

Analysis of Communication Approaches and Effects Used by the Government on Household Utilization of Freely Distributed Insecticide Treated Mosquito Nets in Migori County, Kenya

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Abstract

Malaria is a weighty public health concern in most parts of Migori County, notably amongst the expectant and lactating women and their children. In this county, the disease is a major cause of morbidity and mortality despite several interventions and initiatives by both the national and county governments. Relatively less attention has been paid to the impact of malaria communication approaches in Migori County. This is withstanding the fact that evidence points to existence of some literature on communicating strategies somehow. It is against this backdrop that this paper seeks to study factors that hinder utilization of health services for fighting malaria by evaluating three factors namely communication strategies, socio-economic and cultural factors and netting material design. Cross-sectional descriptive and analytical survey design was adopted in the study. Purposive sampling was employed in identifying key health centers where both secondary and primary data on malaria related cases was obtained. In order to establish the relationship between the failure and or success of utilization of Insecticide Treated Nets (ITNs) with aforementioned factors, multiple regression model was adopted. This study investigated the factors that influence use of ITNs by pregnant and lactating women as well as children under the age of five in the County using a multiple regression approach. The regression results showed that the current government(s) (national and county) communication strategies and approaches, socio-economic factors, value attached to the free ITNs and netting material design significantly affected use of ITNs. The study concludes that these factors hinder use of ITNs by women and children under five years and therefore the mere presence or ownership of an ITN by a household may not guarantee utilization of the same. The study recommends that urgent efforts be made to change communication strategies and approaches, redesigning of netting material to fit different types of recipients' houses as well as increase awareness on the importance of ensuring children less than five years sleep under an ITN if reduction in morbidity and mortality in these vulnerable groups is to be achieved.

Background to the Study

Malaria is endemic to the poorest countries in the world, causing 400 to 900 million clinical cases and up to 2.7 million deaths each year (Bremner, 2001). More than 90% of malaria deaths occur in Sub-Saharan Africa, resulting in an estimated 3,000 deaths each day. This is equivalent to 50 school buses killing all 60 school children on board every day! Almost all the deaths are among children younger than age of five. Other high-risk groups include women during pregnancy, non-immune travelers, refugees and other displaced persons, and people of all ages living in areas of unstable malaria transmission (WHO & UNICEF, 2003). In highly endemic countries, malaria poses a serious danger to pregnant women and their unborn children. Malaria in pregnancy causes maternal anemia, miscarriage, and low birth weight. In endemic countries, it is the leading cause of maternal mortality and one of the primary causes of neonatal deaths (Bremner et al, 2001; WHO & UNICEF, 2003).

Malaria is caused by infection with one of four species of Plasmodium: Plasmodium falciparum, P. vivax, P. ovale and P. malariae. Plasmodium falciparum causes the most serious disease and is responsible for over 95% of infections in sub-Saharan Africa. Malaria parasites are transmitted through the bite of an infected Anopheles mosquito. Malarious mosquitoes bite between sunset and sunrise, usually during the night.

In Migori county, poor communication strategies on preventive behavior by the government at individual, family, community, health delivery and policy levels has immensely contributed morbidity and mortality amongst pregnant, lactating and children below age of five. While many of these challenges could be partially answered through other types of interventions – strategic communication approaches, value attached to the freely donated nets, socio-economic and cultural factors and netting material design - all demand a different strategic communication response and more dynamic approaches towards mitigating, if not completely eliminating malaria disease in the County.

Problem Statement

Strategically designed communication approaches can play a key role towards effective use of ITNs. Communication strategies are generally called for whenever there is a need to change and or, create behavior,

awareness, knowledge, attitudes, social norms, skills, or expectations. However, in Migori County, just like in all other endemic regions, there is often inadequate and ineffective information, and strategic communication initiatives to support anti malaria initiatives, policies, and guidelines towards enhancing utilization of ITNs in the County. Malaria strategic communication approaches are rarely evaluated and very few studies have looked at the impact of various malaria communication strategies and techniques, if any. Thus, there is little evidence showing that communication can effectively influence malaria practices.

There is also little known about the relative effectiveness of various communication strategies on malaria control.

Objectives of The Study

The specific objectives of this study include:

1. To evaluate the current communication strategies and approaches on the utilization of ITNs in Migori County
2. To determine the socio-economic and cultural perceptions among potential users on the use of ITNs in Migori County
3. To establish the utilitarian effect of material design of ITNs versus different designs of household structures in utilization of ITNs in Migori County.

