

Social Behaviour Change Communication – Its Impact on Malaria Program - North Bank Regions as a Case Study in The Gambia

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Abstract

The Gambia Malaria Strategy Plan 2021 – 2025 places greater emphasis on strategies for malaria elimination. Hence, North Bank Regions (NBR) have been identified due to the relative low transmission to introduce case-based surveillance as a strategy for malaria elimination. Social Behaviour Change Communication (SBCC) is a critical component of the malaria program. SBCC study in NBR would provide evidence essential for malaria elimination. A three-stage cluster sampling design was used, and the NBR were purposely targeted due to their relative low malaria transmission. In total, 167 household heads and 192 caregivers of children under five years were interviewed. The findings showed that over 90% in NBR valued the use of Long-Lasting Insecticidal Nets (LLIN) in preventing malaria even if it differed in shape and texture from their taste. It is evident that use of health centre/hospital, radio and community health worker can engender wider coverage of messages on malaria in NBR. Malaria treatment was sought and received in a timely manner. Most respondents treated for malaria were tested for malaria prior to the treatment. Overall results are indicative of high levels of knowledge and practice in the prevention, control and treatment of malaria. Despite the existence of few misconceptions and resistance to change that limits the gains made through concerted efforts. The findings are indicative of room for improvement for the achievement of more effective malaria prevention and treatment. Additionally, affordability of LLINs featured prominently, whereas free net distribution could significantly increase access, the issue of sustainability remains pertinent.

Keywords: *Long-Lasting Insecticidal Nets, Malaria, Social Behaviour Change Communication.*

Background

The National Malaria Control Program (NMCP) in collaboration with partners achieved a significant reduction in the malaria burden over the last decade. The prevalence of malaria parasite infection among the general population has reduced from 4% in 2010 to 0.2%, in 2014 and 0.1% in 2017 [1]. The number of confirmed malaria cases declined by over 50% from a high of 166,232 in 2014 to 74,084 in 2021 [2]. Annual malaria case incidence declined across all regions from 87 to 30 per 1000 population in 2014 and 2021 respectively (Health Management Information

System (HMIS)- District Health Information System 2 (DHIS 2).

The current National Malaria Strategy Plan (NMSP) 2021 – 2025 places greater emphasis on strategies for malaria elimination in selected districts, while ensuring the deployment of appropriate strategies in the other districts that will drive malaria prevalence to zero, marking a decisive shift in the country's approach [3,4,5]. The NMSP is guided by malaria stratification, prioritizing strategies for malaria elimination by ensuring the deployment of appropriate interventions to drive local transmission to zero. Surveillance is a cornerstone to accelerate and track the

country to a malaria-free future [3,6,7]. North Bank Regions (NBR) have been identified due to the relatively low transmission to conduct case-based malaria surveillance as a strategy for elimination [3].

Community engagement is increasingly recognized as a critical element in malaria elimination [8,9], for example, to ensure that the last cases are identified and treated before they lead to focal outbreaks [10,11]. Community engagement through Social Behaviour Change Communication (SBCC) has been an important component of malaria prevention and control strategies in The Gambia. SBCC activities are geared towards influencing a general improvement in populations' knowledge, attitudes and practices towards malaria and are therefore an integral part of the scaling-up interventions for malaria elimination. SBCC activities are often prioritized and budgeted, hence the need for a reflection on the contribution of SBCC to the malaria efforts. An SBCC study in NBR would provide evidence on the effectiveness of activities towards behaviour change in the drive to the introduction of case-based malaria surveillance as part of efforts in malaria elimination.

Purpose of Study

The specific purpose of the SBCC study is as follows:

1. To assess the level of knowledge of the household heads and caregivers in North Bank Regions about the causes and consequences, as well as the mode of transmission and prevention of malaria.
2. To identify factors inhibiting the adoption of recommended prevention/treatment behaviours.
3. To identify strategies to be implemented that can accelerate increased behaviour change towards malaria elimination.

Methodology

Study Design and Sampling Process

A three-stage cluster sampling design was used, and the North Bank Regions i.e., North Bank West Region (NBWR) and North Bank East Region (NBER) were targeted in this study. Mainly due to their relatively low malaria transmission have been targeted for the introduction of case-based malaria surveillance, a key strategy for malaria elimination. Three districts per region were randomly selected in each of the two regions at the first stage. Five villages were randomly selected using the Probability Proportional to Size (PPS) technique in each of the three selected districts in each region at the second stage. From each of the selected villages six households were selected at random to be interviewed on each of the two questionnaires.

Questionnaires

Two questionnaires were used in the study: a household questionnaire which was administered to all heads of households or their representative, and a caregiver's questionnaire which was administered to mothers/primary caretakers of children under five.

Both household and caregiver questionnaires collected basic demographic and socioeconomic information (e.g., age, sex, educational attainment) for all usual residents and visitors who slept in the household the night preceding the interview. Other questions asked whether the child had a fever in the two weeks preceding the date of the interview, actions taken when the child had a fever, care-seeking behaviour, usage of LLINs by children under 5 etc.

Training

The training for the data collectors was done over two days during which the various tools were thoroughly discussed. This ensured that data collectors understood how the questionnaires should be completed. To measure the level of understanding of the questions by members of the team, the tools

were pre-tested before the actual data collection to assess the appropriateness of the wording of the questions and to verify the translations and skip patterns. During the training, the questionnaires were translated into two major local languages commonly spoken (Mandinka and Wolof) to enhance understanding.

