cluster of respondents from each village was created, and a sampling fraction was computed by dividing the required sample to the total population of the studied villages. This sampling fraction was multiplied by the population of each village to get the representative sample from each village. Then using a simple random sampling, respondents from each village were selected for interview. Table 1 shows the distribution of these respondents from each study's village.

Table 1: Sample size

Village	Sample size
Kibirizi	95
Kikomelo	136
Nsheshe	99
Kihumulo	73
Total	403

Data Collection Methods

Methods of data collection used in this study were household surveys, focus group discussions (FGDs) and key informant interviews. The household survey was applied to a randomly selected sample from the study area. The method was administered using a questionnaire. Enumerators were well-trained before the data collection exercise began. In the FGDs, a total of 8 focus groups (2 from each village) containing 8 participants were involved. Moreover, 12 key informants were involved.

Data Analysis and Presentation

Data analysis was done using IBM SPSS Version 20. This software was used for quantitative data collected by a household survey, while content analysis was used for qualitative data from the FGDs, as well as from key informant interviews. Techniques of data analysis—including, frequencies, cross tabulation, measures of central tendency, independent sample t-tests and

Analysis of Variance were used in the analysis. Data presentation was done using texts, tables and transcriptions of information from key informants.

The Conceptual and Theoretical Review of Community Participation

The Conceptual Review of Participation.

The concept of community participation as comprehended in international discourse is usually ill-conceived in practical application in several communities. In practice, different connotations of participation usually emerge. However, practitioners think they are all together working on the same agenda of participation while, in fact, they are far apart. Owing to this, it is very difficult to comprehend if such contradictory connotations result into similar intended outputs.

Community participation as comprehended in international discourse entails involvement of local people in decision making process and evaluation of a development interventions and/or projects (kirigha, 2016; Naku, et al., 2021; Marsland 2006). The concept is also associated with local empowerment and calls for the use of local knowledge. Ideally, the "facilitators" of a participatory intervention and/or projects is not supposed to arrive with their pre-formulated plan for intervention, but would work together with local people to identify their needs and ways in which they can use their own knowledge and resources to improve their situation. However, some practical application, people are usually implementors and/ or recipients of what has already been decided by higher authorities while echoing the similar concept of participation.

In Tanzania, two contradictory discourse of participation is circulating in the country. One is the international discourse aiming in empowering community to make decision and the other is the concept of self-reliance which is rooted on Mwalimu Nyerere concepts where communities participates by contributing their labour and resources on a pre-planned intervention of which they did not participate in their formulation (Marsland, 2006).

Theoretical Review on community participation

Typological theory of community participation

Pretty (1995) classification is perhaps the well elaborated kind of classification which presented seven typologies of community participation as presented in Table 2. Pretty (1995) prescribed typologies of community participation namely: Manipulative participation; passive participation; participation by consultation; Participation for material incentives; functional participation; interactive participation and self-mobilization.

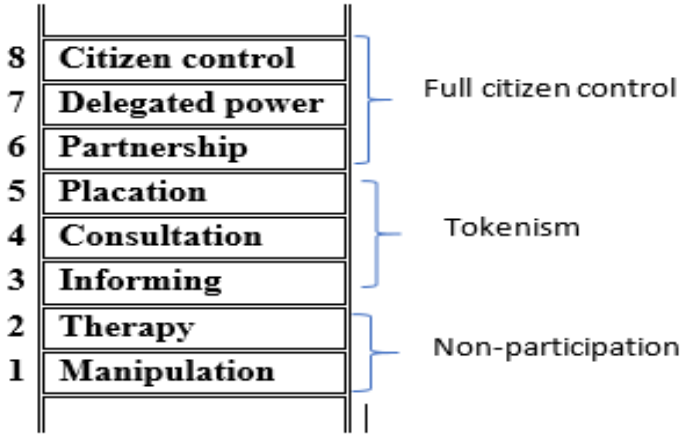
Table 2: Typology of community participation

