Malaria Behavior Survey

Tanzania Mainland 2021

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Table of Contents

Acknowledgements	i
Table of Contents	ii
List of Tables	iv
List of Figures	iv
Acronyms	vi
Preface	vii
Executive Summary	8
Introduction	13
Malaria in Mainland Tanzania	13
Malaria Interventions in Mainland Tanzania	13
Rationale for MBS in Mainland Tanzania	14
Goals and Objectives of the Mainland Tanzania MBS	15
Conceptual Model	15
Glossary of Terms Used in the MBS	16
Methodology	17
Survey Design	17
Sampling	17
Data Collection and Analysis	20
Research Ethics	22
Results	23
Sample Description	23
Household Characteristics	23
Household Ownership of Selected Assets	23
Population Characteristics	23
Supplemental Information	26
Cross-Cutting Ideational Determinants	27
Supplemental Information	29
Malaria Case Management for Children Under Five Years Old	31
Ideational Variables Linked with Care-Seeking	31
Relevant Behaviors and Outcomes	32
Advanced Analysis	33
Supplemental Information	37
Malaria in Pregnancy	39
Ideational Variables Linked with Antenatal Care Attendance and IPTp Use	39
Antenatal Care Attendance and Intention to Seek ANC	40
IPTp Receipt and Intention to Use IPTp	41
Advanced Analysis	42

Supplemental Information	45
Mosquito Net/Insecticide-Treated Net Use	46
Ideational Variables Linked with Net Use	46
ITN Access and Use	47
Use of Available Nets	48
Consistent Net Use by Respondents	48
Net Characteristics	48
Net Care and Repurposing	49
Advanced Analysis	49
Supplemental Information	56
Indoor Residual Spraying	59
Ideational Variables Linked with Acceptance of IRS	59
IRS Awareness	59
IRS Attitudes, Response-Efficacy, and Perceived Self-Efficacy	60
Acceptance of IRS in the Past and Willingness to Accept IRS in the Future	61
Supplemental Information	64
Media Consumption and Message Exposure	65
Media Consumption	65
Message Recall	66
Supplemental Information	68
Conclusions and Recommendations	69
Core Strategic Approach 1: Integrated Malaria Vector Control	70
Core Strategic Approach 2: Malaria Diagnosis, Treatment, and Preventive Therapies	75
Supporting Strategy: SBC and Advocacy	84
Media Access and Consumption for SBC Programming	85
SBC for ITN Use	85
SBC for IRS programs	85
SBC for care-seeking for child with fever	85
SBC for malaria in pregnancy	86
Implications for Future Research	86
Conclusions	87
References	88
Annex A: Data Tables	90
A.1 Sample Characteristics	91
A.2 Cross-Cutting Ideational Determinants	95
A.3 Malaria Case Management	
A.4 Malaria in Pregnancy	124
A.5 Insecticide-Treated Net Use	143
A.6 Indoor Residual Spraying	163
A.7 Media Consumption and Message Exposure	172

List of Tables

Table 1. Sociodemographic and Structural Characteristics of Respondents, by Zone	25
Table 2. Summary of Cross-Cutting Ideational Determinants	28
Table 3. Summary of Ideational Variables Related to Malaria Case Management	34
Table 4. Logistic Regression Exploring Factors Associated with Prompt and Appropriate Care-Seeking for	
Fever in Children under Five Years in the Past Two Weeks	35
Table 5. Summary of Ideational Variables Related to Malaria in Pregnancy	43
Table 6. Summary of Ideational Variables Related to Net Use	52
Table 7. Logistic Regression Exploring Factors Associated with Consistent Net Use	53
Table 8. Logistic Regression Exploring Factors Associated with Engaging in Net Care Behavior	54
Table 9. Summary of Ideational Variables: Indoor Residual Spraying (IRS)	63
Table 10. Summary of Variables Related to Media Consumption	67

List of Figures

Figure 1. Ideation Model of Strategic Communication and Behavior Change	. 16
Figure 2. Proportion of Sampled Households, by Zone and Region	. 19
Figure 3. Study Sample	. 23
Figure 4. Urban versus Rural Participants, by Zone	. 24
Figure 5. Respondent Education and Wealth Quintile Distributions, by Zone, Tanzania 2021 (N=4,468)	. 25
Figure 6. Malaria-Related Ideational Factors at a Glance	. 27
Figure 7. Malaria Care-Seeking and Treatment: Ideational Factors at a Glance	.31
Figure 8. Percentage of Respondents with Specific Knowledge of Malaria Care-Seeking and Treatment,	
According to Background Characteristics, Mainland Tanzania	. 32
Figure 9. Care among Caregivers with a Child with Fever (n=197)	. 33
Figure 10. Significant Determinants of Prompt and Appropriate Care-Seeking for Children Under Five	. 35
Figure 11. Malaria in Pregnancy Related Ideational Factors at a Glance	. 39
Figure 12. Malaria in Pregnancy Behaviors and Intentions	.41
Figure 13. Significant Factors Associated with Intention for early ANC	. 42
Figure 14. Net Use: Ideational Factors at a Glance	. 46
Figure 15. Net Use	. 48
Figure 16. Significant Determinants of Consistent Net Use	. 50
Figure 17. Significant Determinants of Engaging in Net Care Behavior	.51
Figure 18. Percentage of Respondents with Awareness of IRS Program (n=4,468)	. 59
Figure 19. Respondents with Favorable Attitudes toward IRS (^n802)	. 60
Figure 20. Respondents Who Perceived IRS as Effective (^n=802)	.61
Figure 21. Respondents Who Perceived Self-Efficacy for IRS behaviors (^n=802)	.61
Figure 22. Prior and Intended Acceptance of IRS	. 62

Figure 23. Media Access and Consumption at a Glance	65
Figure 24. Respondents Who Listen to the Radio at Least Once per Week (n=4,468)	65
Figure 25. Respondents Who Watch TV at Least Once per Week (n=4,468)	66
Figure 26. Respondents Who Own a Mobile Phone (n=4,468)	66
Figure 27. Exposure to Malaria Messaging in Six Months Prior to Survey Net Use	67
Figure 28. Care-Seeking Behavior for a Child with a Fever	78

Acronyms

- ACT Artemisinin-based combination therapies
- ANC Antenatal care
- AOR Adjusted odds ratio
- CCP Johns Hopkins Center for Communication Programs
- CHW Community health worker
- DHS Demographic and health survey
- EA Enumeration area
- IPTp Intermittent preventive treatment of malaria in pregnancy
- IRS Indoor residual spraying
- ITN Insecticide-treated net
- MBS Malaria Behavior Survey
- MIS Malaria Indicator Survey
- MOH Ministry of Health
- NMCP National Malaria Control Program
- PMI U.S. President's Malaria Initiative
- SBC Social and behavior change
- SP Sulfadoxine pyrimethamine
- TDHS Tanzania Demographic and Health Survey
- USAID United States Agency for International Development
- WHO World Health Organization

Preface

To be added

Executive Summary

The National Malaria Control Programme (NMCP) continues to strategize effective malaria control interventions in Mainland Tanzania, where malaria remains a major public health concern. NMCP's integrated malaria interventions and strategies have been supported by multiple implementing partners, including the U.S. President's Malaria Initiative (PMI). Along with systemic interventions, malaria control depends in part on human behavior. Understanding populations' malaria-related knowledge, attitudes, and practices are key in informing social and behavior change (SBC) programs to influence human behavior towards prevention and control of malaria. The goal of the Malaria Behavior Survey (MBS) is to provide a better understanding of the sociodemographic and ideational characteristics associated with malaria-related behavioral outcomes in Mainland Tanzania, and to inform SBC strategies and activities designed to improve these outcomes.

The MBS was implemented in four zones representing Mainland Tanzania nationally—Lake, Coastal, Southern Highlands, and Central Highlands. The surveys gathered data from 3,105 households and 4,468 individuals (3,362 women aged 15–49 and 1,106 men aged 18–59). The most salient and key findings are presented in this Executive Summary and are reported by zone only if statistically significant at the p=0.05 level or below. More detailed results and significance testing can be found in the body of this report.

Household Characteristics

- On average, households in Mainland Tanzania included about five residents and two sleeping rooms.
- About 58% of households had electricity; 69% of households were near a public health facility while 36% were near a private health facility and 50% were near a pharmacy.¹
- While 52% of all respondents lived in rural areas, urban or rural residency differed significantly by zone (from 34% rural in the Central Highlands to 65% rural in the Lake Zone).
- Sixty percent of all households owned a radio; 36% had a television; 87% owned a simple mobile phone; 24% had a smartphone; 52% owned land; and 42% owned livestock.

Population Characteristics

- Slightly more household members in Mainland Tanzania were female (54%) or aged 18 or older (51%).
- Most respondents were married or living with someone as married (81%), and most had attended primary school (68%).

¹ "Near" is defined as located five kilometers or less (thirty minutes or less on foot, or ten minutes or less by car).

• About 15% of Central Highlands residents, but nearly 28% of Lake residents, were in the lowest wealth quintile, while 30% of respondents in the Coastal Zone were in the top quintile compared to 12% in the Southern Highlands.

Cross-Cutting Ideational Factors

- Most respondents had correct information about malaria (74%), which was positively associated with educational attainment. About 72% believed they were susceptible to malaria.
- Perceptions of health care workers were highly favorable. Nearly 92% of respondents had favorable perceptions of facility-based health providers, and 80% reported positive attitudes about community-based health workers.
- Only 30% of respondents believed that the consequences of malaria were severe.
- Few (21%) discussed malaria with their spouse or partner or with family and friends in the six months prior to the survey.
- Nearly all participants (96%) perceived boy and girl children as having equal priority for net use and malaria treatment, indicating equitable gender norms related to malaria prevention and care.
- Most cross-cutting ideational factors were found to be statistically different by zone, education, urban/rural residence, and wealth quintile.

Case Management for Fever in Children under Five Years

- Less than half of respondents (45%) believed that malaria treatment is efficacious, and 66% had comprehensive knowledge specifically related to care-seeking and treatment.
- About 85% of respondents believed in the response-efficacy of malaria testing.
- Sixty-two percent of respondents believed that most people in their community sought prompt care for their child's fever; 79% reported being involved in their child's fever care-seeking decision; and 95% reported high self-efficacy in seeking malaria testing and treatment.
- Only 13% of caregivers had reported a child under five with a fever in the two weeks before the survey, 85% of whom sought some level of care for that fever.
 - Among those who had sought care, 91% did so within the recommended period (the same or next day following the onset of fever), with statistically significant differences by zone, urban/rural residence, and wealth quintile.
 - Slightly more than half (56%) of caregivers with a feverish child reported seeking care *first* from a health facility/clinic, health provider, or CHW.

Malaria in Pregnancy

 Only 6% of respondents correctly answered all three knowledge questions around the Intermittent preventive treatment in pregnancy (IPTp)—when a pregnant woman should first seek antenatal care (ANC), the number of recommended ANC visits, and the number of doses of the prophylactic malaria drug sulfadoxine pyrimethamine SP) a pregnant woman should receive.

- About 74% of respondents saw malaria in pregnancy as a severe illness.
- Regarding descriptive community norms, 59% of respondents estimated that most pregnant women in their community made at least eight ANC visits and about 67% believed that most pregnant women took SP.
- Regarding injunctive community norms, 76% of respondents thought that most people in their community would approve of pregnant women taking SP to prevent getting sick from malaria.
- Favorable perceptions of health providers who offer malaria in pregnancy care was reported by 69% of the respondents.
- Only 10% of women with a live birth in the previous two years reported attending at least eight ANC visits—the number of visits recommended in Tanzania. About 78% of women reported at least four ANC visits.
 - Those in the lowest wealth quintiles and those from rural areas were least likely to report having at least eight ANC visits.
- Around 78% of female respondents reported receiving SP from an ANC visit, with women who reported four or more ANC visits significantly more likely to report receiving three or more doses of SP than their counterparts with one to three ANC visits.
 - Only 41% of rural women reported three or more SP doses during their last pregnancy compared to 54% of their urban counterparts. Respondents from the Lake Zone (42%) were least likely to receive three or more doses than women in other zones.
- About 75% of women reported that they were accompanied by their partner/spouse for at least one ANC visit.
- Only 34% of women who intended to get pregnant in the future reported their intention to seek ANC at least eight times in a future pregnancy, which is the recommended number of ANC visits in Tanzania.
- In logistic regression analysis, rural residence, secondary or higher education, higher wealth quintiles, favorable attitudes toward IPTp, equitable gender norms around ANC, favorable perceptions of health care providers, and discussing ANC attendance with a spouse/partner were associated with higher odds of intending to seek early ANC in a future pregnancy.

Mosquito Net Use

- About 76% of surveyed households had at least one mosquito net (including untreated nets), and 55% of households had at least one insecticide-treated net (ITN).
- About 73% of survey respondents reported they use a mosquito net consistently (every night of the week). However, only 53% of respondents believed that most people in their community use a mosquito net every night (descriptive community norm).
- The most important ideational factors associated with consistent net use in logistic regression included perceived self-efficacy to use nets, favorable attitudes toward net use, and supportive descriptive community norms.
- Location of residence was associated with consistent net use: the odds ratios for consistent net use were lowest among residents of Central Highlands and among rural residents.

- Most nets (84%) had been washed at least once, and were washed primarily with detergent (70%) instead of the recommended bar soap (28%). After washing, 93% of nets were reportedly dried out in the sun, instead of in the shade as recommended.
- About 82% of the respondents reported that they engaged in net care behaviors, including rolling or tying up nets when not in use (33%), keeping nets away from children (22%), and handling nets with care (18%).
- Factors associated with higher odds of engaging in net care behavior (i.e., respondents reporting rolling or tying up of nets when not in use) included holding favorable attitudes toward net care (six times higher odds) and favorable attitudes toward net use (four times higher odds).

Indoor Residual Spraying (IRS)

- Only 18% of respondents reported awareness of an indoor residual spraying (IRS) program in their community.
- Among respondents who knew about IRS, 77% had favorable attitudes toward it.
- About 79% of all respondents stated that they would accept IRS if offered, but only 26% believed in the effectiveness of IRS, and 29% believed in their own self-efficacy for IRS related behaviors (such as preparing the home).

Media Consumption

- Most respondents (78%) owned a mobile phone and/or tablet.
- About 61% of respondents listened to the radio at least once a week and about 42% watched TV at least once a week.
- Thirty-seven percent of respondents reported seeing or hearing a malaria message in the six months previous to the survey; those who recalled malaria messages reported radio (56%), health clinics (50%), TV (30%), friends and family (12%), and billboards (10%) as the sources of those malaria messages.

Recommendations

Tanzania NMCP Strategy 1: Integrated Malaria Vector Control

- Improve ITN access: About 25% of households reported that they had no nets (ITNs or untreated) and 45% of households owned no ITNs.
 - In addition, only 52% of households reported having at least one net for every two persons in the household; ensuring there are enough nets for the entire household will be important for people to use nets consistently.
- Increase net use behavior by leveraging factors that were significant in the logistic regression analysis for consistent net use: attitudes toward net use, perceived susceptibility to malaria, communication with others about malaria, community norms about net use, and self-efficacy to use nets.

- High willingness to participate in IRS programs reflects a solid foundation for achieving higher coverage of these programs if the NMCP should decide to do so.
- For community-based programs around IRS, building trust while increasing knowledge and awareness of the benefits of IRS, as well as demystifying myths can fuel support for those programs.