Data collection

Four teams, each comprising two enumerators and a supervisor were established. These teams were deployed to the field for the actual data collection exercise which lasted for 10 days. The teams covered all the selected settlements in the two health regions. The completed questionnaires were vetted by the supervisors in the field, and thorough scrutiny was done before data entry to ensure error-free and ease of data entry.

Informed Consent

The purpose of the study was explained to each interviewee involved in the study before the interview. They all gave their approval before the study in each community.

Data Analysis

Census and Study Processing System (CSPPro) version 6.1 was used to enter the data. The data was then exported to Statistical Package for Social Sciences (SPSS) version 20 and STATA version 14 for analysis.

Results and Discussions

A total of 167 (77-NBWR and 90-NBER) households or their representatives were interviewed. Overall, the majority of

household heads interviewed in this study were males (92.2% and 62.2% for NBWR and NBER respectively). This scenario largely depicts the fact that most households in The Gambia are male-headed [12].

Findings further attested that most of the heads of households were in marital union at the time of the study. Additionally, only a quarter of household heads interviewed have ever been to school. For household heads who have been to school, overall, 31.0% attended primary school, 27.1% attended lower secondary, 26.4% upper secondary and 11.7% attained higher than secondary level education. Only 3.9% of household heads attained pre-school.

Net Ownership and Usage

The use of mosquito nets has been proven to be an effective strategy in malaria prevention [13-15], hence, its use has been a long-standing strategy in The Gambia. In addition to national efforts aimed at promoting net usage, there have been several initiatives aimed at increasing access to mosquito nets in all parts of the country. Mosquito nets have been distributed free of charge through public health facilities and outreach clinic services and through mass campaigns which have reached out to households within communities.

Presented in Table 1 below is the percentage of households that were reported to have mosquito nets in the two regions. Overall, 79.2% and 97.8% of households in NBWR and NBER respectively owned mosquito nets.

Table 1. Percentage Distribution of Households' Possession of Mosquito Nets

Mosquito Nets	NBWR	NBER
Yes	79.2	97.8
No	20.8	2.2
Total	100.0	100.0

For the households that did not own mosquito nets, a host of reasons were given for not owning one. About a quarter (21.4%) of

these households in NBWR indicated that they did not own mosquito nets because they did not benefit from the net distribution campaign.

About 35.7% and 100% in NBWR and NBER respectively felt that they did not own one because they could not afford it while 21.4% of household heads in NBWR indicated that

they don't feel comfortable sleeping under nets. The use of mosquito repellents or insecticide sprays was reported by 21.4% of households in NBWR. (see table 2 below)

Table 2. Percentage Distribution of Reasons for Not Owning a Net

Reasons for not owning a net	NBWR	NBER
I don't feel comfortable sleeping under nets	21.4	0.0
Use mosquito repellent/spray	21.4	0.0
Cannot afford a net	35.7	100.0
Did not benefit from the campaign	21.4	0.0
Total	100.0	100.0

On the question of several mosquito nets owned by households, results of the study showed that the majority of the households in NBWR owned 2-4 nets, followed by 5-10 nets i.e., 39% and 20.8% respectively. Whilst majority of the households in NBER owned 5-10 nets, followed by 2-4 nets i.e., 43.3% and 33.3% respectively. It can be seen from Table

3 below that most households owned 2-10 nets with this category ranging from 59.8% in NBWR to 76.6% in NBER. The large number of nets owned by households depicts the wide ownership of mosquito nets in The Gambia on one hand and the large household sizes on the other.

Table 3. Percentage Distribution of Households that Own Mosquito Nets by Number of Nets

Mosquito Nets	NBWR	NBER
One or no net	11.7	10.0
2-4 nets	39.0	33.3
5-10 nets	20.8	43.3
11-20 nets	6.5	11.1
>20 nets	22.1	2.2
Total	100.0	100.0

The use of LLINs has been quite effective in reducing morbidity and mortality caused by malaria [16,17]. During this study, households were asked about the number of LLINs they owned. These results are presented in Table 4 below. All household heads except 2.3% in

NBER reported owning at least one LLIN. This finding suggests that LLIN ownership is very high and has the potential to reduce the incidence of malaria if these high ownership coverages are translated into proper use of LLINs.

Table 4. Percentage Distribution of Households with at least one LLIN

LLIN	NBWR	NBER
At least 1 LLIN	100	97.7
No LLIN	0	2.3
Total	100.0	100.0

Regarding the source of LLINs owned by households, the study results showed that most nets were obtained from the 2022 mass

distribution campaign (77.6%) in NBWR and 40.7% from mobile outreach/clinic in NBER as presented in Table 5 below. Government

health posts and hospitals formed a significant percentage i.e., 39.5% and 13.8% for NBER and NBWR respectively. The study results are

indicative of the fact that most LLINs are obtained by households from the public health services be it facility-based or outreach clinics.

Table 5. Percentage Distribution of Sources of LLINs

Sources of LLINs	NBWR	NBER
2022 Mass Campaign	77.6	11.6
Government hospital	13.8	7.0
Government health centre	0.0	1.2
Government health post	6.9	39.5
Outreach clinic	0.0	40.7
NGO Hospital	0.0	0.0
NGO health centre/clinic	1.7	0.0
NGO outreach clinic	0.0	0.0
Relative/Friend/Neighbour	0.0	0.0
Shop/market	0.0	0.0
Total	100.0	100.0

Table 6 below showed percentage distribution of household heads who reported to have slept under an LLIN the night preceding the study. The findings of the study

showed that, 83.9% and 77.2% of the household heads in NBER and NBWR respectively reported to have slept under an LLIN night before the study.