	Types of community participation	Main features	Weaknesses
1	Manipulative participation	Participation is pretence with people's representatives on official boards but who are unelected and have no power	Community members do not have power to make decision
2	Passive participation	People participate by being told what has been decided and has already happened. It involves unilateral announcements by an administration or project management who do not listen to people's responses	Community members do not have power to make decision
3	Participation by consultation	People participate by being consulted or by answering questions. External agents define problems and information gathering processes and so control analysis	This process does not grant any share in decision making and professionals are under no obligation to adopt people's views
4	Participation for material incentives	People participate by contributing resources in return of some form of incentives. For example, labour in return for food, cash or other material incentives	Community members do not have power to make decision
5	Functional participation	People form groups to meet pre-determined objectives. Participation in this case is seen by external agents as a means of achieving project goals especially reductions in costs	This participation tends to arise only after major decisions have been made by external agents. Local people may only be co-opted to serve external goals
6	Interactive participation	People participate in joint analysis development of action plans and the formation or strengthening of local institutions	Participation is seen as a right not just as a means of achieving project goals
7	Self-mobilization	People participate by taking initiatives independently of external institutions to change systems. They develop contacts with external institutions for the resources and technical advice that they need and retain control over how the resources are used	Participation is seen as a right not just as a means of achieving project goals

Source: Pretty, (1995)**.**

The Theory of the Ladder of Community Participation

The theory was introduced by Arnstein in 1969. Since then, major insights have arisen in the discipline of community participation. Generally, the theory premises that, participation is structured in the form of a ladder that grows from the lower level of manipulation which entails non-participation but rather people are just controlled though there is a pretence of participation to the higher level of control which is the highest and genuine level of participation (Figure 1). According to Arnstein (1969), for any successful intervention, attainment of the high level of community participation is inevitable.



Despite giving insight into speculation and studies of community participation, however the theory is challenged by presenting very broad categories which in practical realms might not be realistic. According to Burns et al., (1994), increased control may not always be desired by the community and increased control without the necessary support may result into failure.

The Theory of Citizen Empowerment Ladder

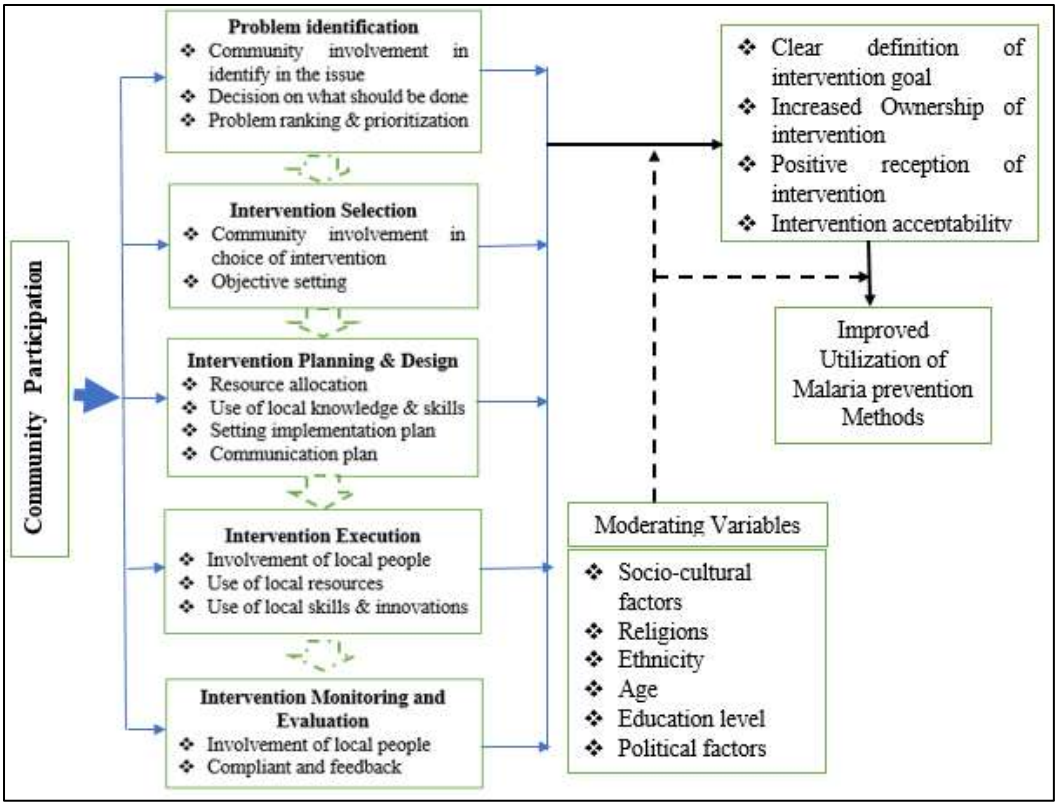
The theory was introduced by Burns et al., (1994) who modified Arnstein's ladder of community participation. According to Burns et al., 1994, community participation comprises twelve levels that grow from the lower level of civic hype to the highest level of independent control. This model encourages people to be responsible and be active in public service decision-making. As distinguished to Arnstein ladder, the citizen power model is a bit elaborated.

