



Insecticide Treated Mosquito Nets (ITNs) on Demand for Wrong Reasons: A Case of Selected Districts in Zambia

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ABSTRACT

Insecticide Treated Nets play a key role in preventing vector-borne Malaria infection. While everyone can suffer from Malaria, Pregnant Women and children under the age of 5 years are more vulnerable and the consequence of malaria in these special groups is usually fatal, Insecticide Treated Nets are important for them. Regular supply of ITNs in communities is heavily acknowledge but data from the Zambia Demographic survey of 2018 showed that 43.6% not having an ITN. This study sought to explore how often communities were supplied with ITNs and how they used them. The study was conducted in Chipata, Sinda and Luangwa Districts in Zambia between 2022 and 2023. Data was collected using interviews and field observation. 12 Community Health Volunteers participated in the study. The study found that over 99.9% used ITNs for malaria prevention, the remaining 0.1% misused ITNs for fencing gardens, as a mopping or shining cloth for floors, as a scrubbing cloth for washing cars and as curtains and door mats. This study recommends aggressive sensitization especially in poorer communities where the practice is usually observed.

Key Words: Insecticide Treated Net, Malaria, misuse, community, vector, mosquitoes

I. INTRODUCTION

Insecticide-Treated Mosquito Nets (ITNs) form an essential component in the preventive care package against Malaria. In low-resource countries facing high-Malaria burdens, governments, assisted by Co-operating Partners supply Insecticide-Treated Mosquito Nets to Pregnant Women and children under the age of five (5) years as the general well-being of these special populations is of grave importance to societal population growth. Malaria, a serious vector-borne disease leaves a trail of devastation among the vulnerable groups of pregnant women and children under the age of 5 years. According to the World Health Organization (WHO) (2009) an Insecticide-Treated Mosquito Net, 'acts as a physical barrier, preventing access by vector mosquitoes and thus providing personal protection against malaria to the individual(s) using the nets' (WHO 2009: 2). Routine Antenatal care (ANC) and Under 5 years' health care package in most developing nations consists of supply of an ITN to Pregnant women for Malaria prevention in pregnancy and prevention of childhood Malaria infection. Scholars have also found out that in 'sub-Saharan Africa, there has been a giant leap in proportion of Insecticide-Treated Mosquito nets use between 2000 and 2020, namely for children aged under five years (from 3 to 49%), and for pregnant women (from 3 to 49%)' (World Health Organization 2021 in Miller et al., 2022:2). 'In line with the Global Malaria Strategy and with the substantial increase in funding support for malaria prevention and control programmes, countries across sub-Saharan Africa are dramatically increasing their ITN coverage' (Baume, Reithinger & Woldehanna, 2009: 8).

In Zambia, initiatives to control and effectively cut down on Malaria associated morbidity and mortality began earlier, protracted dynamism, however, was observed in 1997 with the establishment of the National Malaria Control Centre (NMMCC) buttressing the program with the first 2000-2005 National Roll Back Malaria Strategic Plan (Reddit et al., 2012: 6-7). One of the supreme objectives of the National Malaria Control Program was to achieve wider coverage of Zambia's population with ITNs and through policy enactment, ITNs were to be freely distributed to pregnant women and under-five children (Hangoma, Morse & Michelo, 2019). The 2018 Zambia Demographic Health Survey (ZDHS), to the contrary, revealed shocking findings. The survey revealed that 43.6% of participants did not use an ITN the night before the survey due to non-availability of an ITN in their homes. Eisele, Thwing and Keating (2011) noted media reports about misuse of ITNs in Africa. Berthe et al., 2019 also reported of ITN misuse but acknowledged scanty scholarly work on the subject. The objective of this study was to find out why some households did not have ITNs when 7 Million ITNs had been distributed countrywide (USAID, n.d.) free of charge to achieve a 'Malaria Free Zambia.'

II. Materials and Methods

Study Design: The study used explorative research design and qualitative research approach

Study Location: The study was conducted in Chipata, Luangwa and Sinda Districts of Zambia

Study Duration: It was conducted between January 2022 and December, 2023

Sample size : 3 Districts in Zambia

Inclusion criteria

1. Only communities under Chipata, Luangwa and Sinda Districts were included in the study

Exclusion criteria

1. Communities not under Chipata, Luangwa and Sinda Districts, Zambia.

III. Procedure Methodology

The study employed qualitative research methods. Interviews and Observation methods were employed for data collection. The study was conducted in 12 different communities- evenly distributed (4 neighbourhood clusters per district with 2 clusters from an urban area and 2 clusters in the rural area). A total of 12 participants (4 local residents from each district) participated in the study. Data was collected between January 2022 and December, 2023. Data analysis used Thematic Analysis. Permission was sought from Head men/ section Chairpersons. Prior to engaging participants, explanation about the study objective was offered. Informed consent was obtained from participants after the purpose of the study was shared.