Tanzania NMCP Strategy 2: Malaria Diagnosis, Treatment, and Preventive Therapies

Care-Seeking for Children Under Five Years

- With only 43% reporting prompt (same day or next) and appropriate (health facility/provider) treatment, those who live close to a health facility (public or private) were significantly more likely to engage in care-seeking behavior than those with no health facility near them. Efforts to improve care-seeking behavior should account for how access influences the behavior adoption or maintenance.
- Respondents expressed uncertainty about health facilities and providers having medications in stock for treating malaria. To promote adoption and maintenance of care-seeking behaviors, the perceived (and actual) availability of malaria care commodities is important. Better understanding of how widespread stockout issues are on the Mainland may be helpful and efforts to ensure stock can be coupled with SBC to build community trust that health facilities are prepared.
- Belief that malaria treatment is effective is low among survey respondents at 45%. Interventions
 geared at improving health provider counseling of clients and general awareness around malaria
 testing and treatment among communities should focus on increasing trust in the effectiveness
 of malaria treatment.

Malaria in Pregnancy

- Women from the Lake Zone and from rural areas were least likely to report making four or more ANC visits (and receiving three or more SP doses). This finding aligns with the health facility access data that show where households in the Lake Zone and rural areas report the lowest proportion of access to a nearby health facility.
- Increasing the number of ANC visits allows pregnant women greater opportunity to receive three or more doses of SP and is supported by findings that the highest proportion of pregnant women reporting receipt of three or more SP doses was among those who had four or more ANC visits. Improving access and incorporating community-based healthcare for malaria in pregnancy may improve the number of times pregnant women make ANC visits.

Introduction

Malaria in Mainland Tanzania

Tanzania is an East African country bordered to the east by the Indian Ocean with Kenya and Uganda to the north, Rwanda, Burundi, and the Democratic Republic of the Congo to the west, Zambia and Malawi to the southwest, and Mozambique to the south. According to the most recent census (2012), the population of Mainland Tanzania was an estimated 43,625,354, with 63% of the population under twenty-five years and 15% under five years of age.¹ Projections for 2020 estimate the population at 56 million people, with an average life expectancy of 66 years and women of childbearing age making up 48% of the population.¹ Data from the 2015/2016 Tanzania Demographic and Health Survey (DHS) estimate a total fertility rate of 5.2 births per woman, under five mortality rates of 67 deaths per 1,000 live births, and maternal mortality at 5.56 deaths per 1,000 live births. Furthermore, adult literacy rates were estimated at 77% for females and 83% for males.²

Malaria is a major public health concern across Mainland Tanzania, with 6,001,518 presumed cases in 2020 and 93% of the mainland population living in areas where malaria transmission is active at least one month of the year.^{3,4} In Mainland Tanzania, malaria transmission intensity varies from very low to high transmission. Incidence typically peaks during rainy season, from March to May, with some parts of the country experiencing an additional rainy season in November to December.⁵ This variance contributes to disparities in the malaria burden across the country.⁶

Despite substantial declines in transmission rates and an increase in diagnosis and prevention methods such as ITNs, Tanzanians remain at risk for malaria transmission.^{7,8} In 2017, Tanzania had the fifth highest number of estimated malaria deaths globally.⁹ Furthermore, approximately 4.8% of all deaths in Tanzania in 2019 were due to malaria.¹⁰ Pregnant women and children under five years old are especially at risk, and account for an estimated 60,000 to 80,000 malaria-related deaths per year.¹¹ Transmission among these vulnerable populations is also heterogenous. In 2017, prevalence among children under five ranged from less than 5% in highland regions to 25% in western regions surrounding Lake Victoria.¹² Common effects of pregnancy-associated malaria include low birth weight, fetal anemia, and preterm delivery, each of which has prolonged effects on morbidity and mortality as well as child development.^{13–16} Malaria may also affect child nutritional status, which can weaken their immunity to infectious diseases.¹⁷ About 2.7 million cases among children under five were reported in 2016.¹²

Malaria Interventions in Mainland Tanzania

In 2005, Tanzania was selected to be one of the first three focus countries of the U.S. President's Malaria Initiative (PMI). On Mainland Tanzania, this initiative operates in conjunction with the NMCP. The Government of Tanzania operates a decentralized health system on the mainland and the Ministry of Health, Community Development, Gender, Elderly and Children establishes the policy framework for all health interventions implemented at the regional level. The NMCP is organized into five strategic components: (1) malaria diagnosis, treatment, preventive therapies, and vaccines; (2) integrated vector control; (3) promotion of malaria prevention and curative services through information, education, and communication; (4) surveillance, monitoring, and evaluation; and (5) program management, partnership development, and resource mobilization. The goal of the NMCP is to reduce the average country malaria prevalence from 7% in 2017 to less than 3.5% in 2025. Further, each epidemiologic strata has targets that include reducing the malaria burden in the moderate to high-risk from 15% to less than 7.5% and to maintain and further reduce transmission in low and very low prevalence areas from 1% to less than 0.5%.¹⁸

With the scale-up of prevention and treatment interventions, nearly all indicators have improved since 2005. Sleeping under ITNs has been associated with reductions in malaria incidence. In Tanzania, ITN access has fluctuated since the start of the millennium. The 2004–2005 Tanzania Demographic and Health Survey (TDHS) estimated that 16% of the household population had access to ITNs. This figure increased to 75% in 2011–2012, dropped to 56% in 2015–2016, and then rose to 63% in the 2017 Tanzania Malaria Indicator Survey (TMIS). Current estimates of ITN coverage for children under five is 54.6%, although this figure varies across regions. Furthermore, advice or treatment was sought from a health provider, a health facility, or a pharmacy for 75% of children with a fever in the two weeks before the TMIS. To prevent malaria during pregnancy, IPTp is given to pregnant women at routine ANC visits. In 2017 in Tanzania, 56% of pregnant women received at least two doses of SP/Fansidar (IPTp2+); and 26% received at least three doses (IPTp2+).¹⁹

Rationale for MBS in Mainland Tanzania

Research increasingly demonstrates the effective role of social and behavior change communication programs in increasing the prevalence of positive health behaviors related to malaria prevention and treatment. Program messages must target specific malaria-related ideational variables (e.g., knowledge, attitudes, intention, self-efficacy, and social norms) related to malaria-related behaviors, such as prompt care-seeking and consistent ITN use to effectively improve them. Representative data on the prevalence of relevant behavioral indicators in Tanzania may be outdated, however, as data are currently mostly sourced from the 2015 Tanzania Demographic and Health Survey and the 2017 MIS.

The primary focus of this study is on such ideational, or *intermediate*, variables associated with malariarelated behaviors of interest. This study produced data focused on ideational antecedents that are not included in large national surveys. Such data can be used to (1) estimate the prevalence of both behaviors and their ideational antecedents and (2) estimate the independent and combined effects of ideational characteristics on behavioral outcomes. This survey also incorporates several *structural* variables (e.g., educational attainment, access to bed nets, and wealth index) to measure key social determinants of health. These analyses will help malaria programs and policymakers create and prioritize audience segments and social and behavior change communication messaging while also accounting for structural factors that may inhibit or enable individuals' ability to act.

Goals and Objectives of the Mainland Tanzania MBS

The goal of this study is two-fold: to provide a better understanding of the sociodemographic and ideational characteristics associated with malaria-related behavioral outcomes in Mainland Tanzania and to determine the appropriate focus of programmatic activities designed to improve malaria-related ideational and behavioral outcomes. The specific objectives of the study are to understand the facilitating and inhibiting factors related to the behaviors of:

- 1. Bed net use and care
- 2. Uptake of IPTp in pregnancy
- 3. Prompt and appropriate care-seeking for fevers in children under five
- 4. Acceptance of IRS

The MBS provides direction for future programs intended to promote appropriate malaria prevention and treatment behaviors in Mainland Tanzania.

Conceptual Model

The conceptual framework underlying the MBS is the ideation model for strategic communication and behavior change. This model of behavior change focuses on the multiple, inter-related psychosocial variables that commonly influence individual behavior. As shown in Figure 1, the ideation model recognizes most behavioral decisions as driven by multiple (often simultaneous) psychosocial factors. The model has three components, each comprising several variables: (1) cognitive elements such as attitudes, beliefs, values, perceived risk, subjective norms, and self-image; (2) emotional elements such as response, empathy, and self-efficacy; and (3) social elements such as support, influence, spousal communication, and personal advocacy. The component variables function like risk factors for disease but in a positive way: the more ideational variables that apply to a person, the more likely that individual is to adopt the behavior. Ideational variables are also influenced by communication, (e.g., social interaction, mass media, or interpersonal) and work both individually and synergistically to influence health outcomes. Research has demonstrated a relationship between ideation and malaria behavior, including ITN use, intermittent presumptive treatment of malaria in pregnancy, and careseeking for children under five.

The model also includes environmental constraints, which are often under-emphasized in social and behavior change communication programming. The authors of this report recognize the central importance of social determinants of health, such as social class, income, race, ethnicity, education, occupation, gender, and access to health care, according to the World Health Organization (WHO).¹²

Figure 1.





Glossary of Terms Used in the MBS

- **Perceived susceptibility** is the belief that one is likely to be affected by malaria.
- **Perceived severity** is the perception that the consequences of malaria are severe.
- **Perceived response-efficacy** is the belief that recommended actions (e.g., prompt careseeking, use and care of ITNs, acceptance of IRS, uptake of IPTp) will help a person avoid or minimize the threat of malaria.
- **Perceived self-efficacy** is a belief in an individual's ability to take actions related to reducing malaria.
- **Descriptive norms** are the perceptions of what other people do, and **injunctive norms** are the perceptions of what is approved or disapproved of by others.
- Interpersonal communication about malaria is the discussion with others about malaria topics (e.g., prevention, care-seeking, and treatment).
- Decision-making autonomy is a person's active involvement in decisions related to malaria.

Methodology

This section describes methodological elements of the study, including the design, sampling, data collection, data analysis, and research ethics.

Survey Design

This study used a cross-sectional design with a randomly selected sample of women and men interviewed at one point in time using a structured questionnaire. Based on maps provided by the National Bureau of Statistics, respondents were selected through a multi-stage random process that yielding a representative sample for each survey zone (group of administrative regions). The primary geo-political subdivision in Mainland Tanzania is the region. The mainland is divided into 26 regions (not including five autonomous regions constituting Zanzibar). Regions are further divided into districts. For the sample size determination for this study, NMCP recommended the grouping regions into the following four survey zones:

- Lake: Geita, Kagera, Kigoma, Mara, Mwanza, Shinyanga, Simiyu, Tabora
- Southern Highlands: Iringa, Morogoro, Njombe, Rukwa, Ruvuma, Mbeya, Songwe districts
- Central Highlands: Arusha, Dodoma, Katavi, Kilimanjaro, Manyara, Singida
- Coastal: Dar es Salaam, Lindi, Mtwara, Pwani, Tanga

Each zone was divided into strata comprising urban or rural clusters (EAs). EAs were selected from within each survey stratum with probability proportional to size.

Sampling

Sample Size and Justification

To determine the required sample size for this survey, we estimated the sample size needed to measure each of the relevant malaria-related outcomes including caregivers' bed net use, incidence of fever among under-five children, and prevalence of positive attitudes toward consistent use of bed nets. The following formula is applied to estimate the required sample size:

$$n = d * \frac{z_{1-\frac{\alpha}{2}}^{2} * p(1-p)}{\delta^{2} * R_{h} * R_{i}}$$

where *n* is the required sample of individuals (e.g., women, heads of household); *Z* is the Z value corresponding to the desired confidence level (e.g., in the analyses, we assume Z-1.96, corresponding to a 95% confidence level); *d* is the design effect due to departure from simple random sampling (we assume this to be 1.6 based on secondary analysis of the 2017 MIS Final Report); *p* is the estimated (expected) outcome indicator, such as the proportion of women of reproductive age that slept under a

net the night before the survey or proportion of children under age five that had fever in the last two weeks; δ is the desired margin of error (our sample sizes use $\delta = 5\%$); \mathbf{R}_{h} is the response rate for households (we assume 90% for this parameter); and \mathbf{R}_{i} is the response rate for women in selected households (we assume 95% for this parameter).

This formula yielded a sample size of 3,276 **households** (rounded to 3,300), 3,391 (rounded to 3,410) **female respondents**, and 1,115 (rounded to 1,120) **male respondents**. The study collected data from every eligible woman in the household to ensure that the data captured some pregnant women as well as some caregivers of children under the age of five. The study collected data from one man (the spouse/partner of one of the interviewed women) in every third household that was sampled. This constitutes a **total expected sample of 4,530 respondents**. This sample size considers the potential non-response at the household and individual levels and provides a representative sample at the zonal level, allowing for valid estimation of key malaria behavioral and ideational indicators.

Participant Inclusion and Exclusion Criteria

The inclusion criteria for participant selection were as follows:

- Aged 15 to 49 years for women and 18 to 59 years for men
- Usual resident of the selected household
- Ability to communicate in Swahili or English

Participants were excluded if they had at least one of the following characteristics:

- Inability to consent to participate in the study
- Inability to understand the questions or respond intelligibly
- Ill at the time of data collection
- Refused to complete or provide information on COVID-19 precaution checks, such as illness history and potential exposure

Selection of clusters

The study team obtained a comprehensive list and sketch maps of clusters (enumeration areas; EAs) for selected study EAs obtained from the National Bureau of Statistics. Each of the four geographic zones (described above) was divided into two strata: urban and rural. From each stratum, a number of EAs was selected using probability proportionate to size. A total of 45-50 clusters or EAs (925/20) were selected for inclusion in the study. In each selected EA, the study first obtained the approval of community leaders and updated the sketch map with the help of these leaders. The distribution of the sample is shown in **Figure 2**.

Figure 2. Proportion of Sampled Households, by Zone and Region



Selection of households

The study team conducted a census of the households in the selected EAs using a household listing form. For the purpose of this survey, a household was defined as a group of people who regularly reside in the same dwelling units and share meals. Eligible households were those with a woman of reproductive age (15–49). Once household listing was complete, the study team randomly selected 20 households from the list of eligible households in the cluster, interviewing every 'nth' household based on the number of households in the cluster and beginning with a computer-generated random number to begin the selection. A replacement list of six households was included in the event that some households refused to participate in the survey or remained unavailable despite attempts to reach them.

Selection of individuals

For the household questionnaire, the interviewers identified a resident adult man or woman aged 18 or older who was knowledgeable about the household, obtained written informed consent and then administered the household questionnaire. For the individual questionnaire with women, all women ages 15–49 were selected for interviews. In every third household, the husband/partner of a woman

was selected for an interview. In cases where there was more than one woman in-union, the interviewer randomly selected one husband/partner. If the woman was 15–17 years of age, was not married and did not have children, parental permission and minor assent were obtained.

Final Sample Obtained

While we set a target to collect information from 3,300 households per the sample size calculation above, the minimum necessary sample was 2,900 households. The research team was able to conduct 3,105 household interviews largely due to the absence of people available for interviews when approached. **The final survey sample comprised 3,105 households, 1,106 men and 3,362 women for a total of 4,468** *respondents* and **7,573** *questionnaires.* These numbers were well within the necessary range given that the sample calculation assumed a 10% refusal rate at the household level and 5% at the individual level. Among households with eligible respondents available when the field team was in their community, less than 1% refused to participate.

Data Collection and Analysis

Data Collection Tools

The household questionnaire explored household characteristics such as asset ownership and a roster of all bed nets in use. Both women's and men's questionnaires included modules assessing net use, care, and disposal; perceptions of health services; and ideational factors including knowledge, perceived severity, perceived vulnerability, perceived efficacy of prescribed responses, attitudes, perceived self-efficacy, norms, social interactions and influence, and emotional response related to malaria behaviors. Both questionnaires also explored recall of or participation in malaria-related communication interventions. Of note, women's questionnaires also explored antenatal care (ANC) and receipt of IPTp among women who had a live birth within the past two years, as well as care-seeking and receipt of appropriate treatment for children who had a fever in the past two weeks.