Research Hypotheses

This study tested the following null hypotheses:

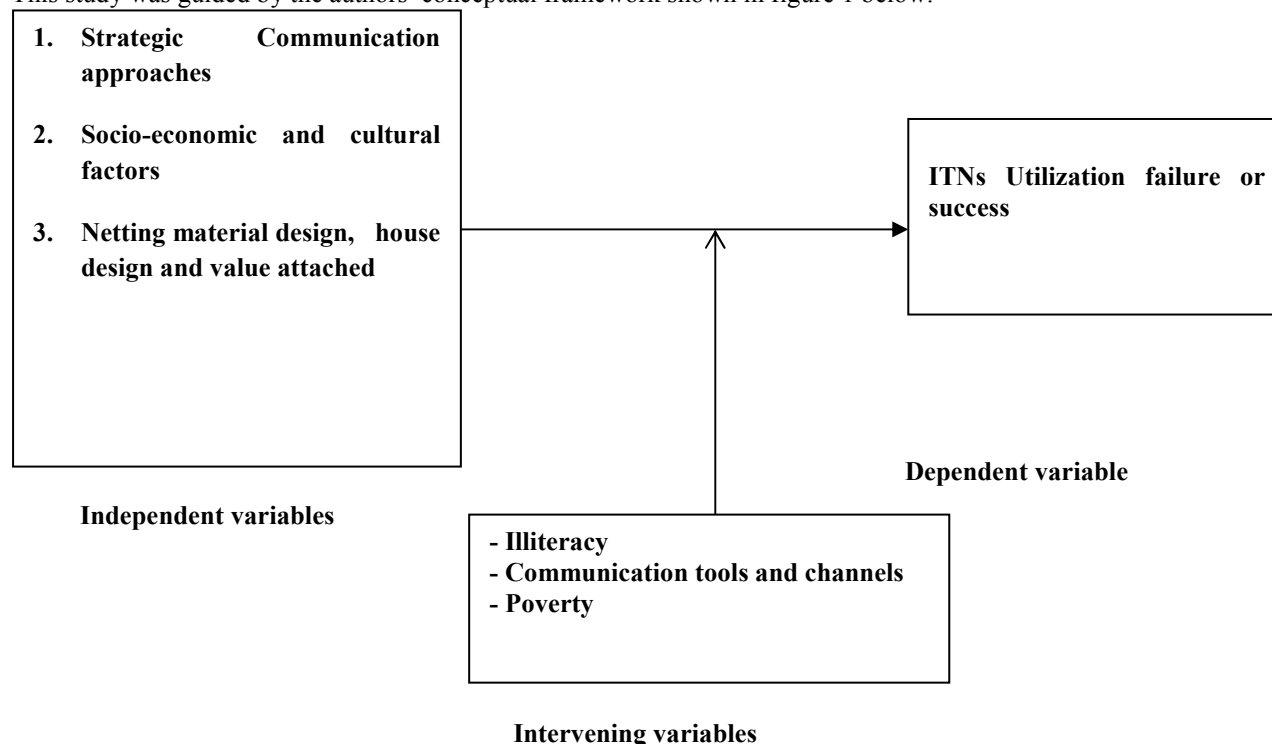
H₀₁: There is relationship between the current communication strategies and approaches on the utilization of INTs in Migori County

H₀₂: Socio-economic and cultural perceptions among potential users on the use of ITNs do not have significant effect among consumers of INTs in Migori county

H₀₃: The utilitarian effect of material design and value attached to ITNs does not have significant effect on different designs of household structures towards utilization of INTs in Migori County.

Conceptual Framework

This study was guided by the authors' conceptual framework shown in figure 1 below:



Research Design and Methodology

Cross-sectional descriptive and analytical survey design was adopted in the study. Purposive sampling was employed in identifying key health centers where secondary data on malaria related cases was obtained from selected health centers registry and identifying the respondents from various villages of Migori County. The key inclusion criteria were that respondents could be identified as owning a (freely distributed by government)

mosquito net or having a mosquito net available for use; that these participants on one or more occasions were identified or self-reported as not using the mosquito net; and that reasons for not using the mosquito net were reported. Studies meeting these criteria were included irrespective of mosquito net design type.

Presentation, Analysis and Interpretation of Data

In order to bring out the relationship existence clearly, the researcher used the multiple regression equation to model for the three factors using the following model,

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \epsilon_{ij}$$

Where:

Y is the dependent or criterion variable (ITNs Utilization)

β_0 is the constant value,

X_1, X_2 and X_3 are the independent variables; strategic communication approaches, socio-economic and cultural factors and value attached to the net respectively.