Theory

Not all social situations require independence in decision making. When individuals look to society for guidance on what to do and think they are likely to conform to societal norms and expectations. Robert Merton, one of the leading American Sociologists of the 20th Century asserted that conformity is good for 'stability and continuity of society' (Merton 1938: 677). However, society has a smaller section that fails to conform. Non-conforming individuals take the 'position which is opposed to that of the others' (Karikó 2020:15). In the matter of Insecticide Treated Nets, the wider expectation is that people will use ITNs for malaria prevention but there is a small section of individuals that choose not to conform to this general expectation.

IV. Results

The sample consisted of 12 Community Health Volunteers distributed as follows:

District	No	Gender		Educational Level	
		M	F		
Chipata	4	2	2	Primary 0 Secondary Education	4
Sinda	4	1	3	Primary 1 Secondary Education	3
Luangwa	4	2	2	Primary 1 Secondary Education	3

The Community Health Volunteers' age range was between 34 and 56 years with the longest serving having served for 23 years.

Question: Does your community receive Insecticide Treated Nets if so how often?

The question was designed to elicit acknowledgement or refusal on whether communities received ITNs. This study found that communities acknowledged receiving ITNs.

'We always receive free ITNs in my community. In fact just this year everyone received' (Female Community Health Volunteer, Chipata District).

'I am reliably informed that in Sinda District ITNs were given according to the number of family members for example those who are 5 they received 5, so everyone receives. I cannot verify how often but whenever ITNs come everybody receives' (Community Health Volunteer Female, Sinda District).

'Luangwa District is always the first priority because we live close to the Luangwa River where mosquitoes breed by the thousands and it's ever hot. I can tell you everyone in this district was given an ITN (Community Health Volunteer, Male).

Question: How does your community use Insecticide Treated Nets?

This question was meant to find out how ITNs were used in various communities as observed by Community Health Volunteers. There was a general admission that over 99.9% of people who received used ITNs for the intended purpose while 0.1% deviated use.

'I can confess that majority of recipients use ITNs as expected very however, use them for fishing, as a fence to keep off flying insects from vandalizing their tender plants on the nursery'(Community Health Volunteer Male, Chipata District).

'When I go round my community, I have observed that nearly all families use ITNs for Malaria Prevention which is good but a few ignorant ones have repurposed the use of ITNs for example some use them as covering material for the exposed grain barn especially after harvest when barns are full. Others use them as sacks for separating maize from the cobs through pummelling' (Community Health Volunteer, Female Sinda District). A male Community Health Volunteer under the same District reported that in his community:

'I have seen a bride on her wedding day wearing a Mosquito net-veil' (Community Health Volunteer, Male Sinda District).

From Luangwa District, besides fishing, a few individuals were reportedly using ITNs as curtains for their doors windows and for separating the bedroom from the sitting room. For those living in round huts made from poles, Mosquito nets were essential to cover the walls a reported by a male Community Health Volunteer:

'Deviants use ITNs as curtains for dividing rooms, and as window and door curtains. Be observant on your way to or from Lusaka, you will sell a few little houses covered in mosquito nets (Community Health Volunteer, Male Luangwa District).

Question: How do you help non-conforming members of your community use Insecticide Treated Nets for the right purpose?

Responses from Community Health Volunteers indicated that they were working closely with Head men/women and section chairpersons to educate and mete out punishment to all the erring members.

'We are on a crusade with local leadership, the moment we find anyone abusing the ITN we confiscate, write down their names so that they may not receive the next time. This is sending chills to would be deviants. Using this brutal method we have noted that ITNs' abuse has drastically gone down' (Community Health Volunteer, Male Chipata District)

'In Sinda District, we don't take it lightly when we find someone tying charcoal bags using ITNs. We report them to the head man immediately' (Community Health Volunteer, Female, Sinda District).

'Those within the Central Business District it's easier to access them but the isolated ones living in the mountains are challenge but we have devised a system of reaching their homes during national programmes such as immunizations. If we find an ITN draped around the hut we threaten them that we will report to the police and its working' (Community Health Volunteer, Male Luangwa District).

Field Observation

Field observations took two years. These field observations were conducted in urban, peri-urban areas as well as in villages. The researcher did not observe anything unusual with how urbanites used mosquito nets, Countable cases were observed in peri-urban areas where citizens had an opportunity to initiate a backyard garden or had houses with cement-floor. It was observed that some used ITNs as a mopping cloth /shining brush for their floor. At the largest hospital in Chipata District, the researcher observed that a family brought a body of a middle aged man reported to have had committed suicide using a mosquito net. They showed the researcher and hospital staff the ITN used. The researcher also observed that ITNs were a hot cake among gardeners growing tomatoes and beans in villages. They scavenged ITNs for their strong strings to support growing plants for greater yields. A few poultry farmers in Sinda and Luangwa Districts used ITNs to make a roof for their chickens' shelters. In one of the religious gathering, the researcher observed that some (estimated 4 out of 300) women used ITNs as outdoor sitting mats.