Data Collection

Breakthrough ACTION hired a Tanzanian research firm, DAMAX Solutions, to implement data collection in the study sites. DAMAX created digital versions of the questionnaires using CSPro and loaded them on Android tablets. DAMAX and Breakthrough ACTION staff co-facilitated a two-day training for household listing procedures. The team next co-facilitated a four-day training for data collectors and team leaders followed by one day of pretesting the data collection instruments and procedures in selected nonsurvey EAs. Four teams of data collectors conducted the fieldwork in June-July 2021. During this time, Breakthrough ACTION as well as NMCP staff and the President's Office, Regional Administration, and Local Government staff visited teams in the field to monitor their progress and provide needed support.

Throughout data collection, appropriate COVID-19 prevention protocols were instituted in adherence with the Tanzania Ministry of Health guidelines, as follows:

- Daily temperature and COVID-19 symptom screening were conducted for all study staff during training and data collection.
- All respondents wore a face mask during data collection.
- All respondents were verbally screened for COVID-19 symptoms.
- Regular hand sanitizer use and physical distancing of at least two meters were ensured.

Data Analysis Procedures

Structural factors assessed in the analyses included gender, educational attainment, wealth index, access to health facilities, and urban/rural residence. Ideational factors explored included respondents' malaria knowledge, attitudes, threat perceptions (i.e., severity and susceptibility), response-efficacy and self-efficacy, community or gender norms, service delivery (community and facility-based workers as well as health facilities in general), and interpersonal communication regarding malaria.

Complete knowledge was defined as having correct responses to all relevant knowledge questions. For questions assessing attitudes or perceptions, variables were recoded as +1 for a positive perception, -1 for a lack of positive attitude, and 0 for "don't know" responses. Scores were then summed to obtain an index of perceptions and attitudes. Respondents with a score greater than the mid-score were considered to have favorable perceptions or attitudes. Interpersonal communication was coded as "yes" if the respondent engaged in discussions related to malaria with a spouse/partner or family/friends.

Key behavioral outcomes were defined as follows:

- Use of available nets the previous night by household members
- Consistent use of a net every night of the week
- Care of nets by tying or folding them up when not in use and employing appropriate washing methods
- Attendance at ANC among women who were pregnant in the past 2 years
- Uptake of IPTp among women who were pregnant in the past 2 years
- Intention to attend ANC early among women who plan a future pregnancy
- Intention to take IPTp among women who plan a future pregnancy
- Prompt and appropriate care-seeking for children who had a fever in the past 2 weeks, defined as seeking treatment the same day or day following the onset of fever at a health facility or from a CHW
- Acceptance of IRS

Cross-tabulations and multivariable regression analyses were used to examine relationships between structural factors, ideational factors, and outcomes of interest. Please note we use the term "structural factors" rather than sociodemographic characteristics because epidemiological analyses typically transmute relational and structural factors (e.g., social class, wealth, education, access to resources, and gender) into individual-level factors (referred to as background or sociodemographic characteristics), which places the onus on the individual rather than on the policies and systems that determine who has access to what and under what circumstances. Social and behavior change communication programming

must address the structures that create disadvantages for some and privileges for others. An initial step is to properly name these factors.

Descriptive statistics were analyzed to examine structural, ideational, and behavioral covariates. Bivariate associations between the primary outcomes of interest and key explanatory variables of interest were first examined using simple logistic regressions and were included in multivariate models only when found to be significantly associated (p<0.2) with the outcome at the bivariate (unadjusted) level, which is in keeping with the one in ten rule of statistics.^{20,21} Multivariate regression models were then conducted, and variables of significance (p<=0.05) are noted in this report. Such multivariate regression models are useful to identify potentially modifiable variables that programs could prioritize to change behavioral outcomes.

These results are cross-sectional, which yields evidence of correlations but precludes causal conclusions.

Research Ethics

Study protocols and tools received approval from the institutional review boards at the National Institute for Medical Research in Tanzania (Protocol# R.8a/Vol. IX/3681) and the Johns Hopkins Bloomberg School of Public Health (IRB#15871). All project staff received training on approved study protocols and research ethics. All study participants provided signed informed consent after trained data collectors explained the purpose of the survey, the types of questions that would be asked, the potential risks associated with participating in the survey, and the actions the study team would take to protect the confidentiality of the participants. In addition, data collectors explained that participants did not have to participate in the study, that they could decide at any point to discontinue their interview, and that they did not need to answer any questions they did not want to. To protect the identity of participants, nicknames were used when possible, instead of legal names. The household listing sheet in a given EA was destroyed when data collection in the corresponding cluster finished. Signed consent/assent forms were kept in secure locations at all times.

Respondents were interviewed outside of the hearing range of others. We paid special attention to ensure that the respondent was not under any pressure from other household members to participate in the study. For example, individual potential male and female respondents were still at liberty to opt out of the study even if the head or other adult member of the household agreed to participate. Similarly, a woman was not obliged to participate in the survey simply because her husband had agreed to participate or vice versa. Each participant made an informed decision to participate or not.

Results

This section summarizes the results of the MBS, including structural factors, cross-cutting ideational factors, case management for fever in children under five, malaria in pregnancy, ITNs, IRS, and media consumption and messages. This section also reviews the characteristics of participant households, including basic descriptions, physical characteristics, and household assets. Sociodemographic information about respondents, such as level of education and age category, are also presented. Interviews were conducted with adults in 3,105 households, with 3,362 female respondents and 1,106 male respondents.

All differences described in the narrative text of this report are statistically significant at the p <= 0.05 level.

Figure 3. Study Sample

Study Sample						
	3,105 households with 13,455 members					
Ť	1,106 Male respondents					
Å	3,362 Female respondents					

Sample Description

Household Characteristics

On average, households in Mainland Tanzania had about five residents and two sleeping rooms; these characteristics did not differ significantly by zone, although all other household characteristics were significantly different by zone (see **Table 1**). On average, 54% of households had finished walls, 82% had finished roofs, and 57% had finished floors. About 58% of households had electricity. Nearly 69% were near (

health facility, 36% near a private health facility, and 50% near a pharmacy.

Household Ownership of Selected Assets

Asset ownership differed statistically and significantly among the four zones for all reported assets, except for land ownership (see **Table A.1.2**

Household Assets and Wealth Quintiles, by Zone). Sixty percent of all households owned a radio and 36% had a television. Household ownership of a simple mobile phone was high, at 87%, but varied from 81% in the Lake Zone to 93% in the Coastal Zone. Less than a quarter of households reported smartphone ownership, ranging from 17% in the Southern Highlands to 34% in the Central Highlands. On average, 25% of respondents owned bicycles. Half of households reported land ownership, and 42% owned livestock.

Population Characteristics

Surveyed households comprised 13,455 individuals (see **Table A.1.3**). Age and sex distributions of household members reflected a very large youth population (under 18 years of age). More household members were women (53.6%) and 51% were 18 years of age or older.

Figure 4. *Urban versus Rural Participants, by Zone*



Characteristics of sample respondents are presented in **Table 1** (also see Annex A.1.4). The sample was designed to interview all women ages 15 and older who lived in the household, and one man in every third household. As anticipated, 75% of survey respondents were female and 25% were male. Only 4.5% of respondents were aged 19 or younger. While 52% of all respondents lived in rural areas, residency differed significantly by zone (from 34% rural in the Central Highlands to 65% rural in the Lake Zone).

Two-thirds of respondents were Christians and 34% were Muslim. Most study participants were married (81%). Most respondents' highest level of

educational attainment was primary school (68%), and nearly one-fourth had completed secondary or tertiary education overall. While the wealth quintiles are designed to be evenly distributed across the entire sample, significant differences were found by zone, with only 12% in the Southern Highlands but 30% in the Coastal Zone in the highest wealth quintile, as shown in **Figure 5**.

Figure 5.





Table 1.

Sociodemographic and Structural Characteristics of Respondents, by Zone

	Lake Southern High		Central Highlands	Coastal	Total
	(<i>^</i>) (n=1064)	(/%) (n=1373)	(n=1113)	(<i>n</i> =918)	(<i>n</i> =4468)
Sex					
Female	74.7	73.8	74.9	78.3	75.2
Male	25.3	26.1	25.1	21.7	24.7
Age***					
15–19 years	6.9	2.5	3.2	6.4	4.5
20–29 years	30.8	26.0	27.8	28.4	28.1
30–39 years	30.8	30.8	32.4	31.5	31.4
≥40 years	31.5	40.6	36.5	33.7	36.0
Residence***					
Urban	35.0	44.9	65.8	47.3	48.2
Rural	65.0	55.1	34.2	52.7	51.7
Education***					
None	18.4	6.3	4.3	7.8	9.0
Primary	62.2	74.4	64.4	69.4	68.0
≥ Secondary	19.4	19.3	31.3	22.8	23.0
Religion***					
Christianity	75.0	83.7	71.2	17.8	65.0
Islam	23.4	15.4	28.7	82.2	34.3
Married*	81.7	83.3	82.3	75.5	81.1

	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (n=4468)
Wealth quintile***					
Lowest	27.6	20.6	14.6	17.3	20.1
Second	21.0	21.8	15.9	20.8	19.9
Third	18.9	24.0	19.0	18.1	20.3
Fourth	17.6	21.1	25.2	13.7	19.8
Highest	14.9	12.4	25.4	30.1	19.9

Notes: *p<0.05; **p<0.01; ***p<0.001 for statistically significant differences between survey zones

Supplemental Information

See the following tables in Annex A.1 for additional information on these indicators.

- Table A.1.1 Housing Characteristics, by Zone
- Table A.1.2 Household Assets and Wealth Quintiles, by Zone
- Table A.1.3 Household Population Characteristics, by Zone
- Table A.1.4 Survey Sample Characteristics, by Zone

Cross-Cutting Ideational Determinants

Cross-cutting ideational factors related to malaria in Mainland Tanzania included general knowledge of malaria, perceived severity of and susceptibility to malaria, malaria-related interpersonal communication with others, perceptions of facility- and community-based health workers, and perceived gender norms related to malaria. All differences reported in the narrative text, unless otherwise noted, are statistically significant.

Table 2, at the end of this section,
presents a summary of cross-
cutting ideational factors. Correct
knowledge regarding malaria was
fairly high, at 74%, and positively
associated with educational attainment.Figu
Mail
attainment.

Equitable gender norms were close to universal (96%), ranging by zone, from 90% in the Lake Zone to 99% in the Coastal Zone. Women scored significantly higher than men (97% and 95%, respectively; p<0.05), but the difference is not programmatically meaningful given that knowledge is at very high levels.

As many as 93% of respondents had favorable impressions of facility-based providers; while 84% in the Lake Zone reported favorable views, 94–97% in

Figure 6. Malaria-Related Ideational Factors at a Glance

∱	96% perceived equitable gender norms
Â	93% overall favorable perceptions of facility-based health providers
* **	80% overall favorable perceptions of community- based health providers
A	72% perceived susceptibility
₫ <u>ħ</u>	30% perceived severity
Î	21% interpersonal communication with spouse/partner

the other three regions expressed supportive attitudes. The lowest rates of favorable attitudes of facility-based providers were reported by those with no formal education (80%).

Perceived susceptibility to malaria, or the belief that they or their children were at risk of contracting malaria, was reported by nearly 72% of respondents and was assessed by measuring a respondent's agreement with ten related statements. Residents in the Central Highlands registered the lowest level of perceived susceptibility (55%), while Coastal Zone residents reported the highest level (84%). Rural residents were more likely than their urban counterparts to be concerned about susceptibility (76% and 66%, respectively). Only 30% of respondents perceived that the consequences of acquiring malaria would be severe (perceived severity). While outcomes by multiple background characteristics differed significantly, the differences were less than five percentage points.

Study participants had not regularly discussed malaria with their spouses, partners, or friends within the six months (21%) prior to the survey. Malaria-related dialogue was least likely in the Central Highlands, and most likely in the Coastal Zone. Men (27%) were statistically significantly more likely than women (19%) to report recent conversations about malaria with their spouses.

Table 2.

Summar	y oj	f Cross-Cutting Id	deational	Determinants
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	Correct knowledge	Perceived susceptibility	Perceived severity	Discussion with spouse or partner	Discussion with friends/ family	Favorable perception of facilit base realth providers	porable poseptions of community- based heat posiders	Reported equitable gender norms
Zone	***	***	***	***	***	***	***	***
Lake	75.6	77.2	31.3	22.1	19.2	<u> </u>	71.6	89.5
Southern Highlands	64.6	73.1	28.8	20.0		94.8	L`8	98.2
Central Highlands	79.1	55.3	29.8	16.8	`4.1	96 '	81.8	94.7
Coastal	79.4	83.7	28.2	1	2.3	9,	84.5	99.3
Sex		*		**				*
Female	73.8	71.4	29.7	19.2	20.5	93.4	79.6	96.6
Male	73.9	73.2	28.9	27.0	20.9	93.0	79.7	95.1
Age		**		*		**	***	**
15–24	74.5	67.7	7.2	1د -	21.0	89.9	73.7	93.1
25–34	74.5	71.1	<u>٦.5</u>	73.3	20.8	94.2	80.2	95.6
35–44	74.5	73.8	30.	. 4	20.3	94.0	80.5	96.6
≥ 45	71.6	/3	8.1	15.	20.3	93.5	82.3	95.6
Residence		***		**	***	***	**	***
Urban	73.8	6, 7	27.2	21.4	23.2	95.2	77.2	96.5
Rural	73.5	76.1	۲ ک.	17.2	18.0	91.6	81.9	93.8
Education	**	**	***			***	***	***
None	<u>`9.0</u>	67.5	29.5	17.4	18.4	80.4	70.2	82.4
Primary	72.	5.1	31.3	21.7	20.9	94.1	81.0	96.4
≥ Secondary	80.6	63.	24.4	21.0	20.5	95.8	79.3	98.0
Wealt. quintile	***	***	*	***	***	***		***
Lov `st		72.2	31.8	18.5	20.3	88.4	81.5	91.9
Secon	73.6	74.2	29.3	18.3	16.9	92.6	77.9	94.9
Middle	73.4	76.2	31.7	20.9	19.6	95.6	79.5	97.1
Fourth	75.2	71.1	30.0	22.3	20.8	95.8	79.7	96.9
Highest	79.2	65.3	24.7	25.9	25.3	94.0	79.6	96.5
Total	73.9	71.8	29.5	21.2	20.6	93.3	79.7	95.5

Notes: Significance of differences: *p<0.05; **p<0.01; ***p<0.001

Supplemental Information

See the following tables in Annex A.2 for additional information on these indicators.

- Table A.2.1 Correct Knowledge of Malaria, by Zone
- Table A.2.2 Perceived Susceptibility to Malaria
- Table A.2.3 Perceived Severity of Malaria
- Table A.2.4 Interpersonal Communication Regarding Malaria
- Table A.2.5 Perceptions Regarding Facility-Based Health Workers
- Table A.2.6 Perceptions Regarding Community Health Providers
- •

Table A.2.7 Gender Norms Related to *Malaria*

Malaria Case Management for Children Under Five Years Old

Using logistic regression, this section describes the ideational factors related to malaria case management for children under five; the prevalence of this behavior; and the associations between ideational, sociodemographic, and structural factors and behavior. All differences reported in the narrative text of this section, unless otherwise noted, are statistically significant.