β_1, β_2 and β_3 are the regression coefficients and,

ϵ_{ij} is the error component with mean of zero because normality has been assumed.

The data was analyzed using SPSS programme version 23.0. After running the statistical test mentioned above, the findings yielded the multiple regressions results discussed below.

Table 1: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.806(a)	0.650	0.392	.495

'R square' is the square of R and is also known as the 'coefficient of determination'. It tells us what proportion (or percentage) of the (sample) variation in the dependent variable can be attributed to the independent variable(s). In table 1 above, we can say that 65% of the factors affecting the ITNs utilization in the county tends to be accounted for by the variation in their reported number of response to the independent variables through the questionnaires issued to them and secondary data obtained from the aforementioned health centers.

Table 2: Regression coefficients

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.511	.378		9.278	.000
	Strategic communication approach	-.195	.043	-.261	-4.526	.000
	Socio-economic and cultural factors	-.320	.087	-.216	-3.661	.000
	Netting material design & value	-.165	.064	-.157	-2.555	.011

a. Dependent Variable: ITNs utilization

Stepwise selection method was adopted in the analysis where each independent variable was entered in sequence and its value assessed. This method was based on the criteria that if adding the independent variable contributes to the model then it is retained, but all other variables in the model are again re-tested to see if they are still contributing to the success of the model. If they no longer contribute significantly they are removed. Thus, this method was to ensure that we end up with the smallest possible set of predictor variables included in the model. In this case, all the three independent variables contribute to the success of the model.

Hence, after the computation, the multiple regression model mentioned above yielded the multiple regression equation shown below:

$$Y = 3.511 - 0.195 \text{ Strategic Communication Approaches} - 0.320 \text{ Socio-economic \& Cultural Factors} - 0.165 \text{ Netting Material design \& value}$$

The above equation was further used to ascertain the presence or absence of causal relationships between the dependent and independent variables by generating a scatter plot diagram as shown below.

Figure 2: Scatter plot showing linear relationships between variables.

Figure 4.5 below depicts the strength of association between the independent variables and dependent variable. The scatter plot shows a linear relationship with few outliers (deviations from the mean) because of variability of respondents used in the study.

Examination of Figure 2 shows that there is a strong positive relationship between dependent that is

health service utilization against independent variables namely the strategic communication approaches, socio-economic and cultural factors and netting material design and value attached to the free ITNs.