V. Discussion

Insecticide Treated Nets form the first line defense against malaria infection. The Zambian Government in collaboration with other Co-operating partners, have prioritized malaria elimination using various strategies for which supply of ITNs at no cost is the top most agenda for Pregnant Women and Children under five years of age. Consistent supply of ITNs has been reported and receipt acknowledged by communities. However, data from the 2018 Zambia Demographic Health Survey (ZDHS) revealed that 43.6% did not have an ITN for use because they did not have. The objective of this study was to find

out whether communities in Chipata, Sinda AND Luangwa Districts have been receiving ITNs and if so how do they use them. This study found that a large proportion of people in Chipata, Sinda and Luangwa Districts used ITNs for Malaria prevention. On a very small scale however, a few deviants have been reported and observed abusing ITNs as fishing nets, garden fences, door and window curtains and as roofing material for poultry houses. Similar findings have been observed in a study conducted in Ethiopia by Baume, Reithinger and Woldehanna (2009) in which ITNs in some communities were being used as ceiling covers, bed covers, room dividers, curtains, door curtains, or tablecloths and as mats for drying grain (Baume, Reithinger & Woldehanna 2009: 8). This study found that in urban, peri-urban areas people were likely to use ITNs for the intended purpose while poorer communities were likely to misuse ITNs presumably because of their low levels of education to appreciate the function of ITNs fully. Berthe and colleagues, in their study conducted in Malawi found that poor fishing communities with low education levels were likely to misuse ITNs than affluent communities (Berthe et al. 2019).

VI. Conclusion

Insecticide Treated Nets play a key role in preventing vector-borne Malaria infection. While everyone can suffer from Malaria, Pregnant Women and children under the age of 5 years are more vulnerable and the consequence of malaria in these special groups is usually fatal, Insecticide Treated Nets are important for them. Regular supply of ITNs in communities is heavily acknowledge but data from the Zambia Demographic survey of 2018 showed that 43.6% not having an ITN. This study sought to explore how often communities were supplied with ITNs and how they used them. The study found that over 99.9% used ITNs for malaria prevention, the remaining 0.1% misused ITNs for fencing gardens, as a mopping or shining cloth for floors, as a scrubbing cloth for washing cars, as curtains and door mats.

VII. Recommendations

This study recommends aggressive sensitization especially in poorer communities where much of the misuse is observed. A Task Force at community level involving Community Health Volunteers, Village Head men/ section chairperson should be formed to track down those found misusing ITNs.

References

- [1]. Baume, C.A., Reithinger, R. & Woldehanna, S.(2009). Factors associated with use and non-use of mosquito nets owned in Oromia and Amhara Regional States, Ethiopia. *Malar J* **8**, 264 (2009). <https://doi.org/10.1186/1475-2875-8-264>
- [2]. Berthe, S., Harvey, A.S., Lynch, M., Koenker, H., Jumbe, V., Kaunda-Nkhangamwa, B., Mathunga, P.D.(2019). Poverty and Food Security: drivers of insecticide-treated mosquito net misuse in Malawi. *Malaria Journal* <http://doi.org/10.1186/s12936-019-2952-2>
- [3]. Eisele TP, Thwing J, Keating J (2011) Claims about the Misuse of Insecticide-Treated Mosquito Nets: Are These Evidence-Based? *PLoS Med* **8**(4): e1001019. doi:10.1371/journal.pmed.1001019
- [4]. Karikó, S. (2020). Conformist Mass Society or Non-Conformist Rebellion? What education can do to resolve the conformity *International Dialogues on Education*, 2020, Volume 7, Number 2, pp. 09-23 ISSN 2198-5944
- [5]. Merton, K.R.(1938). Social structure and Anomie. *American Sociological Review* vol 3 (5) Oct, 1938 pp672-682
- [6]. Mwangi, L.M., Mapuroma, R. & Ibisomi, L.(2022). Factors associated with non-use of insecticide-treated bed nets among pregnant women in Zambia. *Malar J* **21**, 290 (2022). <https://doi.org/10.1186/s12936-022-04313-4>
- [7]. Nawa M, Hangoma P, Morse AP, Michelo C.(2019). Investigating the upsurge of malaria prevalence in Zambia between 2010 and 2015: a decomposition of determinants. *Malar J*. 2019;18:61.
- [8]. USAID (n.d). The Journey of 7 Million Bed Nets <https://www.usaid.gov/zambia/news/journey-7-million-bed-nets>
- [9]. World Health Organization (2021) in Miller, J.E., Malm, K., Serge, A.A. et al (2022).. Multi-country review of ITN routine distribution data: are ANC and EPI channels achieving their potential?. *Malar J* **21**, 366 (2022). <https://doi.org/10.1186/s12936-022-04373-6>
- [10]. *World Health Organization* (2009). Global Malaria Program - INSECTICIDE-TREATED MOSQUITO NETS: a WHO Position Statement, Geneva <https://files.givewell.org/files/DWDA%202009/Interventions/Nets/itnspaperfinal.pdf> retrieved on the 9th January, 2024