CITIZEN CONTROL
12. Independent control
11. Entrusted control
CITIZEN PARTICIPATION
10. Delegated control
9. Partnership
8. Limited decentralised decision-making
7. Effective advisory boards
6. Genuine consultation
5. High quality information
CITIZEN NON-PARTICIPATION
4. Customer care
3. Poor information
2. Cynical consultation
1. Civic hype

Generally, despite minor divergence that mostly emanates from conceptualization of what constitutes community participation, however, all authors (Arnstein, 1969; Pretty, 1995; Burns et al., 1994) converge on the comprehension that participation is usually in stages that grow from lower level to higher level. They also agree on the aspect that participation entails the involvement of people on matters that affect their life and that the best practice is when people are fully involved.

The Conceptual Framework

The conceptual framework for this study is displayed in figure 3. This conceptual framework assumes the existence of the relationship between community participation and utilization of Malaria prevention method. As displayed in figure 3, full community participation in problem identification, intervention selection, intervention planning, intervention execution and monitoring and evaluation in the absence of moderating factors may results into clear intervention goals definition, increased ownership among community members, positive reception and perception as well as increased acceptability. However, as suggested by Arnstein (1969) the higher level of community participation is required for attainment of successful results.



Source: Modified from Kirigha (2016).

Results and Discussion

Sample Characteristics

The sample characteristics for this study revealed that, a total of 403 households were involved in this study. As illustrated in Table 3, 78.2 percent were males headed households while female headed households comprised 21.8 percent only. According to Brown and Walle (2020) and URT (2015), the dominance of male-headed households over female-headed households displays a typical characteristic of many households in Africa. URT (2015) links this scenario to cultural norms that recognize males as heads of households. The analysis of marital status revealed that; 84.1 percent of household had a married status as compared to 15.9 percent who were either single, divorced or widowed. Both sex of household levels and marital status of household may have implication on household poverty level (Brown & Walle, 2020; Muzakiyah, 2017; URT 2015) which in turn may impact affordability of various malaria prevention methods. The education level and age of respondents were also analysed in this study. The analysis of education level revealed that a large proportion of respondents had either primary level of education (65 percent) and no formal education (23.6 percent). 11.3 percent had education higher than primary school. Age and education level may have impact in preference of the methods to be used and/or knowledge and perception on the use of a particular method.