Ideational Variables Linked with Care-Seeking

The ideational factors measured in the case management module include knowing when to seek care for fever, attitudes toward prompt care-seeking for fever, perceived response-efficacy of diagnostic testing, perceived response-efficacy of malaria treatment, perceived self-efficacy for prompt care-seeking, descriptive and injunctive norm toward prompt careseeking, perceptions of health facilities regarding treatment of malaria, perceptions of health providers (facility and community-based) regarding treatment of malaria, and involvement in decision-making related to malaria case management.

Sociodemographic and structural

Figure 7. Malaria Care-Seeking and Treatment: Ideational Factors at a Glance

66% -Q-Knowledge of malaria care-seeking and treatment 95% Perceived self-efficacy to seek testing and treatment 85% Perceived response efficacy of malaria testing Ę 45% Perceived response efficacy of malaria treatment € 62% Perception most people seek prompt care for child 93% Perceived equitable gender norms prioritizing child health care 88% **F** Favorable perceptions of facility-based health workers 80% <u>.</u> Favorable perceptions of community health workers 79% Involved in care-seeking decision when child has fever

factors include age, sex, residence, educational attainment, and wealth quintile. The specific **care-seeking behaviors explored for a child under five years old with a fever** included **any care-seeking; appropriate** care-seeking (from a health facility or community-based health provider); and **prompt** care-seeking (same day as or day after onset of fever). **Table A.3.1** summarizes data for each of these variables.

With respect to knowledge, and as shown in **Figure 8** (below), more than three-fourths (77%) of all respondents spontaneously mentioned artemisinin-based combination therapy (ACT) as a way to effectively treat malaria. Knowledge that care should be sought the day that, or the day after, a child developed a fever was almost universal (96%), varying from 91% in the Lake Zone to 98% in the Coastal Zone. Recognition that a blood test is the best way to know if someone has malaria was also high, at 88% overall. Nearly all respondents (99%) identified health facilities as the best place to go in the community if the suspect a child under five years of age has malaria. **Comprehensive knowledge**, or correct responses to all four knowledge questions, was in the mid-range at 66%, on average.

As shown in **Table A.3.1**, most respondents held favorable attitudes related to care-seeking and treatment for malaria (91%), although the rates were highest in the Coastal Zone (97% compared to around 90% in the other zones), and was positively and associated with age, urban residence, educational attainment, and wealth quintile.

Relevant Behaviors and Outcomes

Figure 8.

Percentage of Respondents with Specific Knowledge of Malaria Care-Seeking and Treatment, According to Background Characteristics, Mainland Tanzania



Significance levels: *p<0.05; **p<0.01; ***p<0.001 *Health Facility/clinic includes the following places: Public medical sector, private medical sector and community health provider. Exclude advice or treatment from a traditional practitioner, shop, market and tiltnerand drug seller.

Female respondents who were caregivers of children under five were asked about relevant malaria case management behaviors **Table 3.** Only 13% (n=197) reported that at least one of their children under five years old had had an episode of fever in the two weeks prior the survey.

Overall care-seeking rates were appreciable. Among caregivers who reported a recent episode of fever among their children under five, 85% sought care for the fever. Statistically significantly lower care-seeking rates occurred among caregivers in the Lake and Central Highlands zones (76% and 77%, respectively) compared to over 90% in the other two zones (see **Table 3**). While 91% of caretakers sought advice or treatment the same as or the day after the onset of their child's fever (prompt care-seeking), only 78% in the lowest wealth quintile reported taking this action. About half (56%) of caregivers with feverish children practiced appropriate care-seeking (defined as seeking care from a health facility or from a CHW as a first recourse), with lower rates among rural residents (39%) and the two lowest wealth quintiles (30% and 47%, respectively), suggesting lack of access and/or of financial resources as a limitation. Only 43% of caregivers with a feverish child in the two weeks prior to the survey had sought prompt *and* appropriate care (see **Table A.3.10**). Rural residents compared to urban dwellers (25% and 61%, respectively) were less likely to seek care than those not near a health facility compared to those were near a facility (23% and 49%, respectively). Educational attainment and wealth quintile were also positively associated with prompt and appropriate care-seeking.

Caregivers reported that a malaria test was conducted for 72% of the children with fever in the two weeks prior to the survey for whom care was sought (see Table A.3.15). Among those children, 54% were reported to have received a positive malaria test result, with the highest percentage in the Lake Zone (82%) compared to a low of 33% in the Coastal Zone. Reported positivity rates were negatively associated with wealth quintiles. Among respondents reporting a positive malaria test, nearly 74% reported that they were given ACT for their child, with the highest rate among caregivers in the Coastal Zone (92%) and the lowest rate in the Southern Highlands (41%).

Figure 9.

Care among Caregivers with a Child with Fever (n=197)



Advanced Analysis

Adjusted logistic regression analysis was used to explore ideational factors related to **prompt and appropriate** care-seeking by the 197 female caretakers who reported a child under five having a fever in the two weeks before the survey. For this analysis, prompt and appropriate care is defined as careseeking within one day of the onset of the child's fever from a health facility or community-based health provider. The ideational factors explored in this advanced analysis are listed in **Table 3** (end of this section) and

Figure 10.

The only statistically significant ideational factors associated with prompt and appropriate care-seeking was favorable perceptions of CHWs regarding care-seeking and treatment (i.e., providing referrals) (aOR 7.32; p .001). Compared to their urban counterparts, the odds of rural caregivers seeking prompt and appropriate care-seeking were statistically significantly lower (aOR 0.26; p All of the higher wealth quintiles compared to the lowest and secondary or higher education resulted in higher odds of prompt and appropriate care-seeking. Of note, proximity to a public or private clinic, a measure of access, did not affect odds ratios (data not shown).

Table 3.

Summary of Ideational Variables Related to Malaria Case Management

	Knowledge of care-seeking and treatment (%)	Favorable attitudes toward care- seeking and treatment (%)	Perceived response- efficacy of testing (%)	Perceived response- efficacy of treatment (%)	Perceived self-efficacy for testing and treatment (%)	Perceived supportive descriptive community norms of care- seeking and treatment (%)	Perceived equitable gender norms related to treatment (%)	Favorable perception of health facilities regarding care- seeking / treatment (%)	Favorable perception of community health providers for care- seeking/ treatment (%)	Favorable perception of facility health providers regarding care- seeking/ treatment (%)	Involved in decision to go to health facility, purchase medicine when child has fever ^A (%)	Involved in decision about what to do when respondent is sick^ (%)
Zone	***	***	***	***	***	***	***	***	***	***	***	***
Lake	66.1	87.8	80.3	55.9	86.5	69.1	86.9	58.3	71.6	77.3	70.1	67.1
Southern Highlands	61.0	91.0	84.2	40.6	97.6	71.2	95.8	74.5	80.8	89.1	82.3	91.3
Central Highlands	55.4	88.0	84.2	30.5	97.9	68.1	93.5	63.6	81.8	94.4	81.3	90.4
Coastal	85.1	97.3	90.1	54.1	98.7	76.5	96.4	73.4	84.5	90.6	79.1	78.8
Sex											**	
Female	65.3	90.8	84.4	44.6	95.0	71.7	93.4	68.0	79.6	88.0	77.1	82.2
Male	67.1	90.8	84.6	44.0	95.9	68.9	92.8	66.9	79.7	87.8	81.7	84.5
Age	**	**	***		***		**		***	**	***	***
15–24	61.1	87.6	79.1	45.2	89.1	67.9	90.3	68.5	73.7	84.5	70.3	74.3
25–34	67.2	90.3	85.3	43.9	95.8	70.3	93.3	67.4	80.2	87.4	77.1	83.0
35–44	65.0	91.9	86.1	45.2	97.0	72.0	94.6	67.3	80.5	89.1	80.6	84.7
≥45	68.3	92.5	85.1	43.7	96.9	73.1	93.5	68.1	82.3	89.9	82.1	84.8
Residence		*	***		***		**		**	***	***	***
Urban	66.0	92.1	87.1	45.6	96.5	71.5	94.9	66.4	77.2	90.8	83.7	88.8
Rural	65.5	89.5	81.9	43.7	93.7	71.8	92.0	69.4	81.9	85.4	71.3	76.4
Education	***	***	***		***		***		***	***	***	***
None	55.1	78.7	69.7	47.1	86.3	73.4	79.4	64.3	70.2	71.0	60.4	63.0
Primary	66.4	91.4	86.0	43.9	96.2	71.0	94.4	67.9	81.0	88.7	79.5	83.9
≥ Secondary	68.0	93.8	85.6	45.2	95.9	70.0	95.2	68.5	79.3	92.3	83.0	88.1
Wealth quintile	***	***	***		***	***	***			***	***	***
Lowest	53.3	84.9	77.5	45.8	89.1	67.5	88.2	70.5	81.5	79.1	71.5	75.7
Second	65.5	88.0	83.0	42.9	94.8	67.2	93.5	67.8	77.9	88.4	75.9	82.5
Middle	68.2	93.0	86.3	42.4	97.6	71.3	94.8	67.1	79.5	91.5	80.6	86.6
Fourth	67.1	94.0	87.4	43.7	97.4	72.2	95.2	66.8	79.7	91.6	82.2	84.4
Highest	74.7	94.0	88.1	47.7	97.4	76.7	94.6	66.2	79.6	89.2	82.4	85.1
Total	65.8	90.8	84.5	44.5	95.3	71.0	93.3	67.7	79.7	88.0	78.5	82.9

Notes: N=4468 overall respondents, ^n=3622 with spouses/partners for questions regarding decision-making; *p<0.05; **p<0.01; ***p<0.00

Figure 10.



Significant Determinants of Prompt and Appropriate Care-Seeking for Children Under Five

Table 4.

Logistic Regression Exploring Factors Associated with Prompt and Appropriate Care-Seeking for Fever in Children under Five Years in the Past Two Weeks

	Percentage	Adjusted odds ratio	95% confidence interval
Age			
15–24	38	1.00	n/a
25–34	40	0.97	0.37 – 2.54
35–44	55	2.40	0.80 - 7.13
≥45	50	0.90	0.13 - 6.31
Education			
None (reference)	25	1.00	n/a
Primary	40	1.17	0.25 - 5.40
≥ Secondary	64	6.06 ‡	0.95 – 38.5
Household wealth quintile			
Lowest (reference)	17	1.00	n/a
Second	38	4.80*	1.25 – 18.4
Middle	64	9.33**	2.09 - 41.7
Fourth	53	5.59*	1.29 – 24.2
Highest	62	4.12‡	0.91 - 18.6
Zone			
Lake	34	1.00	n/a
Southern Highlands	52	1.12	0.35 - 3.62
	Percentage	Adjusted	95%
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		odds ratio	confidence
			interval
Central Highlands	37	0.35‡	0.11 – 1.13
Coastal	51	1.42	0.47 – 4.25
Residence			
Urban (reference)	61	1.00	n/a
Rural	25	0.26**	0.10 - 0.67
Perceived severity of malaria			
No (reference)	45	1.00	n/a
Yes	36	0.61	0.25 – 1.44
Perceived susceptibility of malaria			
No (reference)	42	1.00	n/a
Yes	43	1.31	0.46 – 3.79
Talked about malaria with spouse/friends/family members			
No (reference)	38	1.00	n/a
Yes	47	0.92	0.39 – 2.12
Knowledge of malaria care-seeking and treatment			
No (reference)	39	1.00	n/a
Yes	45	0.73	0.30 - 1.79
Favorable attitudes toward care-seeking and treatment			
No (reference)	20	1.00	n/a
Yes	45	4.18	0.64 – 27.4
Care-seeking and testing perceived as the norm in the community			
No (reference)	35	1.00	n/a
Yes	47	1.52	0.62 - 3.74
Perceive equitable gender norms related to malaria treatment			
No (reference)	28	1.00	n/a
Yes	44	1.88	0.35 - 10.1
Mentioned at least one incorrect method of malaria transmission			
No (reference)	43	1.00	n/a
Yes	41	1.89	0.56 - 6.37
Heard a message about malaria on the media			
No (reference)	34	1.00	n/a
Yes	52	1.46	0.66 - 3.21
Favorable perceptions of health facilities regarding care-seeking			
	10	1.00	n/a
	42	0.54	11/a
Eavorable perceptions of facility health providers regarding care-	45	0.54	0.20 - 1.45
seeking and treatment			
No (reference)	45	1.00	n/a
Yes	42	0.19**	0.06 – 0.67
Favorable perceptions of community health workers (CHW)			
regarding care-seeking and treatment			
No (reference)	31	1.00	n/a
Yes	47	7.32***	2.47 – 21.7
Perceived efficacy of malaria testing			
No (reference)	44	1.00	n/a

	Percentage	Adjusted odds ratio	95% confidence interval
Yes	43	0.39	0.09 - 1.66
Perceived efficacy of malaria treatment			
No (reference)	44	1.00	n/a
Yes	41	0.46‡	0.21 - 1.03

Notes: Number of observations: 197 female respondents reporting on a child under five who most recently had a fever in the two weeks before the survey; \ddagger p<0.1 * p<0.05; ** p<0.01; *** p<0.001; Abbreviations: n/a: not applicable.

Supplemental Information

See the following tables in Annex A.3 for additional information on these indicators.

- Table A.3.1 Ideational Variables Related to Malaria Case Management
- Table A.3.2 Logistic Regression
- Table A.3.3.
 Knowledge of Malaria Care-Seeking and Treatment
- Table A.3.4.
 Attitudes Toward Malaria Care-Seeking and Treatment
- Table A.3.5. Perceived Response-Efficacy of Malaria Testing
- Table A.3.6. Perceived Response-Efficacy of Malaria Treatment
- Table A.3.7.
 Perceived Self-Efficacy for Malaria Testing and Treatment
- Table A.3.8.
 Gender Norms Related to Malaria Treatment
- Table A.3.9. Perceived Community Norms Regarding Malaria Care-Seeking and Treatment
- Table A.3.10.
 - Perceptions of Health Facilities Regarding Malaria Care-Seeking and Treatment

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Table A.3.11.

Perceptions of Facility Health Workers Regarding Malaria Care-Seeking and Treatment

- Table A.3.12. Perceptions of Community Health Workers (CHWs) Regarding Malaria Care-Seeking and *Treatment*
- Table A.3.13.

Decision-Making for Malaria Care and Treatment

- Table A.3.14. Involvement in Decision-Making for Malaria Care and Treatment among Respondents with *Spouses/Partners*
- Table A.3.15. Care-Seeking and Testing of Children With Fever in Two Weeks
- Table A.3.16. Treatment of Children with Fever
- Table A.3.17. Treatment of All Children Under Five *with Fever*
- Table A.3.18. Intention to Seek Care and Treatment for Malaria for Child under Five Years with a Fever

Malaria in Pregnancy

This section describes the ideational factors related to malaria in pregnancy and the prevalence of relevant behavioral outcomes and intentions, as well as the associations between ideational factors and behavioral intentions using logistic regression. Ideational factors related to malaria in pregnancy explored in the MBS include knowledge, favorable attitudes, perceived severity, perceived response-efficacy, perceived self-efficacy (for men and women separately), perceived supportive community norms, perceived equitable gender norms, favorable perceptions of health workers, involvement in decision-making, and interpersonal communication. Relevant outcomes explored include ANC attendance and receipt of IPTp. The specific behavioral intentions explored included intention to attend ANC or to receive IPTp in a future pregnancy. All differences reported in the narrative text of this section, unless otherwise noted, are statistically significant.