Table 6. Percentage Distribution of Respondents Who Slept Under LLIN the Previous Night

Slept under LLIN	NBWR	NBER
Yes	77.2	83.9
No	22.8	16.1
Total	100.0	100.0

This study results point to a near universal ownership of LLINs amongst households. It is evident from the study results that most households got their LLINs free of charge through either the mass net distribution campaign or through health facilities. Whereas more than 90% of households owned at least one LLIN, on average more than 80% of LLINs were bed-nets which are expected to be more efficient in preventing malaria. In terms of household preference of LLIN shape, it is evident that most households preferred the conical or round LLINs to the rectangular

shaped ones (59.7% versus 31.2% in NBWR and 74.4% versus 21.2 in NBER) as showed in figure 1 below. Soft LLINs were also preferred to the harder type. This study findings point to a very high usage of LLINs in malaria prevention but due to the fact that most households got their LLINs through the free distributions. It remains to be seen whether gains made in popularizing LLINs would be maintained if households have to buy when support to the free LLIN distribution is withdrawn.

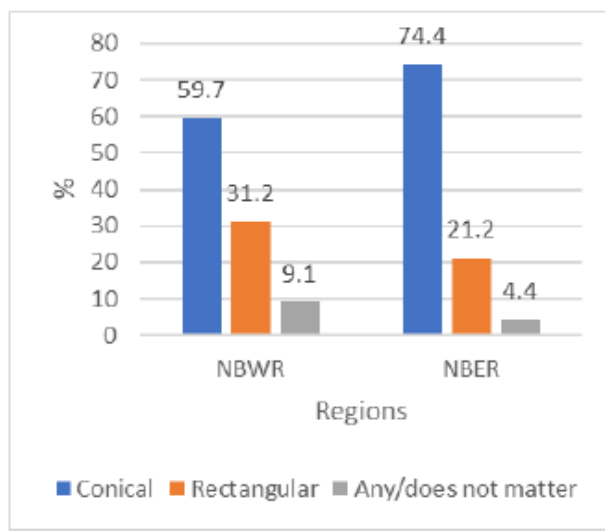


Figure 1. Percentage Distribution of Respondents by Preference of Net Type and Region

Regarding use of LLIN if issued with a different type not of their preference, table 7 below showed that most of the respondents 98.7% in NBWR and 97.8% in NBER

confirmed that they will still use it. This presumably confirms the importance communities attached LLINs as a malaria preventative measure.

Table 7. Percentage Distribution of Respondents Who Reported that if Issued with a Different Type of LLIN of their Preference, they Will Still Use It

Use LLIN even if not their preference	NBWR	NBER
Yes	98.7	97.8
No	1.3	2.2
Total	100.0	100.0

Knowledge, Attitudes and Practices

Household heads when asked whether they believe they can get malaria, overall, most respondents 97.4% and 83.3% in NBWR and NBER respectively answered in the

affirmative (see table 8 below). This is an indication that communities recognize the risk of contracting malaria which is important to take preventive measures.

Table 8. Percentage Distribution of Respondents Who Believe they Can Get Malaria or Not

Can get Malaria	NBWR	NBER
Yes	97.4	83.3
No	2.6	16.7
Total	100.0	100.0

Respondents when further questioned on whether they believe it can be serious if they caught malaria, 98.7% and 95.5% in NBWR

and NBER respectively of household heads believed it could be serious (see table 9 below).

Table 9. Percentage Distribution of Respondents Who Believed it Can be Serious or Otherwise if they Get Malaria by Region

Malaria can be serious	NBWR	NBER
Yes	98.7	95.5
No	1.3	4.5
Total	100.0	100.0

Results of the study showed that in general household heads believed that seeking medical assistance within 24 hours of the onset of a fever can lessen the severity of malaria. Overall, 100% in NBER and 93.5% in NBWR

of household heads were of the view that seeking medical assistance within 24 hours of the onset of a fever can lessen the severity of malaria (see table 10 below).

Table 10. Percentage Distribution of Respondents Who Reported that Seeking Medical Assistance within 24hrs on the Onset of Fever Can Lessen Severity of Malaria

Seek medical assistance with 24hrs	NBWR	NBER
Yes	93.5	100.0
No	1.3	0.0
Don't know	5.2	0.0
Total	100.0	100.0

Household heads when further questioned on how seeking medical assistance within 24 hours of the onset of a fever can lessen the severity of malaria, 64.0% and 59.8% in NBWR and NBER respectively of household heads argued that it reduces the risk of fever,

35.0% and 28.8% in NBWR and NBER respectively said that it enabled early treatment whilst 11.4% respondents in NBER thought delays in treatment could cause death (see table 11 below).

Table 11. Percentage Distribution of Respondents Who Gave Reasons That Seeking Medical Assistance Within 24hrs on the Onset of Fever Can Lessen the Severity of Malaria

Reasons for seeking medical assistance within 24hrs	NBWR	NBER
It reduces the risk of fever	64.0	59.8
Enables early treatment	35.0	28.8
Delays may cause death	1.0	11.4
Other	0.0	0.0
Total	100.0	100.0

Household heads were asked if they had malaria in the two weeks preceding the study. The study results were indicative of low incidence of malaria in the sampled population. Overall, only 2.6% and 1.9% of

respondents in NBWR and NBER respectively reported to have suffered from malaria in the two weeks preceding the study (see table 12 below).