Table 3. Sample Characteristics

Variables	Frequency	Percentage
Sex of respondents		
Males	315	78.2
Females	88	21.8
Marital status		
Single	13	3.2
Married	339	84.1
Divorced/Separated	22	5.5
Widowed	29	7.2
Education level		
No formal education	95	23.6
Primary	262	65.0
Secondary	38	9.4
Advanced secondary	1	.2
Non-Higher learning college	7	1.7
Age Category		
< 35	120	29.8
35-54	184	45.7
55 +	99	24.6

Uses of Malaria Prevention Methods

Finding from the study area revealed that all households use at least one method of Malaria prevention. Methods used varied from traditional to modern methods depending on preferences of household and economic factors attached to that particular method. However, it was found in this study that, about 51.4 percent of household either use traditional medicine or both traditional and modern methods in separate occasions with 15.4 percent relying solely on traditional medicine. Less than 50 percent use rely solely on modern methods (Table 4).

Table 4: Modern versus Traditional Methods of Malaria Prevention

Method	Frequency	Percentage
Modern method only	196	48.6
Traditional method only	62	15.4
Both modern and traditional	145	36.0
Total	403	100.0

As indicated in Table 4 above, a substantial proportion of households still rely on the use of traditional methods of malaria preventions. This is possibly because, study was conducted in rural areas where the use of traditional medicine is one among the typical characteristics of many communities in Africa (Oyebode, et al., 2016; Sato, 2012). According to Sato, 2012 the increased

use of traditional methods is attributed among others by affordability, accessibility and acceptability to the communities in which it operates. The type of tradition medicine used as identified by respondents in the field area includes the use of several medicines which include; *"Enkaka", "Mubirizi", "Ekituntunwa", "Enyamashumi", and "Kamuli*.

The world health organization and medical practitioners emphasize the use of modern methods of Malaria prevention because of its proven nature of its effectiveness in preventing Malaria (WHO, 2020). Findings from the study area revealed that, the uses of modern methods, traditional methods or both are influenced by affordability, availability and beliefs and perception attached to some methods by local people on effectiveness of some traditional methods over modern methods. Some household fail to access modern methods because they are very costly relative to traditional methods which can be accessed freely from their surrounding hence being driven to use as a means of malaria prevention.

The preference on the use of traditional method over the modern methods has also be echoed in some studies (Lokina *et al.* 2013; Alebie et al. 2017; Noronha et al. 2020; Suswardany et al., 2017; Taek et al.,2018; and Willcox and Bodeker, 2004). These studies indicate that over dependence on traditional medicine is due to increased resistance to commonly used anti-malaria drugs. Willcox and Bodeker (2004) observed that traditional medicine was the main anti-malaria drugs that have been used for thousands of years among rural dwellors not only in Tanzania but also in the whole africa. Lokina *et al.* (2013) observed that cultural beliefs and norms in Lake Victoria-zone are strongly linked to natural resource as a means for prevention against Malaria.

Perception and Preferences on Malaria Presentation Methods

Perception of the Method

Respondents were asked to provide their opinion on whether the methods recommended by the program for use are capable in fighting against malaria. Responses revealed that, although a large proportion or respondents (47.4) percent had the opinion that the methods are capable of preventing them with Malaria, however, there was a substantial proportion (42.9) of respondents who responded that the recommended methods are not capable of preventing malaria (Table 5). This implies among others that these 42.9 percent had not felt the benefits of using the methods implemented by the program hence portraying that communities are not well informed about the effectiveness of the methods. Such shortfall may emanate among others on weakness in participation approaches applied.

Table 5: Perception of Malaria prevention method

Responses	Frequency	Percent
Yes	191	47.4
No	173	42.9
Don't know	39	9.7
Total	403	100

The fact that some community members perceive that the recommended malaria prevention methods are not effective was also confirmed during a focus groups discussion where one of the participants was quoted saying as translated into equivalent English language;

We have sprayed the whole house but yet mosquitoes bite us during the night. They know that it is not effective. if not, why do they tell us to use nets?

Drawing inferences from all these evidences it may be interpreted that, either community member are not satisfied with the operation of the system or negatively perceive the operation of the methods because of insufficient information they are having on its operation. According to Choi et al., 2019), the indoor residual spray last for four months only before which another spray is required. It is possible that community members lack such information a situation that leads into blaming the method for not being effective. Moreover, some people perceive that the effort to fight Malaria is the government's effort and that they have nothing they can do to prevent the problem. This finding supports a report published by WHO (2019) which observed in Nahama village in Cost region of Tanzania, some people believe that individual household cannot prevent Malaria a situation that makes it difficult to control the disease.