Ideational Variables Linked with Antenatal Care Attendance and IPTp Use

Table 5. at the end of this section summarizes the ideational factors related to malaria in pregnancy, including ANC and IPTp. Respondents who knew (1) when a pregnant woman should first seek ANC, (2) the number of recommended ANC visits, and (3) the number of IPTp doses a pregnant woman should receive were counted among those with correct or comprehensive knowledge. With only 6% of respondents able to correctly answer all three questions, comprehensive knowledge was rare. Women (8.5%) were more likely to answer correctly than were men (0%). While education, age, and wealth quintile were associated with this variable, the relationships were non-linear.

Nonetheless, 86% of respondents reported favorable attitudes toward IPTp, ranging from a low of 79% in the Lake Zone to a high of 92% in the Central Highlands. Urban residence, education, and wealth quintile were all positively associated with favorable attitudes. A clear majority of respondents (74%)

Figure 11.

Malaria in Pregnancy Related Ideational Factors at a Glance

Ē	97% Perceived response-efficacy of IPTp
	95% Women's self-efficacy regarding IPTp
	86% Favorable attitudes towards IPTp
*	86% Women involved in decision-making regarding ANC ⁺
\$	74% Perceived malaria in pregnancy as severe
Å	70% Discussed ANC attendance with spouse/partner
	69% Favorable perceptions of health providers
) (67% Perceived that most take malaria preventative medicine during pregnancy (norm)
	59% Perceived supportive community norms for ANC
-`Ģ	<mark>6%</mark> Comprehensive knowledge of IPTp

perceived malaria in pregnancy as severe, ranging from 60% in the Lake Zone to 83% in the Southern Highlands. Age was positively associated with perceived severity. Most respondents (97%) perceived IPTp to be efficacious; age, urban residence, education (none compared with any), and wealth were positively associated with this perception. Men's perceived self-efficacy to support their spouses to prevent malaria in pregnancy through IPTp was very high (96%); wealth was positively associated with this perception. Likewise, women's perceived self-efficacy to take IPTp was notably high (95%).

About 59% of all respondents perceived making at least eight ANC visits to be the norm for women in their community, but this ranged from 41% in the Central Highlands to 71% in the Lake Zone. Women compared with men and respondents aged 25 and older versus their younger counterparts were more likely to report this norm. About 67% of all respondents reported that receipt of IPTp (67%) was normative. Women (71%) compared with men (56%) and those in the third or higher quintiles were more likely to perceive this practice as normative. Most respondents (91%) reported that pregnant women should feel comfortable asking their spouse/partner to accompany them to the health facility, reflecting a positive gender norm; this variable was positively associated with wealth quintile and age. Interestingly, men (95%) were more likely to report this perception than were women (89%).

Many respondents (69%) had favorable perceptions of health providers regarding malaria-in-pregnancy services, although this varied widely by zone, with only 56% in the Coastal Zone but 78% in the Central Highlands reporting positive perceptions. Urban residence, age, and educational attainment were positively associated with favorable perceptions. Only 60% of respondents in the lowest wealth quintile were favorably disposed compared to 70% or more reported by those in the other wealth quintiles.

Many respondents in partnerships were involved in decision-making related to ANC. Specifically, 84% of all respondents with partners noted that decisions regarding ANC were made by themselves or jointly with their partners, with 86% of women and 79% of men reporting that they were involved. Urban residence, age, educational attainment, and wealth quintile were positively associated with decision-making. The rate was lowest among respondents residing in the Lake Zone (75%) and highest in the Central and Southern Highlands (89%). Seventy percent of all respondents with partners noted that they discussed ANC with their partners in the six months preceding the survey, ranging from 62% in the Central Highlands to 82% in the Coastal Zone. Again, urban residence, educational attainment, and wealth quintile were positively associated with this variable.

Antenatal Care Attendance and Intention to Seek ANC

Fully 94% of women with a live birth in the two years preceding the survey reported that they attended at least one antenatal (ANC) visit. Of those women who attended any ANC, 71% reported their first ANC visit between 1-4 months of pregnancy (early ANC). Significant difference in women reporting early ANC were noted by zone and wealth quintile. Over three-quarters of respondents (78%) indicated that they had attended at least four ANC visits in their last pregnancy; rates were positively associated with urban residence and wealth quintiles, and ranged from 73% in the Southern Highlands to 85% in the Coastal Zone. Only 10% noted that they attended eight or more ANC visits, with those in the highest wealth

quintile (21%) much more likely to report eight or more visits than their counterparts in lower wealth quintiles (6–9%). In addition, 75% of women indicated that they had been accompanied by their partner for at least one ANC visit; the only background characteristic that differed significantly for this indicator was by zone (67% Central Highlands, 83% Southern Highlands). Finally, 78% reported receiving a mosquito net at an ANC visit, with younger women more likely to have received one.



Figure 12.



Most female respondents (95%) who planned to have another child stated their intention to use IPTp in their next pregnancy. The only statistically significant difference was by wealth quintile, but it was nonlinear. Seventy-five percent of all female respondents who planned to have a child in the future indicated that they intended to initiate ANC visits during their first trimester, but only 34% intended to attend eight or more ANC visits. Both of these intentions were positively associated with educational attainment and wealth quintile.

IPTp Receipt and Intention to Use IPTp

Most pregnant women (90%) reported they received at least one dose of SP during pregnancy but less than half (47%) reported three or more doses as recommended by the WHO. The percentage that received three or more doses varied statistically significantly by zone, especially when comparing the Central Highlands (57%) to the other zones (ranging from 41 to 46%). This outcome was also significantly and, understandably, higher among the women who attended eight ANC consultations and among those who started ANC in the first trimester compared to others (**Table A.4.12**). Urban residence, educational attainment, and wealth quintile were positively associated with three or more doses of SP.

Advanced Analysis

Logistic regression analysis was applied to explore ideational factors related to intentions to attend ANC in the first trimester among women who anticipated a future pregnancy. The intention to use IPTp in a future pregnancy was not explored because it is already highly prevalent (>90%).

As shown in the chart below, the socioeconomic factors positively and statistically significantly associated with the **intention to seek early ANC** included wealth quintile, educational attainment, and rural residence. The odds of expressing the intention to seek early ANC were positively and significantly associated with the following ideational factors: discussed ANC with partner/spouse, expressed favorable attitudes toward IPTp, perceived equitable gender norms regarding ANC, and had favorable perceptions of health providers involved in malaria in pregnancy care.

Figure 13.



Significant Factors Associated with Intention for early ANC

Table 5.

Summary of Ideational Variables Related to Malaria in Pregnancy

	Comprehensive knowledge of IPTP recommendat- ions	Favorable attitudes toward IPTp	Perceived malaria in pregnancy as severe	Perceived response- efficacy of IPTp	Women's perceived self- efficacy regarding IPTp^	Men's perceived self- efficacy regarding IPTp&	Perceived most women in community attend ≥ 8 ANC visits during pregnancy	Perceived most women in community take malaria preventive medicine during pregnancy	Perceived most in community will approve of pregnant women taking medicine to prevent malaria^	Perceived pregnant women should feel comfortable asking their spouse/ partner to go to health facility for ANC	Favorable perceptions of health providers around malaria in pregnancy related care	Involved in decision - making regarding ANC+	Discussed ANC attendance with spouse/ partner+
Zone	*	***	***	***	***	**	***		***	***	***	***	***
Lake	7.5	81.0	59.6	90.6	86.2	91.4	71.2	69.7	65.7	87.7	69.5	75.1	63.4
Southern Highlands	4.6	89.5	83.3	97.9	96.8	96.1	60.3	66.6	76.7	86.2	70.4	88.8	74.7
Central Highlands	6.9	92.4	81.5	99.5	98.6	96.1	41.4	65.0	84.8	94.6	78.6	89.0	61.9
Coastal	7.1	78.9	65.8	99.1	99.0	99.0	63.5	68.5	77.7	95.6	56.4	82.4	82.4
Sex	* * *						*	***		***		***	
Female	8.5	86.3	73.5	96.7	100.0	-	59.9	71.1	100.0	89.2	69.7	86.5	69.9
Male	0.0	85.3	73.9	97.2	-	100.0	55.6	55.9	-	94.9	68.3	79.2	71.0
Age	**	**	***	***	***		*	***	***	***	***	**	
15–24	6.5	82.0	67.3	92.2	88.5	92.6	53.7	61.6	65.4	84.1	62.4	79.6	67.3
25–34	6.9	88.1	72.1	97.3	96.9	95.1	59.1	70.8	77.9	91.9	72.6	84.5	71.0
35–44	7.5	86.2	75.1	97.9	97.5	95.6	60.2	68.6	80.7	91.3	70.9	86.4	70.7
≥45	3.8	85.9	78.6	98.2	96.2	96.0	60.7	64.9	79.2	92.8	68.0	83.7	70.2
Residence		***		***	***				*		***	***	*
Urban	6.8	89.6	74.9	98.1	97.1	95.0	58.5	66.2	78.2	90.6	72.5	87.9	72.3
Rural	6.0	82.8	72.4	95.6	93.4	95.9	59.1	68.4	74.6	90.6	66.6	81.2	68.4
Education	**	***	***	***	***	***		**	***	***	***	***	***
None	6.0	72.2	67.2	86.8	85.3	80.6	63.5	63.5	57.5	84.4	57.6	64.9	50.6
Primary	7.3	86.5	77.6	98.0	96.7	95.5	58.3	68.9	79.0	91.5	69.8	86.0	71.5
≥ Secondary	3.9	90.2	64.2	97.3	95.0	98.4	58.6	64.0	76.8	80.5	72.8	86.8	74.3

	Comprehensive knowledge of IPTP recommendat- ions	Favorable attitudes toward IPTp	Perceived malaria in pregnancy as severe	Perceived response- efficacy of IPTp	Women's perceived self- efficacy regarding IPTp^	Men's perceived self- efficacy regarding IPTp&	Perceived most women in community attend ≥ 8 ANC visits during pregnancy	Perceived most women in community take malaria preventive medicine during pregnancy	Perceived most in community will approve of pregnant women taking medicine to prevent malaria^	Perceived pregnant women should feel comfortable asking their spouse/ partner to go to health facility for ANC	Favorable perceptions of health providers around malaria in pregnancy related care	Involved in decision - making regarding ANC+	Discussed ANC attendance with spouse/ partner+
Wealth		***	***	***	***	**	**	*	***	***	***	***	***
quintile													
Lowest	6.3	78.0	72.1	92.9	89.3	90.2	58.2	63.8	69.1	87.0	59.9	77.6	64.4
Second	6.2	84.1	75.1	97.0	94.7	96.0	56.8	65.6	75.3	90.7	70.6	82.0	66.0
Middle	6.9	87.9	78.4	98.0	98.0	96.6	59.2	69.3	80.0	90.7	72.4	87.6	74.8
Fourth	6.6	89.5	73.9	98.1	96.9	96.3	55.9	69.0	79.3	92.2	73.6	87.8	69.5
Highest	5.8	90.7	68.5	98.1	97.2	98.1	64.2	68.9	78.1	92.5	70.4	86.7	76.5
Total	6.4	86.0	73.6	96.8	95.2	95.5	58.9	67.3	76.3	90.6	69.4	84.3	70.2

Notes: * p<0.05; ** p<0.01; *** p<0.001; ^ This sample only includes women (n=3362); [&] This sample only includes men (n=1106); ⁺ This sample only includes respondents who are married or living as if married (n=3622)

Supplemental Information

See the following tables in Annex A.4 for additional information on these indicators.

- Table A.4.1.
 - Logistic Regression Exploring Factors Associated with Intention For Early ANC
- Table A.4.2. Knowledge of IPTp
- Table A.4.3.
 Attitudes toward IPTp
- Table A.4.4. Perceived Severity of Malaria in Pregnancy
- Table A.4.5.
 Perceived Response-efficacy of IPTp
- Table A.4.6. Perceived Self-Efficacy for IPTp—*Women*
- Table A.4.7. Perceived Self-Efficacy for IPTp-Men
- Table A.4.8. Perceived Community Norms Regarding IPTp
- Table A.4.9. Perceived Gender Norms Regarding Malaria in Pregnancy
- Table A.4.10. Perceptions of Health Providers Regarding Malaria In Pregnancy
- Table A.4.11. Decision-Making Regarding Antenatal Care
- Table A.4.12. Interpersonal Communication Regarding Antenatal Care
- •
- •
- Table A.4.13.

Intention to use Intermittent preventive treatment of malaria in pregnancy (IPTp), to attend at least 8 ANC visits, and to attend ANC in the first trimester

- Table A.4.14. Antenatal Care (ANC) Attendance
- Table A.4.15. Use of Intermittent Preventive Treatment (IPTp) by Women During Pregnancy
- Table A.4.16. Source of IPTp

Mosquito Net/Insecticide-Treated Net Use

This subsection describes the ideational factors related to mosquito net/ITN use, including data related to knowledge, attitudes toward net use and net care, perceived response-efficacy, perceived self-efficacy, perceived supportive community norms, and perceived equitable gender norms. Other variables reported in this section include the prevalence of relevant ITN and/or net use outcomes, and the associations between the ideational factors and the relevant outcomes using logistic regression. These relevant outcomes include household-level net and ITN ownership, population-level net access and use, characteristics and use of existing nets in the households, net care practices, and consistent net use by respondents.

Ideational Variables Linked with Net Use

Results summarizing the analyses of the ideational variables linked to net use are presented in **Table 6** at the end of this section.

Approximately 92% of the respondents identified using mosquito nets (treated or untreated) as a way to prevent malaria. More respondents from Coastal and Lake Zones, with higher education, and in the higher wealth quintiles indicated *sleeping under a net as a malaria prevention method* compared to their counterparts. Most respondents (91%) reported *favorable attitudes toward mosquito nets*, with higher rates among those from Coastal Zone and Southern Highlands, from urban areas, with higher education, and in the higher wealth quintiles. The majority of respondents (93%) also reported *favorable attitudes toward net care*, with higher rates among Lake and Coastal Zone residents, those with higher education, and those in higher wealth quintiles.

In contrast to the highly favorable attitudes, only about two-thirds (66%) of the respondents *perceived mosquito nets as effective in preventing malaria*, reporting thinking that their chances of getting malaria are the same whether they slept under a mosquito net or not. Respondents from the Coastal Zone and from Southern Highlands, those with higher education, and those in the higher wealth quintiles were less likely than their counterparts to perceive nets as efficacious toward malaria prevention.

Self-efficacy to use nets was high, at 88%, with the lowest self-efficacy reported in

Figure 14.

Net Use: Ideational Factors at a Glance

6	92% Knowledge					
14	91% Favorable attitudes towards bed nets					
∱ ∱	91% Equitable gender perceptions towards net allocation					
¥	88% Perceived self-efficacy to use nets					
	67% Perceived effectiveness of bed nets					
	53% Perceived consistent bed net use by community members					

respondents from the Lake Zone and Southern Highlands, among younger respondents (15 to 24 years), those with no formal education, and those in the lower wealth quintiles.

Only about half of the respondents (53%) perceived that most people in their community who have nets slept under them every night (*descriptive norm*). Respondents from Lake Zone and Coastal Zone, female respondents, and those in the higher wealth quintiles were more likely than their counterparts to perceive that most people in their community were regularly sleeping under a net. Respondents from the Lake Zone (16%) were most likely to think that at least half of the people in their community would call them names or criticize them for sleeping under a bed net every night, but overall, not many respondents regarded this disapproval of net use to be prevalent in their communities. In addition to those from Lake Zone, younger respondents (15 to 24 years), rural respondents, those with no formal education, and those in the lowest wealth quintile were more likely to experience this community disapproval of regular net use than their counterparts.

