

Attitudes of Communities Towards Malaria Control Strategies in Lindi and Mtwara Districts, Tanzania

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Received: 30 May 2019; Accepted: 29 June 2019

Citation: Nkulikwa Z.A, Malago J.J, William G.W. Attitudes of Communities Towards Malaria Control Strategies in Lindi and Mtwara Districts, Tanzania. Nur Primary Care. 2019; 3(3): 1-8.

ABSTRACT

Malaria perpetuates morbidity and mortality albeit relentless efforts on utilizing modern malaria control strategies which are in place. Could there be a missing link between strategies and implementation? Are attitudes part of the contributing factors in the persistence and recalcitrance of this pernicious disease? This paper attempts to answer these questions with respect to community members' attitudes toward the methods of malaria control in Lindi and Mtwara, particularly toward modern malaria control strategies in comparison with traditional approaches; distribution of insecticide treated mosquito nets, and the meaningful and appropriate utilization of the distributed mosquito nets. The study was quantitative and involved 356 respondents from both study areas. Likert scale eliciting the alternative responses of strongly agree, agree, neutral, disagree and strongly disagree was employed to collect primary data as part of a questionnaire. Both descriptive and inferential statistics were executed for the analysis of these data. Descriptive statistics yielded frequency distribution and percentages while inferential statistics involved Kruskal-Wallis test and Chi-square test of homogeneity. The attitudes were more positive towards modern malaria control strategies than traditional methods at the significance level of $p < 0.05$. Respondents from Mtwara favoured traditional approach than those from Lindi, with significant difference $p = 0.004$. However, there was negative attitude towards mosquito distribution, and dispositions were negatively associated with sleeping under mosquito nets. Conclusively, although the respondents had positive attitudes toward modern malaria control approaches, they had negative attitudes towards the provision of mosquito nets and their use. Therefore, it is recommended that, for effectual and efficient malaria control strategies, the interaction and interrelation of attitude, education and knowledge, as well as social cultural factors must be considered coherently.

Keywords

Malaria, Attitudes, Malaria control strategies.

Introduction

Malaria is one of the leading causes of morbidity and mortality particularly in the sub-Saharan part of Africa, including Tanzania. Sub-Saharan Africa has conducive environment for mosquito infesting, reproducing and thriving. The type of mosquito responsible for the transmission of this nagging disease is termed Anopheles. In spite of malaria disease having been discovered at least 138 years ago, it is still endemic in tropical and subtropical areas of the earth. It is debilitating to individuals, corrosive to sub-Saharan communities and poses a formidable public health challenges in most of countries in which it is prevalent. According to the World Health Organization (WHO) and the United Nations Children Fund (UNICEF) (2018), an estimate of a person dies in every ten seconds, devouring 91% of multiple millions of

peoples' lives per annum. In addition, three million members of communities are infected with malaria parasites at one time while at least a third of the population develops health complications [1]. Furthermore, an approximate of 2018 million cases were reported all over the world in 2017, and among these 80% were contributed by fifteen countries of Africa (WHO, 2017), Tanzania being one of them. The report indicates that at least three billion people remain at risk of malaria infection with a great proportion of these vulnerable people residing in endemic areas, sub-Saharan Africa in particular.

Because of the debilitating effects of malaria to individuals and with its associated corrosion to communities, the Tanzanian Government has been taking preventive, interventional and curative measures. Among approaches employed in malaria eradication and prevention include uses of insecticide-treated mosquito nets (ITNS). These are utilized as a shield for mosquito stinging and

thus preventing mosquitoes from transferring vectorial parasites to a victim during sleeping at night. Also, in door residual spraying (IRS) of dwellings, intermittent preventive medical attention with sulphadoxine-pyrimethamine [2] are employed. Additionally, the rapid diagnostic tests and treatments with effective antimalaria medicines like artequin and proquoral (Mabrone) are also applied [3]. Nevertheless, utilizing of ITNs is the most common and favourable strategies of all methods by the Government of Tanzania. This is conceived of being the most-cost-effective method in malaria preventive strategies in highly endemic regions, especially in coastal regions of Tanzania [4]. Since, free of charge community-based distribution of long-lasting insecticides nets (LLNS) is implemented by the government of Tanzania through various campaigns and nongovernmental organizations (NGOs), then this method is the most affordable and accessible by the majority of members of Tanzanian communities.