Preferences on Specific the Method of Malaria Prevention

Household respondents were asked to state the most preferred method for malaria prevention regardless of whether it is currently being used by the household or not. Responses revealed that use of untreated nets were mostly preferred (34.5percent) followed by insect side treated nets (25 percent). There was also a substantial proportion of responses 21.1 on the use of traditional medicine (Table 6).

Table 6: Preferences of Malaria Prevention Methods

Responses	Responses *	
	Number of responses	Percent
Insecticides Treated Net	155	25
Indoor residual spraying	46	7.4
Use of Traditional Medicine	131	21.1
Destruction of mosquito breeding sites	75	12.1
Untreated Mosquito Net	214	34.5
Total	621	100

*Multiple response

Earlier studies by Minja (2001) in Kilombero district observed that preference on the use of Malaria prevention method was greatly influenced by social and cultural dimension. This study observed that people linked Malaria to super natural cause identified as attacks by witches and that only Amulets was more desirable than the use of ITN

Ranks of the Preferred Method of Malaria Prevention

Preference on method of malaria prevention was also assessed during a focus group discussion. Two participants from each village were selected randomly from focus groups conducted in each village (one from each focus group) and asked to represent others in the setting preference and ranking of the methods of most preferred malaria prevention method for use by most of the households. Ranking was done in such a way that each method was compared with another method

and asking respondent to agree on the most preferred method between the two. Responses following agreement of the groups were recorded and then the scores calculated. Results indicated that the use of untreated mosquito nets followed by the use of traditional medicine had the highest scores and was ranked the 1st and 2nd respectively (Table 7).

Table 7: Ranks of preferred methods of Malaria prevention

		1	2	3	4	5	Score	Rank
1.	Use of Insecticides Treated Nets (ITN)		**1**	**3**	**4**	**5**	**1**	**4**
2.	Use of Indoor Residual Spraying (IRS)			**3**	**4**	**5**	**0**	**5**
3.	Use of Traditional Method				**3**	**5**	**3**	**2**
4.	Destruction of Mosquito Breeding Sites					**5**	**2**	**3**
5.	Use of Untreated Mosquito Nets						**4**	**1**

As indicated in table 6 and 7, the use of untreated mosquito nets and traditional methods are the mostly preferred method of malaria prevention. The use of insecticide mosquito treated nets and the use of indoor residual spray were the least preferred methods of malaria prevention. The literature suggests that factors including affordability, traditions and cultural norms, beliefs, myths and perceptions might influence the selection of these methods (Lokina *et al.* 2013; Alebie et al. 2017; Minja, 2001).

Most Un-preferred Method of Malaria Prevention

Respondent were asked to rank the most un-preferred method for malaria prevention drawing experiences from most of the households. Results indicated that the indoor residual spray scored

the highest score followed by the use of insecticide treated nets and were ranked 1st and 2nd respectively (Table 8). The rest of the methods coincided with the score of 1.

Table 8: Ranking of unreferred methods of Malaria prevention

		1	2	3	4	5	Score	Rank
6.	Use of Insecticides Treated Nets (ITN)		**2**	**1**	**1**	**1**	**3**	**2**
7.	Use of Indoor Residual Spraying (IRS)			**2**	**2**	**2**	**4**	**1**
8.	Use of Traditional Medicine				**3**	**5**	**1**	**3.3**
9.	Destruction of Mosquito Breeding Sites					**4**	**1**	**3.3**
10.	Use of Untreated Mosquito Nets						**1**	**3.3**

As displayed table 8, the use of insect side treated nets and indoor residual spray are the most un-preferred method of malaria prevention in the study area. These results correlate to the results in Table 7 where these methods were the least preferred. This is possibly because of the feeling and myths attached to these methods (Nnko et al., 2012). A study by Nnko et al., (2012) in Busisi ward in Mwanza region found that people disliked insecticide treated mosquito nets because they head from their fellow members that they are poisonous. Almost similar results were discovered during a focus groups discussion where, it was observed that household hates the use of in-door residual spray because of bad smell that last for a very long time. Along with this the Mosquito treated nets are disliked because of the belief attached to it that it makes men impotent and that it causes lung cancer.