Mainland Tanzania is promoting net sharing as a way for neighbors to share their extra nets with one another. Only about 13% of the respondents reported net sharing to be a community norm, with those with no formal education and those in the lowest wealth quintile being more likely to report that most people in their community would share their extra nets with their neighbors.

The majority of the respondents (91%) reported equitable gender norms for net allocation within the household. Respondents in the lowest wealth quintile (86%), with no formal education (75%), in rural areas (89%), in the youngest age category (15–24 years; 88%), and from the Lake Zone (83%) were less likely to report equitable net allocation gender norms.

ITN Access and Use

About 75% of the households reported having one or more mosquito nets, and approximately 55% of the households reported having at least one ITN. Access to nets in general and access to at least one ITN was higher in urban areas, in the Lake Zone and Coastal Zone, and among higher wealth quintiles. Only 52% of the households reported having enough nets for all household members, which was defined as at least one mosquito net for every two persons in the household. Households with enough mosquito nets were more common in the Lake Zone and in the highest two wealth quintiles.

De facto household population access to an ITN was 55%, with higher access reported in the Lake Zone and Coastal Zone, in urban areas, and in areas with greater access to resources (higher wealth quintiles). Lowest household population access to an ITN was reported in the Central Highlands (48%), and ITN access increased from 43% among people in the lowest wealth quintile to 59% in the highest. De facto household population use of an ITN the night before the survey was 49%. ITN use varied by age and zone but overall, fewer younger household members (0–14 years) used an ITN the previous night than their older counterparts (15–25+). Southern Highlands was the exception to this trend in de facto household population ITN use, with household members 0-14 years reporting slightly higher ITN use (49-59%) than those 15 and over (47-53%).

De facto population (the group of people that stayed in the household the previous night) ITN use the night before the survey was significantly different between households with less than one net per two persons compared to households with at least one or more nets per two persons in the household. Overall, only 8% of de facto household members used an ITN the night before the survey if less than one net was available per two persons in the household. That proportion jumped to 89% of de facto household members using an ITN if the household had access to at least one or more nets. De facto population use of ITNs in the Central Highlands was significantly different for male (38%) and female





(46%) household members. In general, for de facto population, residents in urban areas and in the higher wealth quintiles reported higher ITN use the night before the survey.

Use of Available Nets

Of nets available in homes for use by household members, 89% were used the night before the survey and <u>86% of available nets</u> were used every night of the week before the survey. Overall, use of available nets did not differ by residence area or wealth quintiles, with the majority of nets being used if they were available to households.

Consistent Net Use by Respondents

About <u>73% of respondents</u> reported using a net every night of the week (consistent net use by respondents). Consistent net use was higher in most urban areas, among those with higher levels of education, and by those in the higher wealth quintiles. Consistent net use was highest among respondents from the Coastal Zone (84%) and lowest in those from the Central Zone (59%). Aside from having different denominators, the gap between consistent use of available nets and consistent net use by respondents may be influenced, in part by, respondents lack of access to a net in their household.

Net Characteristics

Only slightly more than half (56%) of the nets identified in the net roster were ITNs, 88% of which were reported obtained free of charge. The highest proportion of ITNs was in the Lake Zone (63%), and the lowest proportion was in the Central Highlands (48%). The most common source of nets was mass

distribution campaigns (33%), followed by shop, market, or street vendor (27%). About 20% of the nets were reportedly received through ANC. Most nets (62%) were reported to be less than twelve months old, and about 18% were older than three years. The most common net color was reported to be blue (66%), followed by white (24%). Trends in net characteristics such as source, age, and color did not significantly differ by zone.

Net Care and Repurposing

Respondents also noted specific net care and repurposing actions. Most (84%) reported washing their nets, primarily with detergent (70%) or bar soap (28%). Nearly all respondents reported drying their nets out in the sun (93%). About 82% of respondents reported engaging in net care such as rolling or tying up nets when not in use (33%), keeping nets away from children (22%), and handling nets with care (18%). Only about 10% of the respondents reported ever repurposing a net. Among those who had repurposed nets, most used them as protection for seedlings/crops, for rope or tying things, protecting domesticated animals, fencing, or bedding/padding. Repurposing actions differed significantly by zone.

Advanced Analysis

To explore ideational, behavioral, structural, and access factors related to consistent net use, adjusted logistic regressions were run (see Figure below; details reported in Table 10 at the end of this section). Several of the strongest associations with consistent net use were ideational. Significantly higher adjusted odds ratios of consistent mosquito net use were observed for the following ideational factors: perceived self-efficacy (aOR 5.12), favorable attitudes (aOR 2.98), and supportive descriptive community norms (aOR 2.26). Communication about malaria with family or friends (aOR 1.55) and perceived susceptibility to malaria (aOR 1.33) were also associated with significantly higher odds ratios of consistent net use. Interestingly, perceived net effectiveness against malaria was associated with a negative odds ratio (aOR 0.76). Odds of consistent net use did not differ much by zone, except for the Central Highlands, with a negative aOR of 0.38. A negative odds ratio of consistent net use was also found for rural residents (0.66) compared with urban dwellers. The odds ratios of consistent net use were slightly higher among respondents aged 25 to 34 years (aOR 1.39), female respondents (aOR 1.41), and those with primary education (aOR 1.49), compared to their counterparts. The number of nets in the household, one measure of access, was positively associated with a higher adjusted odds ratio (1.53). No difference in odds ratios were noted by wealth quintiles.

Figure 16.



Significant Determinants of Consistent Net Use

For the behavior of net care, we used the binary variable of whether respondents reported rolling up or tying up their nets when not in use. Logistic regression analysis focused on the association between engaging in net care behavior and household, sociodemographic, and ideational factors. Many of the strong associations with net care engagement were ideational (noted in the figure below): favorable attitudes toward net care (aOR 6.06), favorable attitudes toward nets in general (aOR 4.15), talking about malaria with family or friends (aOR 1.25), and perceived supportive community norm around net use (aOR 1.19). Sociodemographic factors such as level of educational attainment (aOR 1.56–1.62), wealth quintiles (aOR 1.29–1.43), being female (aOR 1.19), and being 25 to 34 years old (aOR 1.20) also resulted in higher odds of respondents engaging in net care behavior. In addition, consistent net use by respondents yielded higher odds (aOR 2.39) of engaging in net care behavior. Perceived net effectiveness (aOR 0.80) and Coastal Zone residence (aOR 0.33; compared with Lake Zone) saw negative odds of engaging in net care behavior. No statistically significant difference in net care behavior odds was noted for the other zones and between urban/rural residence.

Figure 17.





Table 6.

Summary of Ideational Variables Related to Net Use

lable 6.								
Summary of Ideationa	l Variables Rela	ted to Net Use						
	Knowledge of malaria prevention using mosquito nets	Favorable attitudes toward mosquito nets	Favorable attitudes toward net care	Perceived response- efficacy of nets	Perceived self- efficacy to use nets	Perceived supportive descriptive community norms regarding nets	Perceived supportive descriptive community norms toward nets sharing	Perceived equitable gender attitudes related to net use
Zone	***	***	***	***	***	***	***	***
Lake	95.3	86.1	92.8	68.1	82.7	59.0	14.7	82.8
Southern Highlands	86.7	92.6	91.2	64.1	85.0	43.2	16.5	93.7
Central Highlands	91.4	87.3	91.8	74.5	86.9	47.8	5.8	91.6
Coastal	96.8	96.7	98.9	58.3	98.2	66.2	13.8	97.3
Sex						*		
Female	92.2	90.6	93.7	65.8	87.9	53.8	13.1	91.1
Male	91.5	90.7	92.1	68.4	86.7	50.0	12.1	91.8
Age		*			*			**
15–24	92.1	88.2	92.9	65.3	84.1	51.3	13.1	87.6
2534	92.6	91.3	94.3	67.7	89.0	54.2	12.9	91.8
35–44	92.1	92.0	93.4	67.9	88.3	54.0	12.9	92.5
≥45	90.8	89.4	92.1	63.5	87.5	50.4	12.5	91.8
Residence	*	**		*				***
Urban	91.1	91.9	93.3	68.0	88.2	51.3	13.1	93.6
Rural	92.8	89.5	93.3	65.1	87.1	54.2	12.7	89.2
Education	***	***	***	***	***		***	***
None	87.3	75.9	85.6	53.9	76.2	55.8	20.4	74.7
Primary	91.5	91.1	93.2	66.2	87.8	53.4	12.3	92.6
≥ Secondary	95.2	94.8	96.6	72.3	91.6	49.9	11.7	94.0
Wealth quintile	***	***	***	***	***	***	*	***
Lowest	87.4	84.4	87.7	58.4	79.9	47.7	15.8	85.6
Second	91.8	88.8	91.5	65.8	85.2	49.1	11.3	90.1
Middle	91.9	93.4	94.2	65.9	88.7	54.3	11.4	93.7
Fourth	93.9	93.1	96.5	70.1	91.7	55.3	12.8	93.3
Highest	95.0	93.4	96.6	72.1	92.6	57.9	12.9	93.7
Total	92.0	90.6	93.3	66.5	87.6	52.8	12.9	91.3

Notes: *p<0.05; **p<0.01; ***p<0.001

Table 7.

Logistic Regression Exploring Factors Associated with Consistent Net Use

	Percentage	Adjusted	95% Confidence
	reitentage	Odds Ratio	Interval
Age in years			
15–24 (reference)	73.5	1.00	n/a
25–34	76.5	1.39 ‡	0.99-1.97
35–44	72.9	0.96	0.67-1.38
≥45	69.5	0.83	0.56-1.22
Sex			
Male (reference)	72.3	1.00	n/a
Female	73.7	1.41*	1.08-1.84
Education			
None (reference)	60.3	1.00	n/a
Primary completed	74.5	1.49 ‡	0.97-2.29
≥ Secondary	75.3	1.20	0.73-1.99
Household wealth quintile			
Lowest (reference)	64.7	1.00	n/a
Second	71.2	1.22	0.84-1.77
Middle	76.4	1.08	0.74-1.56
Fourth	77.4	1.16	0.77-1.74
Highest	77.4	1.04	0.67-1.62
Zone			
Lake (reference)	78.7	1.00	n/a
Southern Highlands	74.3	0.99	0.70-1.39
Central Highlands	58.9	0.38***	0.27-0.53
Coastal	83.6	1.01	0.68-1.49
Residence			
Urban (reference)	75.9	1.00	n/a
Rural	71.1	0.66**	0.50-0.87
Attitudes favorable to the use of mosquito nets			
No (reference)	50.5	1.00	n/a
Yes	75.8	2.98***	1.97-4.50
Perceived severity			
No (reference)	72.5	1.00	n/a
Yes	75.5	1.17	0.90-1.51
Perceived susceptibility			
No (reference)	61.7	1.00	n/a
Yes	78.0	1.33*	1.02-1.72
Talked about malaria with spouse, family or friends			
No (reference)	69.7	1.00	n/a
Yes	83.5	1.55**	1.15-2.10
Equitable gender attitudes toward net allocation			
No (reference)	67.3	1.00	n/a
Yes	74.0	1.01	0.64-1.58

	Percentage	Adjusted Odds Ratio	95% Confidence Interval
Perceived mosquito net effectiveness			
No (reference)	69.5	1.00	n/a
Yes	75.4	0.76 ‡	0.58-1.00
Perceived self-efficacy for mosquito net use			
No (reference)	36.0	1.00	n/a
Yes	78.7	5.12***	3.56-7.37
Use of mosquito nets perceived as the norm in the community			
No (reference)	60.4	1.00	n/a
Yes	85.0	2.26***	1.77-2.89
Mentioned at least one incorrect method of transmitting malaria			
No (reference)	73.4	1.00	n/a
Yes	73.3	1.32	0.88-1.96
Saw/heard a message about malaria in the past six months			
No (reference)	69.5	1.00	n/a
Yes	80.2	0.89	0.69-1.15
Number of bed nets	n/a	1.53***	1.33-1.75
Number of observations	3382		

Notes: **‡** p<0.1 * p<0.05; ** p<0.01; *** p<0.001; abbreviations: n/a, not applicable.

Table 8.

Logistic Regression Exploring Factors Associated with Engaging in Net Care Behavior

	Percentage	Adjusted Odds Ratio	95% Confidence Interval
Age in years			
15–24 (reference)	29.8	1.00	n/a
25–34	36.1	1.20 ‡	0.98-1.47
35–44	32.9	1.12	0.90-1.38
≥45	32.4	1.15	0.91-1.45
Sex			
Male (reference)	31.4	1.00	n/a
Female	33.8	1.19*	1.01-1.41
Education			
None (reference)	18.8	1.00	n/a
Primary completed	33.6	1.56**	1.17-2.07
≥ Secondary	37.8	1.62**	1.17-2.24
Household wealth quintile			
Lowest (reference)	23.4	1.00	n/a
Second	31.9	1.38**	1.11-1.73
Middle	36.5	1.42**	1.13-1.78
Fourth	37.2	1.29*	1.02-1.63

	Percentage	Adjusted Odds Ratio	95% Confidence Interval
Highest	37.3	1.43**	1.10-1.84
Zone			
Lake (reference)	35.9	1.00	n/a
Southern Highlands	36.4	0.93	0.77-1.11
Central Highlands	36.6	1.11	0.91-1.35
Coastal	21.3	0.33***	0.2741
Residence			
Urban (reference)	37.1	1.00	n/a
Rural	29.8	0.89	0.76-1.04
Attitudes favorable to the use of mosquito nets			
No (reference)	9.7	1.00	n/a
Yes	35.7	4.15***	2.87-6.01
Perceived severity			
No (reference)	33.3	1.00	n/a
Yes	33.1	0.95	0.82-1.10
Perceived susceptibility			
No (reference)	31.1	1.00	n/a
Yes	34.1	0.97	0.82-1.13
Talked about malaria with spouse, family or friends			
No (reference)	32.0	1.00	n/a
Yes	36.7	1.25*	1.07-1.47
Attitudes favorable toward mosquito net care			
No (reference)	3.7	1.00	n/a
Yes	35.4	6.06***	3.18-11.57
Perceived mosquito net effectiveness			
No (reference)	30.7	1.00	n/a
Yes	34.5	0.80**	0.69-0.93
Perceived self-efficacy for mosquito net use			
No (reference)	18.2	1.00	n/a
Yes	35.4	1.02	3.56-7.37
Use of mosquito nets perceived as the norm in the			
community			
No (reference)	29.5	1.00	n/a
Yes	36.6	1.19*	1.04-1.38
Saw/heard a message about malaria in the past six			
months			
No (reference)	30.9	1.00	n/a
Yes	37.2	1.00	0.87-1.16
Consistent net use			
No (reference)	17.8	1.00	n/a
Yes	38.8	2.39***	1.98-2.88
Number of observations	4438		

Notes: ‡ p<0.1 * p<0.05; ** p<0.01; *** p<0.001; ^net care behavior is defined as rolling up or tying up the net when not in use.; abbreviations: n/a, not applicable.

Supplemental Information

See the following tables in Annex A.5 for additional information on these indicators.