The provision of long-lasting mosquito nets is ineffective and at least meaningless unless they are used by the recipients meaningfully. This is dependent upon several factors, among them being knowledge with understanding, traditions, habits and practices as well as perceptions and attitudes. Knowledge is a necessary condition for a recipient to be able to utilize malaria preventive strategies, but it is not sufficient. Proper execution of these strategies ought to involve positive attitudes toward the strategies and knowledge thereof. According to Marzano [5], attitudes embody and shape our experiences and act as sieves through which our acts are sorted. Furthermore, Eiser [6] succinctly explains that attitudes entail feelings or thoughts of like or dislike, approval or disapproval, attraction or repulsion, trust or distrust manifested through what we say and do or how we react to what other people say and do or urge us to do. This may be for our own good or for a certain purpose.

Because of the gravity of malaria and its recalcitrance despite the relentless efforts exerted by the Tanzanian Government and NGOs to combat it, and since, according to Andegun et al., the disease was the global challenge in 20th century and now is only a formidable challenge for merely 40% of the earth so far, this paper intends to assess people's attitudes towards malaria control strategies. Because attitude is presumed to be among the missing links between the availability of malaria control strategies and their being implemented, this manuscript determines community members' attitudes towards the methods of malaria control in the study areas.

Methodology

Study Area and Design

The research was undertaken in Lindi and Mtwara Regions. These regions have a conducive environment for mosquito to thrive and are prone for mosquito infestation. It follows then that they have been among the targets, by Tanzanian government, for chargeless long-lasting nets and other preventive strategies implemented by the Government of Republic of Tanzania. Lindi Region consists of six districts, which are Kilwa, Lindi Rural, Nachingwea, Liwale, Ruangwa and Lindi Urban. It is situated between latitudes 7°55' and

10°50' South of Equator and between longitudes 36°51' to 40° East of the Prime Meridian. This region borders the Coastal Region to the North, the Indian Ocean to the East and Mtwara Region to the South, while Morogoro Region is located to the West. Ruvuma Region is to the South-West of Lindi. The climatic condition of Lindi is characterised by temperature with humidity of the mean temperature of 27°C. The rainfall ranges between 780 mm and 1200 mm per year. This region comprises at least 781306 inhabitants whose main economic activity is farming. Principally, they produce maize, cassava, sorghum, paddy, cashew nuts, and simsim.

In contrast, Mtwara Region lies between longitudes 38° and 40°30' East of the Prime Meridian. It is located between 10°05' and 11°25' South of the Equator. This region borders Lindi to the North, the Indian Ocean to the East, and in between this region and Mozambique runs Ruvuma River. Mtwara borders Ruvuma region to the West. Mtwara Region comprises five districts, 21 divisions, 98 wards and 554 villages. The smallest district among the five districts is the Urban district called Mtwara Mikindani where the study was conducted. The mean temperature is 27°C with humidity that ranges between 87% in March to 79% in October. As applied to, Lindi, Mtwara has farming as its principal economic and subsistent activity for its residents. The only distinguishing features of these regions from other regions of Tanzania, in this context, is that Mtwara and Lindi each natural gas deposits. While Lindi produces natural gas at a location called Songo Songo Island, discovered in 1974, Mtwara has natural gas reservoir at Mnazi Bay. This was discovered in 1982.

This research on which this paper is based, employed a cross-sectional research design whereby data were collected once and therefore are suitable to describe the situation at the period in which the study was conducted, but not how things would always be in the study area. This means time could not be a variable in this paper. It was and is constant. With an intention of collecting information from respondents, the cross-sectional survey was deployed to assess the attitude by the members of this community towards malaria control measures and other related endeavours. Purposive, convenience and randomized methods were utilized for this aim. The districts were selected purposively while convenience and random sampling methods were utilized to collect data from the respondents. Structured questionnaire was administered to the respondents by the researcher and his two assistants.