Table 12. Percentage Distribution of Respondents Who Reported to have Malaria or Not in the Last Two Weeks Preceding the Study

Malaria in 2 wks preceding study	NBWR	NBER
Yes	2.6	1.9
No	97.4	98.1
Total	100	100

Generally, knowledge levels on malaria prevention are very high in The Gambia [1,18]. This inference is premised on the fact that 94.0% of respondents were reported to have received information about protecting

themselves from malaria. In the two regions, the proportion of respondents who reported receiving information on malaria prevention ranged from 90.7% in NBWR to 94.4 % in NBER (see table 13 below).

Table 13. Percentage Distribution of Respondents Who Reportedly Received Information about Protecting Themselves from Malaria

Received information	NBWR	NBER
Yes	90.7	94.4
No	9.3	5.6
Total	100.0	100.0

To gauge the knowledge imparted through sensitization of malaria prevention, heads of households were asked about what they learnt on protecting themselves from malaria. The study results showed that 55.0% and 52.5% in NBWR and NBER respectively of respondents learnt how consistently sleeping under a mosquito net can protect them from malaria.

Whilst 44.2% and 46.2% in NBWR and NBER respectively identified environmental sanitation as a means of preventing malaria. Overall, respondents who felt sleeping under a mosquito net was the most effective way they could protect themselves from malaria were in the majority (see table 14 below).

Table 14. Percentage Distribution of Household Heads by What they Learnt about Protecting Themselves from Malaria

Learnt about Malaria	NBWR	NBER
Always sleep under a mosquito net	55.0	52.5
Environmental sanitation	44.2	46.2
Other	0.8	1.3
Total	100.0	100.0

Of the respondents who had ever heard of malaria, most reported receiving information about malaria from one or more sources. Among numerous sources of information, the largest proportion of respondents had received

information regarding malaria from radio, health centre/hospital and/or community health worker. In NBWR it was in the order of radio, community health worker and health centre/hospital i.e., 30.1%, 25.3% and 24.7%

respectively. Whilst in NBER it was radio, health centre/hospital and community health worker i.e., 32.7%, 27.7% and 10.4% respectively (see table 15 below). However,

none of the household heads reported newspapers/posters/pamphlets as source of information on malaria.

Table 15. Percentage Distribution of Source of Information on Malaria

Source of Information	NBWR	NBER
Community health worker	25.3	10.4
Health centre/hospital	24.7	27.7
Radio	30.1	32.7
TV	3.4	6.4
Friend	8.2	7.9
Spouse	0.7	7.9
Brother/sister	0.0	0.5
Peer educator	1.4	0.0
Newspapers/posters/pamphlets	0.0	0.0
Community volunteer	6.2	3.5
Other	0.0	3.0
Total	100.0	100.0

Another question household heads were asked was what they thought about the signs and symptoms of malaria. The signs and symptoms identified by majority of household heads were fever, headache, nausea and vomiting, feeling cold, loss of appetite, dizziness and body ache or joint pain which accounts for more than 80% of respondents.

It can be observed from the table that these were the malaria signs and symptoms identified by respondents. The identification of these typical malaria signs and symptoms by most respondents is a clear indication of appreciably high levels of knowledge on malaria amongst the population (see table 16 below).

Table 16. Percentage Distribution of Household Heads by Perceived Signs and Symptoms

Signs & Symptoms	NBWR	NBER
Headache	19.7	15.1
Fever	23.1	21.1
Nausea and vomiting	15.1	19.4
Feeling cold	12.6	11.7
Loss of appetite	5.9	8.3
Dizziness	4.6	4.0
Diarrhoea	0.4	2.0
Body ache or joint pain	5.5	9.4
Pale eyes	4.6	1.7
Body weakness	7.1	1.7
Refuse to eat or drink	0.0	1.7
Jaundice	0.0	0.6

Other	1.3	3.1
Don't know	0.0	0.3
Total	100.0	100.0

In table 17 below shows percentage distribution of respondents who were able to mention at least three symptoms of malaria. The findings of the study showed that majority of household heads interviewed in the two

regions were able to mention at least three symptoms of malaria. Overall, 96.1% in NBWR and 100% in NBER of the respondents were able to mention at least three symptoms of malaria.

Table 17. Percentage of Respondents Who were Able to Mention At Least Three Symptoms of Malaria

Mention at least 3 symptoms	NBWR	NBER
Yes	96.1	100.0
No	3.9	0.0
Total	100.0	100.0

Regarding satisfaction with malaria treatment services, there appears to be general satisfaction amongst respondents with 89.6%

and 98.9% in NBWR and NBER respectively expressed satisfaction (see table 18 below).

Table 18. Percentage of Respondents Satisfied with the Malaria Treatment Services

Satisfied with Malaria treatment	NBWR	NBER
Yes	89.6	98.9
No	10.4	1.1
Total	100.0	100.0

Respondents who expressed satisfaction with the malaria treatment services were further questioned on the aspects of the treatment they were satisfied with and the majority (48.9% in NBWR and 47.7% in NBER) were satisfied with the fact that the laboratory blood tests revealed their status.

About 46.9% and 45.8% in NBWR and NBER respectively of respondents expressed satisfaction with the effectiveness of the new malaria drugs (see table 19 below). However, availability of drugs for the effective treatment of malaria remains a challenge.