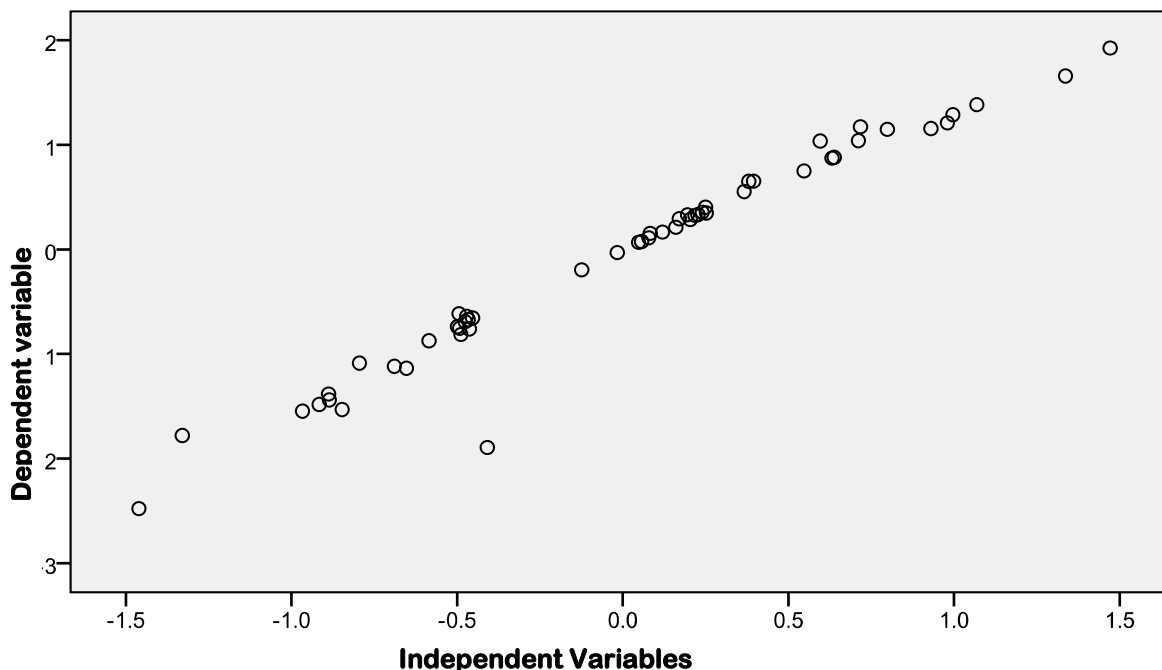


Figure 2: scatter plot showing linear relationships between variables

Analysis of Variance (ANOVA)

The researcher carried further analysis to ascertain the variability of relationships between the dependent and independent variables. The analysis of variance (ANOVA) tests whether the model is significantly better at predicting the outcome than using the mean as a ‘best guess’. Specifically, the F-ratio represents the ratio of improvement in prediction that results from fitting the model (labeled ‘Regression’ in Table 3 below) relative to inaccuracy that still exists in the model (labeled ‘Residual’) in Table 3 below).

If improvement due to fitting the regression model is much greater than the inaccuracy within the model, then the value of F will be greater than 1.

In essence, Table 3 below reports an ANOVA, which assessed the overall significance of our model. Thus the researcher was interested in testing the hypotheses mentioned elsewhere in this paper.

Table 3: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	17.267	28	.617	2.520	.004(a)
	Residual	9.300	38	.245		
	Total	26.567	66			

Decision and conclusion:

Since the p-value, $p=0.004 < 0.05$, we **reject H_0** , and **accept H_1** at 5% level of significance and conclude that indeed at least some of the independent variables namely the current strategic communication approaches, socio-economic and cultural factors and netting material design and value attached to its free of charge status have some significant effect on utilization of ITNs amongst pregnant and lactating women of Migori county

Summary and Conclusion

In order to meet the objectives, achieve its targets and mitigate or eradicate malaria cases in Migori County, the government communication strategies need to be fully integrated into the broad spectrum of malaria interventions and not just merely seen as an isolated intervention, an after-thought or add-on. With adequate time and resources, strategically designed communication can play an important role in scaling up prevention and control efforts at the individual/household, community, health delivery, decentralized and national levels. Malaria communication should be integrated with other health education and communication efforts. Malaria control programmes need to balance malaria-focused and integrated communication approaches. For example, after initial introduction through focused communications, malaria control in pregnancy should become an

integral part of reproductive and maternal health communication. Likewise, information and education about home management of malaria in children should become part of integrated management of childhood illnesses (IMCI) communication.

Furthermore, communication efforts should be strategically designed from an audience centred perspective to address the social, economic and contextual /cultural environment as well as individual behaviors and knowledge. The coordinated use of interpersonal communication, community mobilization, advocacy and mass media have been effective in a variety of other public health agendas. This way, the government will be able to fight and win its populace against repugnant cultural and superstitious beliefs associated with ITNs.

Effective advocacy among influential individuals and groups can also help address some of the underlying societal and environmental factors that influence individuals' ability to take action, either in terms of prevention or treatment. Religious, health, political, commercial, traditional and community leaders, through their positions of power and respect, can make malaria health communication a public issue and support recommended prevention and control practices, helping to overcome barriers to adoption, acting as role models, and changing community norms around treatment seeking and prevention.

Netting material design is a contributing factor towards utilizations of ITNs. Failure of ITNs usage in the County is immensely contributed to by the design which does not put into consideration the type of recipient's house design or possession or lack of bed.

The aspect of giving ITNs for free seems to be another major undoing to their utilization. This is loosely supported by the subjective theory of value which advances the idea that the value of a good is not determined by any inherent property of the good, nor by the amount of labor necessary to produce the good, but instead value is determined by the importance an acting individual places on a good for the achievement of his desired ends. Hence there is need to sell ITNs to the recipients in order for them to attach value to it and safeguard it while utilizing it at home. This can be made possible by providing malaria treatment through community based providers and selling subsidized ITNs through a voucher system will not automatically increase appropriate treatment or use. This may take the form of branding and media promotion; referrals through health services; community mobilization activities; or a combination of the three. Demand creation involves more than informing people about products or services. It involves understanding the audience's socio-psychological environment and designing messages and materials that inform, educate, and motivate audiences within that context.

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