Data Collection Procedures

This study used a Likert scale as part of a questionnaire. It employed the familiar pattern of statements followed by a series of options, which were strongly agree, agree, neutral, and disagree and strongly disagree. According to Vegt et al., [7], Likert scales are suitably good for examining the degree of agreement with or support for the beliefs, policy, practice or attitude. Accordingly, this paper put this method into use in order to assess attitudes of residents from the study areas towards malaria control strategies. Moreover, this tool was specifically used to collect information on attitude towards the actual use of mosquito nets, modern malaria control strategies and traditional malarial control strategies. This

information was collected in Kiswahili, which is the national language of Tanzania and is fluently spoken in the study areas. Thereafter, the structured data were translated into English by the researcher. The whole process of collecting data involved 185 respondents from Lindi and 171 respondents from Mtwara, leading to 356 respondents.

Data Analysis

Quantitative data which were obtained through a structured questionnaire were analysed by the use of Statistical Package for Social Science (SPSS) version 23. Descriptive statistics such as frequency distribution and percentages as well as inferential statistics were utilized in the description and making sense of the findings. Moreover, independent samples Kruskal-Wallis test was run to determine differences in attitudes with respect to age. While a chi-square test of homogeneity was run for analysis of data tailored to assess the attitudes toward the use of mosquito nets, Levene's test was executed to analyse the data as regards attitudes toward modern and traditional malaria control strategies.

Principal Components Analysis (PCA) was used to extract items that were retained for further analysis based on 38 variables which were entered for analysis. The variance of items extracted to explain communalities. Communality statistics ranged from 0 to 1; the higher the figure the better the fit for that item. Items with low communalities were dropped from further analysis. Eigenvalues were used to extract the components that would be fit for analysis of the selected items. The 38 items of this study were reduced to eight statements that had eigenvalues greater than one as recommended by DeVaus [8].

Results

This subsection present and discusses about the results from the study area. Accordingly, findings from the structured data of attitudes towards traditional, and modern malaria control strategies, and towards the distribution as well as the use of mosquito nets are dissected in this subsection.

Differences in attitude towards malaria control strategies between the two regions

The results indicate that respondents were more influenced and inclined towards modern malaria control strategies than traditional strategies. By tradition malaria control strategies, we mean the propensity to seek help from which doctors, using herbal medicines on the basis of beliefs that they cure malaria or any other rituals related to malaria preventive measures. The findings in Table 1, shows that respondents were more favourably tailored towards modern control strategies than the traditional ones. The organized data manifest that the attitude was more positive on modern strategies for the respondents from Lindi, (1.64 ± 0.93) than those from Mtwara (1.50 ± 0.86), however, there was no statistically mean difference ($p > 0.005$) between both groups. Furthermore, results in Table 2 connotes, by Leven's test for equality of variants that there was homogeneity of variance for equality of variances between the two groups in terms of attitudes toward modern strategies with $p = 0.002$ for both Mtwara and Lindi Regions. In addition,

the two groups from Mtwara and Lindi differed significantly on preference for traditional malaria preventive strategies. There was a statistically significant in mean attitudinal score between respondents from Lindi and Mtwara, with those from Mtwara scoring greater than those from Lindi, 028 ± 0.10 , $t(354) = -2.9$, $p = 0.004$, as indicated by Table 1 and Table 2.

Attitudes towards traditional malaria control strategies by education level

This paper was set out to examine, among other things, types of attitude of the respondents in the study areas on the basis of their levels of education. As indicated in Table 3, 40.8% of respondents had completed primary education level, followed by 38.8% who had attended secondary level of education. These were the only ones who were in favour of traditions and folkways in dealing with malaria 90.0 % C.I, $\chi^2 = (7.84)$, $p = 0.001$. However, the results in this table show that, to the contrary, there was an inverse relation between post-secondary education level and preference to traditional or folkways in efforts to combat malaria, 03.1%, $\chi^2(4.804)$, $p = 0.001$ and 0.68%, $\chi^2(4.969)$, $p = 0.751$. Intriguingly, the findings indicate that those who had either informal or non-formal education expressed unfavourable preference to traditions and folkways in the same way and almost as those who had attained post-secondary education 0.84%, $\chi^2(7.804)$, $p = 0.001$ and 02%, $\chi^2(7.804)$, $p = 0.001$.