Table 19. Percentage Distribution of Respondents Who were Satisfied with Malaria Treatment Services by Reasons for their Satisfaction

Reasons for satisfaction	NBWR	NBER
The blood test reveals your status	48.9	47.7
The new drugs are very effective	46.9	45.8
Effective drugs are readily available	46.9	6.5
Other	0.0	0.0
Total	100.0	100.0

Malaria Awareness Creation by Community Volunteers

As part of awareness creation, community volunteers, positive deviant individuals, school children and youth out of school were being used to promote malaria prevention and

control. During the study, household heads were asked whether they are aware of the community volunteers, whether their households have ever been visited by the volunteers and the number of times, and whether the visits were effective in educating families and peers about malaria.

It is evident from the findings of this study that household visits by community volunteers who discussed malaria prevention strategies with families is quite common with 82.4% and

81.0% in NBWR and NBER respectively of households reportedly receiving such visits. On the question of whether the visit helped individuals prevent malaria, all household heads 100% in NBWR and 97.7% in NBER were of the view that it did help. The results of the study on this question showed that household heads believed that the home visits by community volunteers were effective in protecting individuals from malaria (see table 20).

Table 20. Percentage of Households that were Visited by Community Volunteers Who Discussed Malaria Prevention with Families and Whether the Visit Helped to Protect Oneself from Malaria

Visits by community volunteers	NBWR	NBER
% of household visited	82.4	81.5
% of household heads who believed the visit helped protect against malaria	100.0	97.7
Total	100.0	100.0

Regarding the number of times households were visited by the community volunteers to discuss with family's malaria prevention strategies, 59.5% of households in NBWR were visited two or more times in the year preceding the study and 22.7% households in

NBER were visited two or more times in the year. Generally, about two thirds of the households in both regions were visited by community volunteers at least twice in the year (see table 21).

Table 21. Percentage Distribution of Number of Times Households were Visited by Community Volunteers in the Last One Year

No. of HH visits	NBWR	NBER
Once	21.4	31.8
Twice	19.1	45.5
More than twice	59.5	22.7
Total	100.0	100.0

On the knowledge, attitude and practice of respondents as it relates to malaria, evidence from this study revealed that overall knowledge levels are high, and the population has the right attitudes to take on the fight against malaria. The study results showed that there is general awareness of the potential for

one to contract malaria and that the consequences can be serious. On the urgency for timely treatment of a malaria episode, almost all respondents interviewed in this study saw the urgency in seeking medical assistance within 24 hours of an episode of malaria. These positive health seeking

behaviours could be explained by the fact that most respondents received information about malaria prevention and the signs and symptoms of malaria as is evident in the study findings. For the malaria prevention, the use of mosquito nets and environmental sanitation have been singled out as important measures by most respondents interviewed in this study. It is worth noting that health facilities, radio and community health workers are important sources of information on malaria as reported by most respondents in this study. Regarding satisfaction with national malaria treatment services, the study results showed that in excess of 95% of respondents were satisfied with the service. Accurate diagnosis through blood tests and the use of new effective anti-malaria drugs were the main reasons for the satisfaction of respondents with the treatment services.

Use of community volunteers have been quite effective in the sensitization efforts on malaria. Whilst the study results point to positive attitudes in malaria prevention and treatment, there is still room for improvement. Gains made in this area could be consolidated through more awareness creation using radio,

health facilities, television programmes and the use of community structures to reach out to hard-to-reach areas of the country.

Caregivers of Children Under Five

Fever is one of the major markers of an illness and one of the frequently reported causes of under-five children's caregivers' visits to healthcare facilities. Information on illness and health-seeking behaviours for children under five in the two weeks preceding the study was collected from all caregivers during the study. This chapter discusses the findings on caregivers of children under five.

Children with Fever in the Last Two Weeks

Out of a total of 192 caregivers interviewed, 53% respondents are from NBWR and 47% from NBER. During the study, all the caregivers were asked whether their children were ill with fever during the past two weeks preceding the study and the results are presented in figure 2. The study shows that, the incidence of fever among children under five was 9.8% and 41.1% in NBWR and NBER respectively.

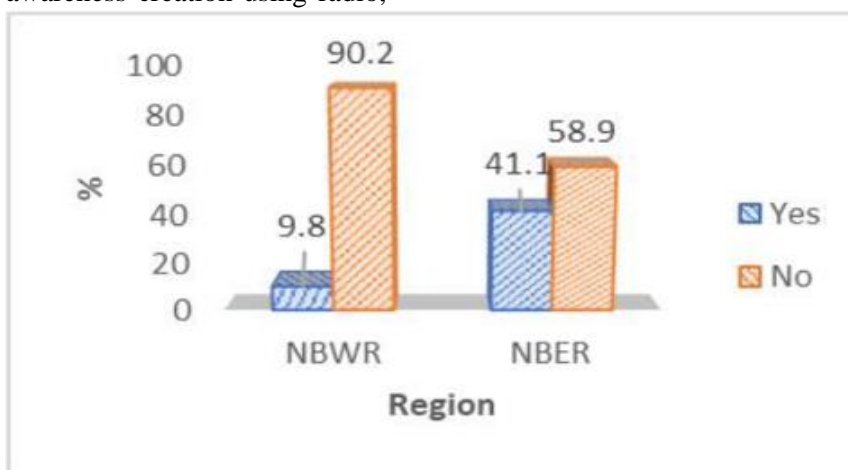


Figure 2. Children with Fever in the Last Two Weeks by Region

Action taken by Caregivers of Children who had Fever

Early diagnosis and timely treatment of malaria is recognized as a fundamental element to the control of malaria [5,19,20].