Incidences of Malaria Cases

Incidences of Malaria in the study area

The results in Table 9 indicated that on average each household in every village studied, had 1 to 2 members infected with malaria in a period of one month before the survey; as well, 1 to 3 members infected with malaria within a period of six months before this survey and more than 4 members infected within the past 12 month before this survey. Table 9 shows the distribution of mean incidences in each studied village.

Table 9: Malaria infection rate/ incidences with in a Household

Villages	Number of Household	Mean Malaria Incidences		
		1 Month Ago	6 Month Ago	12 Month Ago
Nsheshe	99	1.73	1.83	3.91
Kikomelo	136	1.14	2.05	4.02

Kibirizi	95	1.37	2.42	5.39
Kihumulo	73	2.19	1.84	4.49
Overall	403	1.61	2.03	4.45

As indicated in table 9, the mean incidences of Malaria varied across villages with the highest value in Kibirizi Village than any other village whereby more than 5 people was realized to have infection in the past 12 months before the period of survey. Generally, the overall mean incidences for the past twelve months before the period of survey was 4.45 indicating roughly that, at least one household member suffer from Malaria infection after every 2.5 months. Such results not only reveal how contagions malaria is but also one among the leading cause of illness in many households in the study area. Earlier study has also found Malaria to be one among the leading cause of illness and outpatient hospitalization in rural areas (Nnko et al., 2012; Minja 2001).

Malaria Incidences Across Modern and/or Traditional Methods

Moreover, the study wanted to know if the incidences of malaria varied among household using different malaria prevention methods in order to identify which are most effective and if effectiveness could be among the reasons for utilization of particular methods. In this case, respondents were classified depending on whether they rely on traditional, modern or both modern and traditional. One-way Analysis of Variance (ANOVA) was carried out to investigate whether the incidence of malaria in the past 12 months before the period of survey varied among methods of malaria prevention. The results indicated statistical significance difference among groups ($F(2,400) = 22.723$ $p<0.01$) indicating sufficient evidence of differences between methods. The multiple comparison by Post Hoc Analysis revealed that the mean difference of malaria incidences among households using traditional methods differs significantly with the rest of the group at $P=<0.01$. The mean difference for modern methods only and both modern and traditional methods do not differ significantly at $P = <0.01$ (Table 10). This indicates that, despites availability and preference traditional methods of malaria prevention are less effective in fighting against malaria infection among household members. Community participation is vital in sharing this information to community members as they are selecting malaria prevention methods.

Table 1: Incidence of Malaria among household using Modern and Traditional Malaria Prevention Methods

Variables	N	Mean Incidence per year	Std. Deviation
Modern method	196	4.35[b]	2.001
Traditional method only	62	6.52[a]	3.001
Both modern and traditional	145	4.51[b]	2.233
Total	403	4.74	2.382
	F (2,400) = 22.723	P < 0.01	

[a] The mean difference is significant at P< 0.05 level with the rest of other groups

[b] The mean difference do not differ significantly

Incidence of Malaria across Malaria Prevention Methods

The One-Way Analysis of Variance (ANOVA) was applied to test whether the incidences of malaria varied among methods of malaria prevention in the past 12 months before the period of survey. The results indicated that, there was a statistically significant variation of malaria incidences among different methods of malaria preventions methods (F (4,180) = 5.178 P=0. 001). The Post Hoc Analysis further revealed that the mean incidences of malaria among all methods used in the analysis with exception of Indoor Residual spray differed significantly at P< 0.05 (Table 11). This implies that nature of method used determine the extent of prevalence of malaria incidences. Community participation is therefore vital in sharing this knowledge to community members.