Attitudes toward distribution of mosquito nets

While the results in Table 4 show that more female respondents had positive attitude with respect to distribution of mosquito nets (56.4%) than male respondents (43.6%), $\chi^2 = (15.22)$, $p = 0.001$. The findings exhibited by Tables 4 and 5 respectively, indicate that a larger score of these were between 25 and 44 years of age, inclusive. Among these 79.6% had pursued their education up to basic education level. That is primary and secondary level. Of these 40.8% were primary leavers and 38.8% were secondary school education graduates. The information comprised in Table 5 and Table 6 manifest subtle but interesting pattern, which is that there was equivalent dislike of the distribution of the mosquito nets between the participants who had at most informal education (89.4%), corresponding to 7.9%, $\chi^2(7.804)$, $p = 0.001$ of the ones who were in favour of the distribution, and participants who had pursued further education Post-secondary and beyond (90.1%), mapping onto 03.1%, $\chi^2(7.804)$, $p = 0.001$, who completed Post-secondary school and 6.8%, $\chi^2(7.804)$, $p = 0.001$ In addition, these results as contained in Table 5, illuminate the similarity of unfavourable preference towards the distribution of nets among respondents who were in range of 18-24, 45-64, and above 65 years of age except those who were between 25- 44 years of age, 59.4%, $\chi^2(18.870)$, $p = 0.001$ of these were supportive of the distribution.

Attitude towards the use of Mosquito nets

As pointed out in introduction to this study, apart from the innovative malaria vaccination which was reported to be under experiment in Malawi (BBC News 24/04/ 2019), the use of mosquito nets is regarded to be the most efficient, affordable, and effective of all other malaria control strategies. It follows then that

this research set out to determine the attitudes of inhabitants of the study areas toward the utilization of the mosquito nets.

Table 7 demonstrates a random sample of 356 respondents with class- intervals of 18-24, 25-44, 45-56 and above 65 of age, all of whom were to respond by choosing agree, disagree, or neither agree nor disagree to the statement: "Sleeping under the mosquito nets while, at the sometime, covered with a blanket or a bed sheet is the best way to control malaria infection". According to the findings in Table 7, 80.3% of the respondents in the category 18-24 had bad feelings about using mosquito nets, and so did those in the age interval 45-64 as well as those who were above 65 years of age. However, 56.6% of the respondents in the class of 45-64 years of age had an inclination to sleep under mosquito nets.

Furthermore, Table 8 reveals that almost all respondents were unhappy to cover themselves with either a blanket or a bed sheet while asleep under mosquito nets. The results show that 68.6% in the class of 18-24 years old disagreed with the statement that they would be happy to cover themselves with a blanket or bed sheet under a mosquito net. Similarly, 76.6% of those in the category of 25-44 years as well as those who fell in the interval 45 - 64 years of age were against the statement.

Moreover, all respondents did not agree with the statement that asked them if they would be joyful to cover themselves with a blanket or bed sheet only, as indicated by the findings in Table 9.

In addition, when asked to respond to agree, disagree or neither disagree nor agree with the statement "I am fond of using mosquito-treated nets", all participants and across all the class- intervals of age were supportive of the statement. As indicated in Table 10, 88.6% of class 18 - 24, 89.8% of category 25 - 44, 80.0% of class 45 - 64, and 72.7% of interval 65 of above 65 years of age all of whom responded to the statement agreed with it. A Chi-Square test of homogeneity was run, with an adequate sample size established according to Cochran. The two multinomial distributions were equal in the population $\chi^2(3) = 2.77, p = 0.004$. Moreover, Table 10 consists of 356 recruits with category of age between 18 - 24, 25 - 44, 45 - 64, and above 65 all of whom responded to the statement "I feel good when using untreated mosquito nets" disagreed with it. The findings in the table 11, demonstrate that 67.1% of the respondents in the age range of 18 to 24; 69% between 25, and 44 inclusive; 63.3% of interval 45-64 including 54.5% above 65 years of age, disagreed with the statement.

	Location	N	Mean	Std. Deviation	Std. Error Mean
Modern malaria control strategies save people's lives.	Lindi	185	1.6432	.93383	.06866
	Mtwara	171	1.4971	.86347	.06603
Traditional malaria control strategies is the best way that save people lives.	Lindi	185	2.2541	.96419	.07089
	Mtwara	171	2.5322	.83516	.06387

Table 1: Attitude towards modern and traditional malaria control strategies.