During the study respondents who reported that their children had fever in the last two weeks preceding the study were asked measures taken during the episode of the fever. Overall, most of the caregivers more than 80% took their children to either a health

facility, pharmacy or village health worker when they had fever in both regions. However, a small proportion of caregivers took their children to either a traditional healer, stayed at home and gave medicine or nothing. These practices should be discouraged as it could have devastating effects on children.

Table 22 below provides information on the percentage of children who visited health

facility/pharmacy and were referred to a laboratory for blood testing for malaria. Overall, 58.3% and 40.0% children in NBWR and NBER respectively were referred to a laboratory for blood testing.

All the children (100.0%) were seen by health care providers when they visited a health facility during the episode of the fever.

Table 22. Percentage Distribution of Action Taken by Caregivers of Children Who Had Fever by Region

Action taken	NBWR	NBER
Health facility	50.0	83.8
Pharmacy	10.0	2.7
Village health worker	20.0	0.0
Traditional healer	10.0	0.0
Stayed at home and gave medicine	0.0	2.7
Stayed at home and gave nothing	0.0	8.1
NS	10.0	2.7
Total	100.0	100.0
Blood Testing (Malaria)	NBWR	NBER
Yes	58.3	40.0
No	41.7	60.0
Total	100.0	100.0
Seen by health care provider	NBWR	NBER
Yes	100.0	100.0
No	0.0	0.0
Total	100.0	100.0

The World Health Organization recognizes that early diagnosis and prompt treatment, within 24 hours of onset of symptoms, is an essential element of malaria control [5,6,21]. This is primarily because early medical care reduces the chance of progression of the illness to severe disease [19,22].

Caregivers were asked whether the child takes medication for fever or malaria that was provided or prescribed at the health facility or not. The findings of the study showed that the vast majority 100.0% and 66.7% in NBER and NBWR respectively of those interviewed reported in the affirmative. Children in NBWR

(33.3%) were more likely than their counterparts in the other region not to take medicine for fever or malaria that was provided or prescribed at the health facility.

The respondents were also asked the time it took for the child to be tested for malaria at the health facility. The result of the study showed improvement in the malaria treatment services (see table 23 below), as prompt attention is critical in malaria case management [23-25]. Overall, none of the caregivers reported it took less than an hour for the child to be tested and 80.7% and 25.0% in NBER and NBWR respectively indicated that it took an hour for

the child to be tested. About 75% in NBWR were tested in 2 hours or more.

Early diagnosis and prompt treatment are the basic elements of malaria case management [23,26]. The proportion of children tested the same day was higher in NBWR as all the children with fever were tested on the same day whilst in NBER only 9.4% were tested on the same day. Most of the children 87.5% were tested the next day.

Although most of the caregivers reported that the children were tested on the same and next day on the onset of fever, considering the fact that 87.5% in NBER of the caregivers reported that the children were tested after 2 days on the onset of fever, there is the need to intensify on the malaria Information Education and Communication (IEC) programs about the importance early diagnosis and prompt treatment (see table 23).

Table 13. Percentage Distribution of Whether the Child Takes Medicine for Fever or Malaria, Number of Days Taken before Medicine is given and Number of Days it Took for the Child to be Tested for Malaria

Given medicine for fever or malaria	NBWR	NBER
Yes	66.7	100.0
No	33.3	0.0
Total	100.0	100.0
Number of hours it took for the child to be tested	NBWR	NBER
0	0.0	0.0
1	25.0	80.7
2	25.0	16.1
3	50.0	3.2
4	0.0	0.0
Total	100.0	100.0
Number of days it took for the child to be tested for malaria	NBWR	NBER
Same Day	100	9.4
Next day	0.0	87.5
2 days after the fever	0.0	3.1
3 days after the fever	0.0	0.0
4 or more days after the fever	0.0	0.0
Total	100.0	100.0

Table 24 below shows percentage distribution of children under five given medicines for fever or malaria and the time it took for the child to be tested for fever or malaria. The data shows that most of the children given medicine were tested on the same and the following day with 27.4% and

48.1% respectively. This is followed by those who were tested 2 and 3 days after the episode of fever or malaria with 13.2% and 6.6% respectively. Those who were tested four days after the episode of fever accounted for the lowest proportion with about 4.7%.

Table 24. Percentage Distribution of Children given Medicine for Fever or Malaria and the Time it Took for the Child to be Tested for Malaria at the Health Facility

No. of day(s) it took for the child to be tested	Percent (%)
0	27.4
1	48.1
2	13.2
3	6.6
4	4.7
Total	100.0

Net Ownership and Usage

The Roll Back Malaria Initiative has identified the under-fives as one of the high-risk groups for malaria, and one of the strategies to fight malaria in this group is increasing LLIN use [3,6,7,27]. During the study, all caregivers were asked whether the children slept under a mosquito net night before the study. Overall, 94.4% and 73.5% of the caregivers in NBER and NBWR respectively reported that the children slept under a mosquito net the night before the study as opposed to 26.5% and 5.6% in NBWR and NBER respectively that did not sleep under a mosquito net (see table 25).

Information on net usage by children night prior to the study was also sought from

caregivers who reported that their children slept under a net. This is very encouraging as sleeping under an LLIN each night is regarded as one of the most effective ways to prevent malaria.

Information on net usage by children night prior to the survey was also sought from caregivers who reported that their children slept under a net. Overall, 94.7% and 97.7% of children in NBWR and NBER respectively slept under LLIN. This is very encouraging as sleeping under an LLIN each night is regarded as one of the most effective ways to prevent malaria. Only about 4.0% and 1.2% of children in NBWR and NBER respectively slept under pre-treated mosquito nets.