Table 11: Incidence of Malaria Across Malaria Prevention Methods

Malaria Prevention Methods	Sample (N)	Incidence of Malaria per Year	
		Mean	Std. Deviation
Use of Insecticides Treated Net	70	4.79[a]	2.091
Use of Indoor residual spraying	3	5.33[a]	1.155
Use of Traditional Medicine	6	8.83[b]	3.430
Destruction of mosquito breeding sites	13	3.92[a]	1.441
Use of Untreated Mosquito Net	93	4.76[a]	2.447
Total	185	4.85	2.385

F (4,180) = 5.178 P=0. 001

[a] The mean difference is significant at P< 0.05 level.

[b] The mean difference is not significant at the 0.05 level

Participation Approaches Applied

While authors (Burns, 1994; Arnstein, 1969) agree that for any successful intervention, high level of community participation is inevitable the findings from the study area revealed some weaknesses in several aspects during introduction and implementation of the intervention. This part discusses the participation approaches applied in several aspects of the program.

Approaches During Inception of the Program

The approaches used during inception of the program was investigated in this study. Findings from the field area revealed that citizens were not fully involved in deciding and making choice of the kind of interventions to be carried out for malaria prevention. This was revealed during a focus group discussion with a group participant selected to represent others for performing ranking. During a focus groups discussion, it was reported that, the three malaria prevention methods were introduced during the implementation of National Malaria Control Program. The introduced malaria prevention methods included use of insecticides treated mosquito net, indoor residual spraying and destruction of mosquito breeding sites. Citizens were just informed of what is intended to be done and the good side or benefits of the methods towards malaria prevention. However, citizens were not informed of the side effects of the programs.

Further enquiry on the procedures used in introduction of the program, it was also confirmed during key informant interview with one public officer asserted that, the approach used in introducing recommended malaria prevention methods involved local people through their representations. According to him, the District Committee meeting was held at the district headquarter and which comprised personnel from various departments including health, agriculture, water, police, district security, natural resources, livestock and fisheries, division officers, religion leaders and influential people. Community members were presented through their village leaders, influential people and religious leaders. This approach was followed by house to house sensitization, sensitization through Radio and TV, announcements in school, churches and mosque and using of brochures, posters and banners.

Analysing the arguments from these two sides, it can be inferred that, the village representatives, influential people and the religious leaders participated in the program, however, did not seek the consent of the people but they only represented their own ideas. Referring to Both Pretty (1995) and Arnstein (1969), it can be synthesized that the level of participation applied at this stage is at the lower stage of manipulative of which, according to Arnstein (1969), interpretation, such kind of participation implies no participation but a pretence of it.

During Community Sensitization

The study wanted to know the extent of community sensitization and how effective was a sensitization approach as well as the content of sensitization massage. Results from a focus group discussion revealed that sensitization was done in the villages. House to house approach and radio programs and churches. With exception for radio programs which was done through radio Kasibante and Radio Kwizera which lasted for almost a week, house to house sensitization was done for 3 days. The contents of sensitization message focused much on the good side of the programs and the proper use of insecticides. However, citizens did not have an opportunity to question on the negative side of the program. *"Announcements in churches, schools and mosques were done to announce the day of spraying IRS and how to get Insect sides treated nets (ITN) and importance of destructing mosquito breeding sites"* when asked during a focus group discussion who decided the content of sensitization method people were of divided minds. As shown in table 12, most respondents from a focus group discussion (48.4) had an opinion that the district personnel decided the content of sensitization message and 42.2 percent did not know who decided on the content of sensitization message.