Statements	Levene's Test for Equality of Variances t-test for Equality of Means		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Diff	Std. Error Diff	95% Confidence Interval of the Difference	
								Lower	Upper
Modern malaria control strategies save people's lives.	9.336	.002	1.530	354	.127	.14617	.09555	-.04175	.33409
			1.534	354.000	.126	.14617	.09526	-.04117	.33351
Traditional malaria control strategies is the best way that save people lives.	34.062	.000	-2.898	354	.004	-.27811	.09595	-.46682	-.08940
			-2.915	352.53	.004	-.27811	.09542	-.46577	-.09045

Table 2: Attitude towards modern and traditional malaria control strategies.

Level achieved by respondent	Percentage in favour of traditions and folkways	Number of respondents	Coefficient	Statistical significance
No formal	08.4%	30	7.804	P=0.001
Informal	02.2%	08	7.804	P=0.001
Primary school	40.8%	145	7.804	P=0.001
Secondary	38.8%	138	7.804	P=0.001
Post-Secondary	03.1%	11	7.804	P=0.001
Higher education	06.8%	24	7.804	P=0.001

Table 3: Attitude towards traditional strategies for control of Malaria by education level.

Sex of respondent	Per cents of men and women in favour of mosquito nets distribution	Coefficient	Statistical significance
Female	56.4	15.220	p = 0.001
Male	43.6	15.220	p = 0.001

Table 4: Attitude towards distribution of mosquito nets by sex.

Age of respondent	Percentage in favour of mosquito nets distribution	Number of respondents	Coefficient	Statistical significance
18 - 24	19.7	69	18.870	p = 0.001
25 - 44	59.4	205	18.870	p = 0.001
45 - 64	18.8	70	18.870	p = 0.001
Above 65	02.1	11	18.870	p = 0.001

Table 5: Attitude towards distribution of mosquito nets by age.

Education Level achieved by respondent	Per cent in favour of mosquito nets distribution	Number of respondents	Coefficient	Statistical significance
No formal	07.90	30	7.804	p = 0.001
Informal	02.10	8	7.804	P = 0.001
Primary school	41.20	141	7.804	P = 0.001
Secondary	38.8	137	4.969	P = 0.001
Post-Secondary	03.1	11	4.969	P < 0.751
Higher education	06.6	24	4.969	P < 0.751

Table 6: Attitude towards distribution of mosquito nets for education level.

Statement	Age of the respondent in years			
	18-24	25-44	45-64	Above 65
Sleeping in the mosquito net covered With blanket or bed sheet is the best way to control malaria infection	n (70)	n (205)	n (70)	n (11)
Agree	19.7%	56.6%	19.7%	3.1%
Disagree	80.3%	43.4%	80.3%	96.9%

Table 7: Attitude towards sleeping under the mosquito- net when covered with a blanket or bed sheets.

Statement	Age of the respondent				Total
	n (70)	n (205)	n 70)	n (11)	
Happy when covered with blanket or bed sheet under the mosquito net	18 - 24	25 - 44	45 - 64	Above 65	356
Agree	31.4%	23.4%	28.6%	54.5%	27.0%
Disagree	68.6%	76.6%	71.4%	45.5%	73.0%

Table 8: Happy when covered with a blanket or bed sheet by age of the respondent.

Statement	Age of the respondent				Total
	18 - 24 (%)	25 – 44 (%)	45 – 64 (%)	Above 65 (%)	
It joyful covered oneself with blanket or bed sheet only	31.4	24.9	34.3	27.3	28.1
Disagree	68.6	75.1	65.7	72.7	71.9

Table 9: Covering with blanket or bed sheet only.

Statement	Age of the respondent				Total
	18- 24 (%)	25-44 (%)	45-64 (&)	above 65	
Fond of using mosquito treated nets	n (70)	n (205)	n (70)	n (11)	
Agree	88.6%	89.8%	80.0%	72.7%	72.7%
Disagree	11.4%	10.2%	20.0%	27.3%	27.3%

Table 10: Fond of using mosquito treated nets by Age of the respondent.

Statement	Age of the respondent in years			
	18- 24 (%)	25-44 (%)	45-64 (&)	above 65
I feel good when I use untreated mosquito nets	n (70)	n (205)	n (70)	n (11)
Agree	31.4	28.3	35.7	45.5
Neither	1.4	2.4	0.0	0.0
Disagree	67.1	69.3	64.3	54.5

Table 11: Feeling good when using untreated mosquito nets by Age of the respondent.