- Table A.5.1. Summary of Ideational Variables Related to Net Use
- Table A.5.2. Logistic Regression Exploring Factors Associated with Consistent Net Use
- •

- Table A.5.3. Knowledge of Malaria Prevention Using Mosquito *Nets*
- Table A.5.4. Knowledge of Malaria Prevention Using ITNs
- Table A.5.5.
 Favorable Attitudes toward Mosquito Nets
- Table A.5.6. Favorable Attitudes Toward Net Care
- Table A.5.7. Perceived Response-efficacy of Nets
- Table A.5.8. Perceived Self-Efficacy to Use Nets
- Table A.5.9. Perceived Community Norms Regarding Nets
- •

- Table A.5.10. Perceived Gender Norms Regarding *Nets*
- Table A.5.11. Household Possession of Mosquito Nets
- - Table A.5.12.
 - Access to an ITN
- Table A.5.13. Use of Mosquito Nets on the Night Before the *Survey by Persons in the Household*
- Table A.5.14.
 Use of Existing Household Nets in the Household
- Table A.5.15. Characteristics of Nets in the Household
- Table A.5.16. Washing of Existing Household Nets
- Table A.5.17. Reported Net Care and Repurposing Practices
- Table A.5.18. Consistent Net Use

Indoor Residual Spraying

WHO recommends the use of IRS as a primary vector control tool; historically, and across countries, IRS has been a key factor in malaria reduction and elimination. Typically, spray is applied once or twice per year to the walls of housing units in targeted communities. Recent research has also introduced the need to measure post-IRS behaviors, as housing modifications such as wall painting after insecticide application can reduce its efficacy. If no post-IRS modifications are made, the insecticide typically remains effective for six months. All differences reported in this section, unless otherwise noted, are statistically significant.

Ideational Variables Linked with Acceptance of IRS

The MBS collected data on the following ideational variables: awareness of IRS; favorable attitudes toward IRS; perceived response-efficacy of IRS; and perceived self-efficacy to take actions related to IRS. These data may help prepare for any future targeted use of IRS.

IRS Awareness

Only 18% of respondents were aware of the IRS program; awareness was considerably different by zone, ranging from 6% in the Central Highlands to 50% in the Lake Zone (see Figure 11). Awareness was higher among men, rural residents, and those with no formal education compared to their counterparts. See Table 9 at the end of this section for a summary of the ideational variables related to IRS use and awareness.



Figure 18.

Percentage of Respondents with Awareness of IRS Program (n=4,468)

Significance level: *p<0.05; **p<0.1; ***p<0.001 Note: Background characteristic of age was not significant

IRS Attitudes, Response-Efficacy, and Perceived Self-Efficacy

As shown in **Figure 19** (below), 77% of those who had heard of IRS (n=802) expressed positive attitudes, which varied by zone and wealth quintile, though the latter relationship was nonlinear so is not shown. Only 36% of respondents who were aware of IRS perceived it as effective (Figure 13, below), ranging from 33% in the Lake Zone to 52% in the Central Highlands. While the majority of men (82%) reported this perception, only 17% of women did so. Perceived effectiveness was positively and statistically significantly associated with age and educational attainment.



Figure 19.



Note: ^Only those respondents who were aware of the IRS program were asked this question (n=802)

Perceptions of the effectiveness of IRS (**Figure 20**, below) and of self-efficacy to take actions related to IRS (such as preparing the home) (**Figure 20**, below) followed similar patterns, and were both strikingly high among men (82% and 80%, respectively) compared to women (17% and 8%, respectively).

Significance level: *p<0.05; **p<0.1; ***p<0.001

Figure 20.





Figure 21.

Respondents Who Perceived Self-Efficacy for IRS behaviors (^n=802)



Acceptance of IRS in the Past and Willingness to Accept IRS in the Future

Few respondents reported that IRS was offered in their dwellings over the twelve-month period prior to the survey; only 16% of Lake Zone respondents and less than 2% in the other zones reported that they had been asked to permit IRS in their dwellings. Of those offered IRS in the Lake Zone, 92% accepted it as shown in **Figure 22** (below). Willingness to accept IRS is considered a measure of intention to use IRS in the future if available. All participants were asked whether they would be willing to accept IRS in their household. Willingness was relatively high (79% on average) across all zones. Men, rural residents, and respondents ages twenty-five or older were more favorably disposed than were their counterparts.

Figure 22. *Prior and Intended Acceptance of IRS*



Table 9.

Summary of Ideational Variables: Indoor Residual Spraying (IRS)

	Awareness of IRS program	Favorable attitudes toward	Perceived IRS as	Perceived self-efficacy for
	(n=4,468)	IRS^ (n=802)	effective^ (n=802)	IRS behaviors^ (n=802)
Zone	***	**	**	***
Lake	50.4	75.9	32.8	23.9
Southern Highlands	7.8	82.2	43.0	38.3
Central Highlands	5.9	72.7	51.5	51.5
Coastal	10.1	77.4	38.7	31.2
Sex	**		***	***
Female	16.8	77.0	17.3	7.6
Male	21.3	75.9	82.2	80.1
Age			***	***
15–24	17.2	72.3	20.8	15.4
25–34	17.8	79.1	32.9	21.7
35–44	18.4	77.2	39.2	30.8
≥ 45	18.0	75.7	49.1	46.8
Residence	***			*
Urban	15.3	79.1	39.7	33.5
Rural	20.3	75.1	34.2	25.8
Level of education	***		***	***
None	32.3	70.8	20.8	8.5
Primary	16.2	78.5	38.3	30.6
≥ Secondary	17.4	76.0	42.5	39.1
Wealth quintile	**	***		
Lowest	22.2	70.9	34.2	24.1
Second	17.0	73.5	37.1	25.8
Middle	16.2	89.0	33.1	26.9
Fourth	15.7	82.1	33.6	31.4
Highest	18.7	71.3	43.7	37.1
Total	18.0	76.7	36.4	28.9

Notes: ^Only those respondents who were aware of the IRS program were asked these set of questions (n=802); *p<0.05; **p<0.01; ***p<0.001

Supplemental Information

See the following tables in Annex A.6 for additional information on these indicators.

- Table A.6.1.
 - Summary of Ideational Variables Related to Indoor Residual Spraying
- Table A.6.2.
 Awareness of IRS Programs
- Table A.6.3.
 Attitudes toward
- Table A.6.4. Perceived Response-efficacy of
- Table A.6.5. Perceived Self-Efficacy for Behaviors
- Table A.6.6. Willingness to Accept
- Table A.6.7. Reported Acceptance of IRS

Media Consumption and Message Exposure

Media Consumption

Table 10 (end of this section) presents asummary of variables related to mediaconsumption and malaria messaging. Some61% of participants listened to the radio atleast once a week, with listenershippositively and statistically significantlyassociated with male respondents, age,urban residence, educational attainment,and wealth quintile (Figure 24, below).Radio listenership also varied statisticallysignificantly by zone, ranging from 56% inthe Lake Zone to 66% in the CentralHighlands.

Figure 23.

Media Access and Consumption at a Glance

	Radio listenership	61%	
Ľ	TV viewership	42%	
	Mobile phone ownership	78%	

Figure 24.

100 *** 80.1 *** 76.1 80 71.1 71.5 65.0 65.7 62.3 60.8 61.2 60.3 57.8 54.9 60 50.1 39.0 40 34.8 20 0 Lowest Second Middle Fourth Highest None Primary Secondary+ Female Male 15-24 25-34 35-44 ≥45 Wealth Sex Total Education Age

Respondents Who Listen to the Radio at Least Once per Week (n=4,468)

TV viewing was less common, with 42% of study participants reporting that they watch TV at least once a week. Viewership was statistically significantly and positively associated with male respondents, urban residence, educational attainment, and wealth quintile (**Figure 25**). Again, TV viewership differed by zone, ranging from 35% in the Southern Highlands to 51% in the Central Highlands.

A clear majority of respondents (78%) owned a mobile phone and/or tablet.² As shown in **Figure 26**, male respondents, age, urban residence, educational attainment, and wealth quintile were all positively

² Please note that individual respondent ownership (78%) of these devices is lower than reported household ownership of mobile phones (87%).

and statistically significantly associated with mobile phone ownership. Zonal differences were also observed, ranging from a low of 57% in the Lake Zone to a high of 84% in the Central Highlands.

Figure 25.

Respondents Who Watch TV at Least Once per Week (n=4,468)



Figure 26.

Respondents Who Own a Mobile Phone (n=4,468)



Message Recall

Thirty-seven percent of respondents stated they had seen or heard a malaria message in the six-months prior to the survey. Among those who recalled malaria messages, the most common sources were radio (56%), health clinics (50%), TV (30%), friends and family (12%), and billboards (10%). All other sources were less than 10%; less than 3% mentioned social media or SMS (data not shown).

Figure 27.

Exposure to Malaria Messaging in Six Months Prior to Survey Net Use



significantly more likely to identify the logo correctly than were men (25%), and correct responses varied by zone, from 27% in the Southern Highlands to 37% in the Coastal Zone.

Table 10.

Malaria message recall

urban residence,

were statistically

positively and statistically

Summary of Variables Related to Media Consumption

	Listens to radio at least once a week	Watches tv at least once a week	Owns a mobile phone	Seen or heard a message about malaria in the past six months	Identified a campaign logo
Zone	***	* * *	* * *	* * *	* * *
Lake	56.3	35.6	57.0	27.4	30.9
Southern Highlands	61.7	34.6	77.1	39.2	27.1
Central Highlands	66.4	50.6	84.3	40.3	29.1
Coastal	59.7	48.4	75.8	39.2	37.4
Sex	***	**	***		***
Female	57.8	40.3	69.3	37.1	32.5
Male	71.5	45.8	87.5	35.4	24.8
Age	***		***		
15–24	54.9	40.1	58.7	36.5	31.6
25–34	62.3	43.0	76.2	38.9	29.2
35–44	60.3	41.2	74.8	36.3	30.9
≥45	65.7	41.6	81.0	34.1	31.5
Residence	***	***	***	***	
Urban	69.8	58.7	84.8	44.7	31.2

Rural	53.4	26.2	63.9	29.4	30.1
Education	***	***	***	***	
None	39.0	23.1	35.5	16.4	31.0
Primary	60.8	36.2	74.7	35.4	30.4
≥ Secondary	71.1	65.1	86.4	48.4	31.0
Wealth quintile	***	***	***	***	*
Lowest	34.8	12.3	45.2	21.0	33.1
Second	50.1	15.9	66.8	27.8	28.0
Middle	65.0	30.2	79.5	36.1	29.0
Fourth	76.1	63.1	87.4	43.9	39.8
Highest	80.1	86.8	90.5	54.7	33.3
Total	61.2	41.7	78.3	36.7	30.6

Notes: *p<0.05; **p<0.01; ***p<0.001

Supplemental Information

See the following tables in Annex A.7 for additional information on these indicators.

- Table A.7.1. Variables Related to Media Consumption
- Table A.7.2. Radio Listenership at Least Once a Week
- Table A.7.3. Preferred Time to Listen to Radio
- Table A.7.4. Television Viewership at Least Once a Week
- Table A.7.5. Preferred Time to Watch Television Among Those Who Watch at Least Once a Week, (^n=2056)
- Table A.7.6. Mobile Phone or Tablet Ownership
- Table A.7.7. Exposure to Malaria Messages

Conclusions and Recommendations

Malaria control and elimination depend on human behavior in tandem with appropriate policies and interventions at all levels of the social ecological framework. Understanding populations' malaria-related knowledge, attitudes, and practices can be useful for improving SBC programs. In view of malaria transmission trends as well as ongoing and proposed interventions, the MBS is an essential resource for programmatic and policy decisions. This section discusses the relevant and actionable implications of the MBS results for Mainland Tanzania.

The NMCP's National Malaria Strategic Plan (NMSP) 2021–2025 details a long-term vision for a malariafree society with a shorter-term national goal of halving the average prevalence in children under five years of age by 2025.

The strategy to achieve these goals consists of six components, the first three as core strategies and the last three as support strategies:

- 1. *Integrated malaria vector control:* Reduce malaria parasite transmission by maintaining recommended evidence-based vector control interventions according to the targeted malaria risk strata.
- 2. *Malaria diagnosis, treatment, and preventive therapies:* Prevent the occurrence of mortality related to malaria infection through universal access to appropriate diagnosis and treatment and targeted provision of preventive therapies for vulnerable groups.
- 3. *Surveillance monitoring, and evaluation:* Provide timely and reliable information on malaria and the control needed to take appropriate actions in different transmission risk strata and to ensure that resources are used in the most cost-effective manner.
- 4. *Commodities and logistics management:* Maintain timely availability of safe and quality malaria commodities and supplies at all delivery points.
- 5. *SBC and advocacy:* Strengthen an enabling environment in which individuals, households, and communities at risk of malaria are empowered to protect themselves and their families from malaria and to seek proper and timely malaria care and treatment.
- 6. *Program management:* Improve the efficiency and effectiveness of implementation and coordination of malaria control strategies via accountable partnership.

The key findings, conclusions, and recommendations from the Mainland Tanzania MBS that follow have been aligned to inform the first two core strategies of the NMCP National Malaria Strategic Plan through the lens of social and behavior change and advocacy, which is supporting strategy five.

Please note that the key findings reported in the previous sections are summarized here by strategy for the ease of the reader. Programmatic recommendations appear at the end of each strategy section summary results. All differences by background characteristics described below are statistically significant.

Core Strategic Approach 1: Integrated Malaria Vector Control

Strategic Approach 1: Summary of Results

92%

Malaria Vector Control-Mosquito Nets: Facilitators



Knowledge of malaria prevention by bed net use (treated/untreated)

Most respondents identified mosquito nets or ITNs as a major malaria prevention method. Slight but statistically significant differences existed in respondents' knowledge between urban (91%) and rural (93%) residents, by levels of educational attainment (87–95% linear trend with increase in education), and by wealth quintile (75–95% linear trend with increase in wealth). Significant differences in knowledge were noted by zone, with more respondents from Lake (95%) and Coastal (97%) zones identifying mosquito nets for malaria prevention than respondents from Southern (87%) and Central (91%) Highlands.



91% Favorable attitudes toward bed nets

Most respondents reported favorable attitudes toward bed nets, respondents in the lowest wealth quintile (84%), no formal education (76%), and from the Lake Zone (86%) and Central Highlands (87%) were least likely to have these favorable attitudes. Statements where respondents reported the most unfavorable attitudes:

- More than half (55%) of the respondents thought that more expensive bed nets were more effective than cheaper or free bed nets.
- About one in three (~30%) respondents thought that sleeping under a net caused low sex drive in men.
- Around 36% of the respondents thought that treated nets attracted bed bugs and other insects.
- Approximately one in three (~30%) respondents thought it was difficult to unfold a net and cover a sleeping area every night.



88%

Perceived self-efficacy to use bed nets

Overall, self-efficacy to use bed nets was high among respondents. Respondents reported high self-efficacy (87% or higher) in all of the following statements about bed nets:

- Sleeping under a mosquito net for the entire night when there are lots of mosquitoes (91%)
- Sleeping under a mosquito net for the entire night when there are few mosquitoes (88%)
- Sleep under a net every night of the year (87%)
- Get all of their children to sleep under a mosquito net every night of the year (89%)
- Lake Zone respondents reported the lowest self-efficacy for using bed nets (83%) while Coastal Zone respondents reported the highest (98%).



91% Perceived equitable gender norms toward net allocation

Those with no formal education (75%) and those from the Lake Zone (83%) had the lowest proportion of respondents report equitable gender norms for net allocation.



73% Respondents reporting using a net every night

About 86% of nets were reported to have been used every night the week prior to the survey, and 73% of respondents reported that they consistently used their nets (every night of the week prior to the survey). Differences between use the night prior to the survey and seven nights prior to the survey were negligible. Consistent net use was lowest among those with no formal education (60%), those in the lowest wealth quintile (65%) and those from the Central Highlands (59%). Ideational factors — particularly perceived self-efficacy to use nets (5x higher odds), favorable attitudes toward net use (3 times higher odds), and perceived supportive descriptive community norms (2 times higher odds) — were important enablers of consistent use.