Table 12: Decision on Contents of Sensitization Message

	Nsheshe (n = 16)	Kikomelo (n = 16)	Kibirizi (n =16)	Kihumulo (n = 16)	Total
Radio presenter	3(18.8)	2(12.5)	0(0)	1(6.3)	6(9.4)
District personnel	8(50)	6(37.5)	10(62.5)	7(43.8)	31(48.4)
Don't know	5(31.3)	8(50)	6(37.5)	8(50)	27(42.2)
Total	16(100)	16(100)	16(100)	16(100)	64(100)

() Figures in brackets are percentages

Inferring from these evidences, it can be synthesized that community members were not involved in preparation of the sensitization message content but where just told of what is going to happen in their community. This kind of participation fall is to level 2 and 3 Burns et al., (1994) citizen empowerment ladder of which is non-participation, level 3 of Arnstein 1969 which can be interpreted as tokenism and level 1 and 2 of pretty 1995 classification.

Participation During the Choice of the Preferred Method

Community participation in choice of intervention to be implemented is vital for ensuring of ownership and/or successful of intervention (Kamuzora et al.,2013; Chifamba, 2013; Mwamfupe, 2016; Savedoff, 2011). This study assessed whether the community members were involved in deciding whether community members were involved in choice of recommended malaria prevention methods was assessed. The results in Table 13 indicated that the majority of household heads (96.8%) did not participate in choice of recommended malaria prevention methods across the studied villages. Only (2%) claimed to have involved in the choice of methods and 1.2 percent were not sure if they were real involved.

Table 13: Participation on the Choice of Intervention

Responses	Frequency	Percent
Yes	8	2
No	390	96.8
Not sure	5	1.2
Total	403	100

Participation During Program Execution

The study investigated whether the community members were involved during program execution. Results indicated that, majority of respondents (58.1) were of the opinion that they were involved in execution of the program. There were also a substantial proportion of household respondents (35.2 percent) who claimed they were not involved (Table 14).

Table 14: Participation During Program Execution

	Frequency	Response
Yes	234	58.1
No	142	35.2
Don’t know	27	6.7
Total	403	100

Further analysis of information from a focus group discussion revealed that, some youths from the community were temporarily employed to perform the duty of indoor residual spraying. However, the procedure to obtain this job opportunity was not clear and with a lot of bureaucracy.

This was also confirmed during a focus group discussion where one of participants was quoted saying as interpreted into equivalent English language;

> *"In our area, the procedures for accessing the job was not clearly indicated it was too bureaucrat".*

According to Pretty (1995) this kind of participation is called participation for material incentives. At this level people do not have power to make decision. This implies that community members were involved in execution of the program, however, this level of community participation is still very insufficient.

According to Marsland (2006); the participation that is always held by international development expert that aim to empower citizen and aims to involve local people in decision making process is often not in practice in Tanzania yet different actors of participation proceed as if they are working to the same agenda of participation while in fact, they are at a different distant ground; an aspect that makes it difficult in implementation of projects. The kind of participation echoed and practiced among Tanzanians is that rooted in socialization and Nyerere concept of self-reliance in which citizens are obliged to contribute their labour and resources in the community effort to build their nation and does not aim to give them power to make decision (Marsland, 2006). Supporting this argument, findings by Naku et al., (2021) following their studies in Arusha, Morogoro and Iringa observed that most government funded programs were not effective enough to promote effective community participation as communities were in most cases recipients of the final program results.

Conclusion and Recommendations

The study examined the perception, preferences and uses of Malaria prevention methods in the study area; analysed the incidence of malaria cases in the study area as well as among users of various methods and examined the approaches applied in Malaria prevention. The results indicated that there was lower utilization of malaria prevention methods; the use of untreated mosquito nets and traditional methods are the most preferred methods while the Indoor residual spray is the least preferred and the most un-preferred method of malaria prevention. Morden methods of malaria prevention are perceived negatively among households; incidences of malaria cases varied significantly across methods with higher prevalence among users of traditional methods. Participation approaches used was insufficient and mostly manipulative. Basing on the findings, it is recommended that, full participation of community members should be carried out for the intervention to achieve the required objectives.

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