Discussion

This paper set out to examine attitude towards malaria control strategies. Attitude, as defined in this paper, are feelings or thoughts of like and dislike, repulsion or attraction, approval or disapproval of some malaria control strategies. Attitudes are conceived of being a salient component in a successful and consistent malaria control methods. They may contribute in success or failure of the malaria strategies, to either progressive achievement or pernicious development of habits. According to Eiser [6], attitudes are inextricably associated with beliefs. Consequently, they may either positively or negatively influence people's decisions, acts, and practices. The potency of attitudes in shaping and colouring our daily lives can be explained by the biological point of view. In this line of argument, Sinek [9] cogently explains that the brain is of two main and cardinal parts, the neo-cortex and the limbic brains. The neo-cortex brain is responsible for language, logic, reasoning and rationalization. In contrast, the limbic brain deals with beliefs, decision making, evaluation and attitudes but cannot access any elements of the neo-cortex. In his own words he writes: "The power of the limbic brain is astounding. It not only controls our gut decisions, but it can influence us to do things that seem illogical or irrational. It is not logic or facts but our attitudes, hopes and dreams, our belief and guts that drive us to try new things".

On the basis of the findings of this paper, the respondents had mixed bag of attitudes. The results indicate that respondents had positive attitudes towards some components of this study and negative attitudes towards other elements of this research. As regards attitude towards modern or traditional malaria control strategies, the findings show that respondents had positive attitudes towards modern malaria control strategies as compared with folkways of dealing with malaria. In other words, these respondents indicated acceptance of modern malaria control but did not disapprove of traditional malaria control strategies. So, they were as receptive (positive attitude) to modern approach, as they were to traditional ways. As there was a higher statistical means scores of attitudes of respondents from Mtwara than Lindi, $t(354) = -2.9, p=0.004$, with respect to traditional practices, so more of respondents of Mtwara preferred the traditional methods to modern ones. The difference was significant at $p < 0.005$. Likewise, it can be discerned from the results that participants from Lindi had more feelings of favour to modern strategies than those from Mtwara. The differences in attitudes may be attributed to the distinctive nature of these areas of the study, which would contribute to respondents to develop somewhat different and subtle beliefs, hence distinctive attitudes. Further, because attitudes can be associated with the limbic brain, and since no two brains are congruent, then different people from different cultural and environmental areas would have distinctive attitudes. Moreover, because attitudes are intrinsically subjective, diversity of people's feelings about the same entity or activity should be natural and anticipated, and extrapolation cannot be conceived of.

These results are corroborate those of a study conducted in Eastern India by Sabin et al. [10] who found that most respondents showed confidence in modern medicine however equally expressed

admiration for the use of traditional approaches. In that study, which was conducted in India, while half of the participants were attracted to modern approaches, 50% of those were in favour of traditional methods of malaria control strategies. The compatibility of these results between this study and the study by Sabin et al. [10] may be due to ubiquitous in cultural, beliefs, about the efficacy of herbs, religious influence; and promotion of alternative medicine [11]. This implies that culture and environment may influence development of diverse attitudes with regard to malaria control strategies and approaches. It follows then that it is incumbent upon governments, NGOs and healthcare officers to consider, among other factors, the general attitudes of inhabitants of a particular location before embarking on malaria control strategies.

Moreover, attitudinal dispositions of all respondents varied across demographic characteristics such as age and education attainment. With reference to educational level, this paper found that there was significant difference $\chi^2 = (7.804), p=0.001$ whereby participants who had completed basic education had positive attitudinal dispositions towards traditional and folkways whereas the ones who had non-formal or informal education as well as those who had at least attained post-secondary education were in favour of modern malaria interventional methods. This difference may be partly attributed to the people's inability to fully represent their feelings through verbal expression. On the perspective of the limbic brain conception, one can say something different from what one genuinely believes and partly, because of age differences. Since those who had attained basic education were young people, we would suggest that they were somewhat adventurous in their response compared to the rest of different ages. Corroboratively, Bulter et al., asserts that in many ways youths frequently display problem solving skills, getting in touch with their beliefs and being able to express them out, and overtly showing their genuine attitude, the ability that their parents or adults do not possess. In addition, they argue that the young people, are more adventurous in their thinking if only they are less afraid of making mistakes. We, consequently, contend that possibly these young respondents responded according to their inner beliefs rather than in accordance with their knowledge of what ought to be.