Table 25. Percentage Distribution of Children Who Sleep Under a Mosquito Net Night before the Study and the Type of Net Used

Did child sleep under a net the night before the study	NBWR	NBER
Yes	73.5	94.4
No	26.5	5.6
Total	100.0	100.0
Type of net child slept under	NBWR	NBER
LLIN	94.7	97.7
Pre-treated with insecticide	4.0	1.2

Not treated with insecticide	1.3	1.2
Other	0.0	0.0
Total	100.0	100.0

Knowledge, Attitude and Practices

Table 26 below shows the percentage distribution of caregivers whether a child under the age of five can contract malaria or not by region. When questioned about their opinion on the issue, the vast majority 96.7% and 93.1% in NBER and NBWR respectively affirmed that children 5 years can contract malaria.

Also presented in table 26 is the percentage distribution of the caregivers who believe that sleeping under an LLIN can protect children under five years from malaria. Overall, 100% in NBER and 98% in NBWR of caregivers believed that children under five years can be protected from malaria by sleeping under an LLIN.

Table 26. Percentage Distribution of the Caregivers Who Believe that a Child Under the Age of Five Year Can Get Malaria and Whether LLINs Can Prevent Malaria

Can an under-five get malaria	NBWR	NBER
Yes	93.1	96.7
No	6.9	3.3
Don't know	0.0	0.0
Total	100.0	100.0
Can LLINs Prevent Children from Malaria	NBWR	NBER
Yes	98.0	100.0
No	1.0	0.0
Don't know	1.0	0.0
Total	100.0	100.0

Table 27 below shows the responses of caregivers to questions posed to assess their knowledge on signs and symptoms of malaria. Most of the caregivers 26.7% and 23.9% in NBWR and NBER respectively mentioned fever as one of the signs and symptoms of malaria followed by nausea and vomiting and headache.

Other main signs and symptoms of malaria mentioned by the caregivers were 'feeling cold', 'dizziness', 'body ache or joint pain and 'loss of appetite'. Although there were divergent views about the signs and symptoms of malaria, most caregivers were familiar with the main signs and symptoms of malaria.

Table 27. Percentage Distribution of Caregivers by Perceived Knowledge of Signs and Symptoms of Malaria

Signs and symptoms of malaria	NBWR	NBER
Headache	16.6	19.1
Fever	26.7	23.9

Nausea and vomiting	17.9	20.4
feeling cold	6.8	8.0
Loss of appetite	4.2	4.1
Dizziness	8.5	6.1
Diarrhea	5.2	2.5
Body ache or joint pain	3.9	8.3
Pale eyes	3.9	1.3
Body weakness	4.6	1.9
Refusing to eat or drink	0.0	1.0
Jaundice	0.0	0.6
Don't know	0.7	0.6
Other	1.0	2.2
Total	100.0	100.0

Table 28 shows the percentage distribution of caregivers who received information about protecting children under five from malaria. Overall, 91.2% and 91.1% of caregivers in NBWR and NBER respectively reported to have received information about protecting children under five from malaria.

The caregivers who reported to have received information about protecting children under five from malaria were further asked what they have heard or learnt about protecting children from malaria. Results of this enquiry showed that, 83.9% and 61% of

caregivers in NBWR and NBER respectively reported to have learnt that children should always sleep under a mosquito net so as to be protected from malaria. Keeping the environment and households clean (environmental sanitation) was the second major reason advanced by caregivers i.e., 37.8% in NBER and 16.1% in NBWR. Findings of the study suggested that caregivers have knowledge of malaria, and are aware of its prevention methods, including the use of LLINs.

Table 28. Percentage Distribution of Caregivers Who had Ever Received Any Information about Protecting Children Under Five from Malaria and the Issues Heard about Prevention

Did caregiver receive information on protecting children from Malaria	NBWR	NBER
Yes	91.2	91.1
No	8.8	8.9
Total	100.0	100.0
Issues heard about preventing children from malaria		
	NBWR	NBER
Sleep under a mosquito net	83.9	61.0
Environmental sanitation	16.1	37.8
Other	0.0	1.2
Total	100.0	100.0

Table 29 listed the sources of malaria information cited by respondents. Sources of information varied amongst caregivers. Health centre/hospital is the main source i.e., 40% in NBWR and 35.6% in NBER, followed by radio 18% in NBWR and 30% in NBER and

community health worker 22% in NBWR and 9.4% in NBER were the most common sources of information amongst those that had received information about malaria as indicated in table 29 below.

Table 29. Percentage Distribution of Caregivers by Information about Protecting Children Under Five from Malaria

Information about protecting children under five from malaria	NBWR	NBER
Community health worker	22.0	9.4
Health centre / hospital	40.0	35.6
Radio	18.0	30.0
Television	2.5	6.1
Friend	4.5	6.7
Spouse	1.0	6.7
Brother/sister	0.0	0.0
Peer educator	.5	.6
Newspapers/posters/pamphlets	0.0	.6
Community volunteer	10.0	2.2
Other	1.5	2.2
Total	100.0	100.0

During the study, all caregivers were asked whether they were satisfied with the malaria prevention services for children under five years. Overall, 93.1% and 96.7% of the

respondents in NBWR and NBER respectively reported to be satisfied with the services (see table 30 below).

Table 30. Satisfaction with the Malaria Prevention Services

Satisfaction	NBWR	NBER
Yes	93.1	96.7
No	6.9	3.3
Total	100.0	100.0

Regarding malaria treatment services, table 31 shows that 94.1% and 98.9% of the caregivers in NBWR and NBER respectively were satisfied with the malaria treatment services for the children.