As regards the attitudes towards the distribution of mosquito nets, again there were diverse attitudes across the demographic profiles in terms of education achievement and age. The results show that female respondents more favoured the distribution of the nets than male participants. However, it cannot be strongly argued that these females had positive attitudes towards the distribution because barely above 50% were inclined to the idea of the supply of free mosquito nets while just less than 50% indicated disapproval of this strategy. These findings also show that more than 50% had repulsive feelings in relation to distribution of mosquito nets. These results induce scepticism about whether these people would be willing to use the free distributed mosquito nets. We, therefore, infer on the basis of these results that it would be unlikely for the majority of people in this area to utilize the provided nets appropriately. As a result, this negative attitude would perpetuate the morbidity and mortality emanated from the disease. These

results are compatible with other studies conducted in Ghana, Gambia, Cameroon, and Tanzania, which found low utilization of mosquito nets [12-14].

Furthermore, the respondents, almost across all ages and, in particular, those who had almost informal education and the ones who had at least post-secondary education signaled the disapproval of the distribution so did those who had basic education. Accordingly, most of the respondents had negative attitudes toward the distribution of the mosquito nets. This signals that the respondents, to a larger extent, had negative attitudes toward distribution of mosquito nets. These results are in corroboration with Easterly (2006) and Moyo (2009) who are sceptical about the distribution of mosquito bed nets without charge. However; the results are contrary to WHO (2019) and Willey et al., (2012) who advocate for the universal distribution of LLTNs.

In addition, it is difficult to determine the motivation, whether it was intrinsic or extrinsic, especially for those who stated that they were for the distribution. Uncertainty and doubt of the driving force for distribution of mosquito nets stem from the observation of ulterior uses of the mosquito nets in the study area by the researcher. It was observed and witnessed that mosquito nets were misused by people for fencing gardens, fishing, using them as curtains for latrines, and some were converted into sacks. It follows that these inappropriate uses may have enticed the respondents to go for the distribution of nets. This, admittedly, poses the challenge of emphatically determining the general attitude of the community, albeit what is clear about this split of attitudes is that it may contribute in the ineffectiveness of malaria control strategies through mosquito nets. Moreover, the attitudes, as expressed according to age, confirm the split between those who were in favour of mosquito nets and those who felt it was of no use. In accordance with the results of this paper, 80.6% (18 - 24), 80.3% (45 - 64), and 68.9% above 65 years of age believed the distribution of mosquito nets could not curb the debilitating effects of malaria. It is only 57.7% (25 - 44) who were in favour of the distribution of mosquito nets. It, logically and statistically, follows that the majority of these respondents had negative attitude towards the distribution of mosquito nets. This could affect adversely the effectiveness of malaria control programmes.

With respect to attitudes towards the use of mosquito nets during sleeping at night the findings consistently showed that respondents did not like to sleep under the mosquito nets when covering themselves with a blanket or a bed sheet. If they felt uncomfortable to use the mosquito nets together with bed sheets, and if it would not be easy for them to substitute mosquito nets for blanket or bed sheet, then they would not use mosquito nets while asleep at night. Thus, by inference, some people in these communities would not use mosquito nets even when they had them because they had negative attitudes towards utilizing them. However, to the contrary, the results of this study indicate that respondents were fond of using mosquito nets. Paradoxically, these results are contradictory. But this seemingly contradiction can be resolved by the concept of self-referent and another referent. These respondents might have

confused the statement which asked them to agree or disagree with the statement “I am fond of using mosquito nets” to mean “I am fond of other people using mosquito nets”. These findings corroborate the results found by Alloy et al. [15]. They found that positive and negative constructs were differently accessible by subjects when processing information directed towards self-versus others. Consequently, respondents had negative attitudes towards using mosquito nets, although they had no eerie feelings when other people, apart from themselves, used the mosquito nets. This implies that they could possibly allow children or youths use the mosquito nets, albeit they, by themselves, would not feel like using them.

Study Implication and Conclusion

This paper has some contribution with respect to how people view and interact with malaria control strategies within their context and environment. In particular, these results could have a substantial contribution in gaining insight of peoples’ attitudes towards malaria control strategies in Lindi and Mtwara. In addition, these results illuminate that launching any malaria control strategy is a necessary condition to combat aetiology, epidemic and widespread of malaria, but it is not sufficient. For any programme to yield anticipated results is paramount that it considers, among other factors, attitudes of the recipients of the programme and people who serve as the repository of it. Furthermore, the results of this paper imply that malaria control strategies must be systematic by approach and conception. By “systematic” we mean, in this paper, that all components of the programme, or intervention should interact and inter-relate. These components are such as education, awareness, people, tools, and attitudes.

Above all, it appears, by implication, that any one linear conceived programme perceived by cause-effect only may be efficient but not effective. In other words, it would be implausible to assume that once the problem is identified that nags people and that when the solution is delivered to these people, the problem would be solved. So, by inference, on the basis of these results, synergic relation of each element concerned in the fight against this nagging disease is necessary, if not compulsory.

Moreover, this paper suggests that people must be engaged with respect to the importance and necessity of the use mosquito nets. It seems that merely telling people will not help them change their negative attitude to positive ones. We contend that; because the limbic brain that controls beliefs, trust, attitudes and decisions has no capacity for language; it can be accessible through engagement. This can be implemented by health community officers, community development officers, and some volunteers in the community. On the basis of the findings of this research, we conclude that members of these communities had relatively more attitudinal dispositions to modern malaria control strategies than towards the traditional ones. However, they had negative attitude towards the distribution of mosquito nets and the use thereof, consequently rendering the malaria control strategies less efficient and effective than they would have been. Based on the findings of this study, we recommend that, for effectual and efficient malaria

control strategies, the interaction, interrelation and interconnection of attitudes, education, knowledge and understanding must be considered as coherent dynamic elements and should not be regarded as mutually exclusive components of the programme.

References

1. World Health Organization. World malaria report. 2005.
2. Onyebuchi AK, Lawani LO, Iyoke CA, et al. Adherence to intermittent preventive treatment for malaria with sulphadoxine-pyrimethamine and outcome of pregnancy among parturients in South East Nigeria. Patient preference and adherence. 2014; 8: 447.
3. Sebaaly F, Vahedi H, Kanaan HY, et al. Design and implementation of space vector modulation-based sliding mode control for grid-connected 3L-NPC inverter. IEEE Transactions on Industrial Electronics. 2016; 63: 7854-7863.
4. Mboera LE, Makundi EA, Kitua AY. Uncertainty in malaria control in Tanzania crossroads and challenges for future interventions. Am J Trop Med Hyg. 2007, 77: 112-118.
5. Marzano RJ. A different kind of classroom Teaching with dimensions of learning. Association for Supervision and Curriculum Development. 1250 North Pitt Street. Alexandria. 1992; 213.
6. Eiser JR, van der Pligt J. Attitudes and decisions. Psychology Press. 2015.
7. Vogt WP, Gardner DC, Haeffele LM. When to use what research design. Guilford Press. 2012.
8. De Vaus D. Analyzing Social Science Data: 50 Key Problems in Data Analysis. SAGE Publications Ltd. 2002; 402.
9. Sinek S. Start with why How great leaders inspire everyone to take action. Penguin. 2019.
10. Sabin LL, Rizal A, Brooks MI, et al. Attitudes, knowledge, and practices regarding malaria prevention and treatment among pregnant women in Eastern India. The American journal of tropical medicine and hygiene. 2010; 82: 1010-1016.
11. Green CE. Indigenous theories of contagious disease. Alta Mira Press. A division of Sage Publications. Inc. 1999.
12. Ntonifor HN, Veyufamboni S. Assessing the effectiveness of mosquito nets in the prevention of malaria in some parts of Mezam division North West Region Cameroon. BMC part of Springer. 2016; 15: 390.
13. Ahorbu CK, Dunyo SK, Afari EA, et al. Malaria-related beliefs and behavior in Southern Ghana Implications for treatment prevention and control. Tropical Medicine and Interaction Health. 1997; 2: 488-499.
14. Mboma MZ, Overgaard HJ, Moore S, et al. Mosquito net coverage in years between mass distributions: a case study of Tanzania. Malaria Journal. 2018; 17: 100.
15. Alloy LB, Ahrens AH. Depression and pessimism for the future Biased use of statistically relevant information in predictions for self-versus others. Journal of personality and social psychology. 1987; 52: 366.