Respondents who expressed satisfaction with the malaria treatment services were questioned on the aspects of the treatment they

were satisfied with. Majority of the respondents 51.9% and 51.6% in NBWR and NBER respectively were satisfied because the right medicine is always prescribed and 48.1% and 48.4% in NBWR and NBER respectively were satisfied with the fact that the laboratory blood tests revealed their status.

Table 31. Percentage Distribution of the Respondents Satisfied or Not with the Treatment Services

Satisfied with malaria treatment for children	NBWR	NBER
Yes	94.1	98.9
No	5.9	1.1
Total	100.0	100.0
Reasons for satisfaction with treatment services	NBWR	NBER
Lab test provided	48.1	48.4
Right medicine prescribed	51.9	51.6
Other	0.0	0.0
Total	100.0	100.0

Overall, the health seeking behaviour of caregivers of under-five children as observed from this study results is impressive. The evidence showed that most caregivers whose children had a fever in the two weeks preceding the study sought care from a health facility, their children got tested for malaria and received medicine for the fever/malaria. It is also evident that these children got timely treatment since nearly 90.0% of the children were tested for malaria within two days of experiencing a fever. Use of mosquito nets for children under-five as prevention against malaria is common with LLINs being the most dominant type of net. Knowledge levels on malaria is very high amongst caregivers of

children under-five which has the potential to have a positive effect on health seeking behaviour. As has been observed with other categories of respondents, most caregivers received information on malaria through health centre/hospital, radio, and community health workers. Caregivers of children under-five interviewed in this study have expressed general satisfaction with both malaria prevention and treatment services. This is yet another pointer to public satisfaction with the malaria prevention and treatment interventions.

Conclusion

The success of any anti-malaria campaign can largely be gauged by how much the social

behaviour change communication interventions have influenced environmental management geared towards vector control, attitudes to the use of mosquito nets and malaria treatment practices of the population. Overall, results of this study are indicative of high levels of knowledge in the prevention, control and treatment of malaria in the North Bank Regions. Despite the existence of some misconceptions and resistance to change that limits the gains made through concerted efforts. The findings are indicative of room for improvements for the achievement of more effective malaria prevention and treatment.

Use of mosquito nets for the prevention of malaria is very high both amongst the household heads and caregivers of children under five years. It is also encouraging to observe that most of the study respondents use LLINs which are considered more effective in preventing malaria [28,29]. It is however worth noting that whereas mosquito net usage is generally high amongst household heads and caregivers, there are still few reportedly not using mosquito nets. Overall, for those not using nets the issue of affordability featured prominently. Whereas free net distribution could significantly increase access, the question of sustainability of this initiative is pertinent. This remains an issue since less than 1.0% of households reported buying the nets they use. The findings of the study indicate that the population in NBR generally valued the use of nets in preventing malaria as they would use nets given to them even if they differed in shape and texture from their taste.

There is a general recognition of the potential for one to contract malaria amongst the population contacted in this study. This can be attributed to increased awareness of the mode of transmission of the malaria parasites as a result of an effective sensitization campaign through health centre/hospital, radio, community health worker, television, community volunteers. Across target population groups contacted during this study,

it is evident that use of health centre/hospital, radio and community health worker can engender wider coverage of messages on malaria in the North Bank Regions.

On the value of prompt effective treatment of malaria, the study results point to a general consensus on the value of such treatment limiting the debilitating effects of malaria. Generally, malaria treatment was sought and received in a timely manner. Most respondents treated for malaria were tested for malaria prior to the treatment. Such an attitude to the treatment of malaria could drastically reduce burden of malaria in the North Bank Regions and also engender precision in the diagnosis and treatment of malaria. It is however worth noting that a small proportion of respondents delayed seeking for malaria treatment which could have serious health consequences.

Overall, the effect of an effective malaria prevention campaign is mirrored in the low incidence of malaria as reported in this study. The results of the study point to a general satisfaction of communities contacted in the course of the study with the national malaria prevention and treatment initiatives. This can be largely attributed to perceived reductions in morbidity associated with malaria and better malaria treatment outcomes as reported by respondents. Satisfaction with malaria treatment has largely been associated with accurate diagnosis through blood tests and the effectiveness of the malaria drugs being dispensed. Notwithstanding the general satisfaction with the malaria treatment services, the issues related to the ready availability of malaria drugs and laboratories in health regions has been flagged by a cross section of respondents.

Recommendations

Despite the observed gains of the national malaria prevention and control, there is evidence of room for improvement. Based on the findings of this study, the following recommendations are being put forward:

1. Promotion of the use of treated mosquito nets, should be intensified to both consolidate the gains made in the use of nets but also to reach out to individuals who for various reasons continue to resist the use of mosquito nets in the prevention of malaria.
2. Results of this study indicated that most mosquito net owners received them through a free effort should be intensified to increase the gains of the initiative.
3. Malaria testing laboratory facilities should be increased to improve access to diagnosis and effective treatment of malaria.
4. More community mobilization and sensitisations should be embarked on regarding the need for timely diagnosis and treatment of malaria to increase the

gains made in the reduction of morbidity and mortality due to malaria.

5. In the interest of sustainability, it may be prudent to introduce a cost recovery mechanism in order to nurture a culture of self-reliance in accessing treated mosquito nets. This is especially important as donor financing continue to reduce.

Declaration

I declare that there is no conflict of interest.

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