Malaria Vector Control—Mosquito Nets: Limiting Factors



55%

Households with access to at least one insecticide-treated net

While 75% of households reported having access to at least one bed net, only 55% of households reported having at least one ITN. Access to at least one ITN was significantly lower for households in the Central Highlands (44%), and the lowest wealth quintile (40%) compared to their counterparts. Only 52% of households reported having at least one bed net for every two persons in the household. Only 38% of households in the lowest wealth quintile reported having one net for every two persons in the household.



53%

Perceived consistent bed net use by community members

The perception that most community members consistently (every night) used a bed net was prevalent among only slightly more than half the respondents (53%). Respondents from the Southern Highlands (43%), with secondary or higher education (50%), and in the lowest two wealth quintiles (48–49%) were significantly less likely to hold this perception compared to their counterparts.



67%

Perceived response-efficacy of bed nets

Most respondents agreed that sleeping under a mosquito net every night is the best way to avoid getting malaria (93%). In addition, about 62% of the respondents disagreed with the statement "My chances of getting malaria are the same whether or not I sleep under a mosquito net."
Respondents from the Coastal Zone (58%), with no formal education (54%), and the lowest wealth quintile (58%) were least likely to think mosquito nets are effective in preventing malaria.



Malaria Vector Control—Indoor Residual Spraying: Limiting Factors



Aware of IRS programs

18%

Only 18% of respondents reported awareness of an IRS program in their community, although IRS was not implemented in every area in which the MBS was fielded. Awareness of IRS programs were significantly different by zone, ranging from 6% in the Central Highlands to 50% in the Lake Zone. Female respondents,

³ Those unaware of IRS were read a description of what it entails.

urban dwellers, and those with primary education or higher were less aware of IRS programs than their counterparts.



4.3%

Households reporting an IRS-related visit to their dwelling

Only 16% of Lake Zone respondents and less than 2% in the other zones reported that they had been asked to permit IRS in their dwellings. Of those offered IRS in the Lake Zone, 92% accepted it.



36% Perceived IRS as effective

Only 36% of the respondents considered IRS an effective method for preventing malaria. While the majority (85%) of the respondents thought that spraying the inside walls of a house is an effective way to prevent malaria, only 38% thought that those who live in houses that have been sprayed are less likely to get malaria. More male respondents (82%) thought IRS was effective than their female counterparts (17%) and older respondents and those with higher education thought IRS was more efficacious than their counterparts.



29%

Perceived self-efficacy regarding IRS

Less than one in three respondents reported self-efficacy regarding IRS, with a significant difference among respondents by zone (ranging from 24% to 52%), by sex (80% in male respondents and 8% in female respondents), by age (15% to 47% trend by increase in age category), and by level of formal education (9% among those with no formal education compared to 39% among those with secondary or higher). Respondent self-efficacy regarding IRS reflected on two statements: moving all furniture out of the house for spraying and sleeping in the house the night the home was sprayed.

Strategic Approach 1: Recommendations

- Net Access: While 75% of households reported having at least one mosquito net, only 55% of households reported having access to at least one ITN.
 - Mainland Tanzania is anticipating a mass distribution of nets in 2022–2023, so recognizing this <u>clear gap in net access</u>, as a barrier to use, is important given that 25% of households had no nets at all and 45% of households had no ITNs.
 - In addition, the mass distribution campaigns may consider a strategy that takes into account household size to address <u>the gap of access to enough nets</u> in the household given that only 52% of households reported having at least one net for every two persons in the household.
 - Access to nets is significantly *lower in the lower wealth quintiles* across the four zones on the Mainland, so mass net distribution is an opportunity to address this inequity.
- Net Use Behavior: With 86% of the available nets being used consistently and showing no significant differences by urban/rural residence or by wealth quintiles, the primary gap in net use seems to stem from access to nets.
 - Net use by household members showed a dramatic increase, at 89% of household members using nets in households with access to one or more nets per two people in the household compared to 8% in those households with less than one net per two people in the household, <u>supporting the access gap finding</u>.
 - Consistent net use by individual respondents in the week before the survey was at 73%, but with no formal education and the lowest wealth quintiles showing the lowest proportion of the population engaging in consistent net use. This finding aligns with the similar gaps in net access by education and wealth quintiles, pointing to <u>net access as a</u> main factor in the gap in consistent net use for those segments of the population.
 - Rural respondents in three of the four zones also were less likely to report consistent net use compared to their urban counterparts but access was only significantly different in the rural Lake Zone compared to urban areas. So, the gap in consistent net use in the rural area could stem from other contributing factors in the logistic regression: attitudes toward net use, perceived susceptibility, interpersonal communication and community norms, and self-efficacy.
 - Ideational factors particularly perceived self-efficacy to use nets (5 times higher odds), *favorable* attitudes toward net use (3 times higher odds), and perceived supportive descriptive community norms (2 times higher odds) were important enablers of consistent use. SBC malaria strategy must leverage these factors in intervention programming.

- Net Care: Most nets (84%) were reported to have ever been washed, primarily with detergent (70%) or bar soap (28%). Nearly all were dried out in the sun (93%).
 - About 82% of the respondents reported engaging in net care practices, such as rolling or tying up nets when not in use (33%), keeping nets away from children (22%), and handling nets with care (18%).
 - Logistic regression analysis highlighted important factors associated with engaging in net care behavior such as favorable attitudes toward net care (6 times higher odds) and favorable attitudes toward net use (4 times higher odds). These factors can be employed in the SBC approach to promote net care.
- **IRS:** For community-based programs around IRS, building trust while increasing knowledge and awareness of the benefits and demystifying myths can fuel increased support for those programs where they are implemented.
 - The high levels of acceptance and willingness to participate in IRS expressed by survey respondents is a solid foundation for achieving higher coverage of this program, should it be scaled up.

Core Strategic Approach 2: Malaria Diagnosis, Treatment, and Preventive Therapies

Strategic Approach 2	Strategic Approach 2: Summary of Results						
Malaria Care-seeking	Valaria Care-seeking and Treatment—Children under Five: Facilitators						
	88% Favorable perceptions of facility-based health providers						
** *	80% Favorable perceptions of community-based health providers						

Most respondents (97%) agreed that the health provider is the best person to talk to when you think your child may have malaria. Most respondents also agreed that facility-based (91%) and community-based (77%) providers treat their patients with respect, and that health facilities always have malaria test kits (92%) and medications (67%) in stock. Lake Zone respondents reported the lowest proportion of favorable attitudes toward health facilities (58%), facility-based providers (77%), and community-based health providers (72%).

Younger respondents (15–24 years; 85%), those with no formal education (71%), rural dwellers (85%), and those in the lowest wealth quintile (79%) were less likely than their counterparts to have favorable perceptions of facility-based providers.

For community-based health providers, specifically younger respondents (15–24 years; 74%), urban dwellers (77%), and those with no formal education (70%) were less likely than their counterparts to have favorable perceptions.



93%

Perceived equitable gender norms related to malaria treatment

Respondents displayed high levels of gender equitable norms regarding malaria treatment, which suggests that most people would treat male and female children equally with respect to malaria-related care.



79%

Involved in decision to seek care when child has a fever

About 79% of the female respondents said they either make the malaria-related healthcare-seeking decisions for their child themselves or jointly with their partner/spouse. Respondents with no formal education (60%), from rural areas (71%), from the Lake Zone (70%), in the lowest two wealth quintiles (72–75%), younger (15–24 years; 70%), and female (77%) were less likely to report being involved in the decision to seek care for their child's fever.



85%

Perceived malaria testing to be effective

While 93% of respondents agreed that a blood test is the only way to tell if someone has malaria, about half of the respondents thought parents could "diagnose malaria by a child's symptoms just as well as a blood test." In addition, about 20% of the respondents agreed that a person should take malaria medication despite testing negative for it, reflecting misperceptions to be addressed. Those with no formal education (70%), those in the lowest wealth quintile (78%), and younger respondents (79%) had the lowest proportion of respondents to perceive malaria testing as effective.



95%

Perceived self-efficacy to seek malaria testing and treatment

Respondents reported high self-efficacy to seek malaria testing, with most respondents reporting they could afford to seek care (91%), testing and treatment (91%), would go to the health facility/provider the same day or day after developing fever (93%), and could request a blood test (91%) and make sure to finish the full dose of malaria treatment (96%).



73%

Households reported being near a health facility (public/private)

About 68% of households reported proximity to a public health facility, with significant differences between zones, ranging from the Lake Zone at the lowest (61%) to the Coastal Zone at the highest (85%). Only slightly more than one-third of the households (36%) reported being close to a private health facility. Overall, 50% of households reported being close to a pharmacy with the Southern Highlands having the least proportion of households (40%) reporting such access.



Perceived susceptibility to malaria

72%

Slightly less than half (46%) of the respondents believed they could only catch malaria in the rainy season, and 64% reported worrying every day during the rainy season that a family member might get malaria. Residents of the Central Highlands (55%) were significantly less likely than those living in other zones to report perceived susceptibility. Respondents in the highest wealth quintile (65%), with secondary or higher education (64%), in urban areas (66%), and in the youngest age category (15–24 years; 68%), reported the lowest levels of perceived susceptibility.

Perceived susceptibility was associated with 2.5 times increased odds of prompt and appropriate care-seeking for fever in children under five (aOR 2.57).

Malaria Care-Seeking and Treatment — Children under Five: Limiting Factors



Interpersonal communication about malaria with spouse/partner or friends/family

Only about one in five respondents reported talking to their spouse/partner and/or their friends or family about malaria in the six months prior to the survey. Respondents from rural areas and the Central Highlands were the least likely to engage in these conversations.



30% Perceived severity of malaria

20%

Overall, fewer than one in three of respondents believed acquiring malaria would be severe:

- Only 12% of respondents thought that every case of malaria could potentially lead to death, and about 73% thought that someone with malaria is usually expected to recover completely within a few days. More than half of respondents believed they do not need to worry about malaria because it can be easily treated.
- Those in the highest wealth quintile and those with secondary or higher education were least likely to consider malaria severe.



45%

Perceived response-efficacy of malaria treatment

While 77% of respondents identified Artemisinin-based combination therapies (ACT) as the medicine for effectively treating malaria, only 45% considered malaria treatment effective. About 63% of respondents thought that an injection to treat malaria is more effective than malaria medicine taken by mouth. Respondents from the Central Highlands (31%) were least likely to consider malaria treatment effective, but there were no other differences by respondent background characteristics.



Perception that most people seek prompt care for child

About 62% of the respondents thought that most people in their community sought prompt care (same day or next) at a health facility/provider for their child's fever. And about 68% of the respondents thought that most children with fever in the community are taken to a health facility to get malaria testing.

Residents of the Central Highlands were least likely to think their community members seek prompt care (51%) and malaria testing at a health facility (64%).

Respondents in the lowest two wealth quintiles were slightly less likely than their counterparts to think that most of their community members sought prompt care and sought health facility-based malaria testing for their child's fever. This is a topic that health communication programs could — and should — address.

Figure 28.

Care-Seeking Behavior for a Child with a Fever

62%



 Among caregivers who had a child with fever in the two-week period prior to the survey, 85% (n=167) sought care for the fever, 91% of whom did so within the recommended time frame (the same day or day after onset of fever). Of those who sought prompt care, 56% first sought advice or treatment from a health facility or CHW. Only 43% of these care-givers sought prompt *and* appropriate care.

- Prompt and appropriate care-seeking was significantly lower among rural respondents and those who did not live near a health facility, which could reflect more difficulty accessing a clinic.
- About 62% of respondents reported that most people in their communities seek prompt care upon their child developing a fever (descriptive community norm). These percentages could be improved with appropriate interventions across social ecological levels.
- Among those who sought care for their child's fever, 73% reported their child receiving a malaria blood test, and 54% of those tested reported a positive test. Of those who tested positive for malaria, 74% reported receiving ACT, with 71% receiving ACT promptly after testing positive.
- Among all children with a fever in the two weeks before the survey (n=197) regardless of seeking care or malaria testing, 83% reported they received any medication as treatment for that fever.
 - This finding could indicate that caregivers who did not seek formal health care and/or get a malaria test for their child still treated their child's fever with some medication (prescribed/unprescribed).
 - About fifteen caregivers who had not received a malaria test for their child still reported giving ACT to the child with fever.





74% Perceived malaria in pregnancy as severe

Most respondents (90%) agreed that malaria is severe for a pregnant woman and her unborn child. Slightly less than 70% of the respondents ascertained that pregnant women are at higher risk of dying from malaria than their nonpregnant counterparts. The perception of severity of malaria in pregnancy was statistically different by zone, ranging from 60% in the Lake Zone and 66% in the Coastal Zone to 82% in the Central Highlands and 83% in the Southern Highlands.

Younger respondents (15–24 years; 67%), those with no formal education (67%), and those in the highest wealth quintile (69%) were less likely to consider the severity of malaria in pregnancy compared to their counterparts.



76%

Perceived that most community members approve of pregnant women taking antimalarials

Women from the Lake Zone (66%), in the lowest wealth quintile (69%), with no formal education (58%), and in the youngest age category (15–24 years; 65%) were least likely to think that most community members approve of pregnant women taking medicine to prevent getting malaria.



84%

Involved in decision to seek antenatal care

About 70% of women reported ever discussing antenatal care with their spouse or partner, but 84% of all respondents (men and women) reported either making the decision to seek antenatal care by themselves or jointly with their spouse/partner. Female respondents (87%) were slightly more likely to report being involved in ANC decisions than their male counterparts (79%). About 75% of women indicated that they were accompanied by their partner/spouse for at least one ANC visit. Rural residence, no formal education, ages 15 to 24 years, and the lowest wealth quintile had the lowest proportion of respondents reporting being involved in decision-making around ANC.

Malaria Care-Seeking and Treatment—Malaria in Pregnancy: Limiting Factors



6%

69%

Comprehensive knowledge of malaria care in pregnancy

Only 6% of the respondents correctly answered all three knowledge questions about malaria care in pregnancy, with 9% of the female respondents and none of the male respondents demonstrating comprehensive knowledge.

- About 21% of the respondents correctly knew when a pregnant woman should begin going for pregnancy care in the first trimester.
- Sixty percent of the respondents correctly reported how many times a pregnant woman should receive care during one pregnancy four or more ANC visits.
- Approximately 41% of the respondents correctly knew the number of times a pregnant woman should take medicine to keep from getting malaria during her pregnancy at least three doses of IPTp.
- Knowledge of malaria care in pregnancy was significantly different by zone.



Favorable perceptions of health providers giving malaria-specific pregnancy care

As noted in the malaria care-seeking section, favorable perceptions around facility-based health providers reported high, at around 88%. However, when asked specifically about health providers who give pregnancy care around malaria, about 69% of the respondents reported favorable perceptions. Coastal Zone respondents reported the least favorable attitudes toward malaria-related pregnancy care-giving health providers. Unfavorable perceptions of health providers giving malaria in pregnancy care were specifically noted for:

- Over 80% of respondents agreed with the statement:
- Health providers at the health facilities in this community only give pregnant women the medicine to prevent getting sick from malaria if she's eaten beforehand, where only 18% of respondents disagreed.
- A small but notable area for improvement relates to the report by 30% of respondents that health providers turn women away when they seek care in the first two months of pregnancy. Especially in the Coastal Zone, more than 40% of respondents agreed with the statement.



10% Women reporting attending at least eight ANC visits

The recommendation in Tanzania is that pregnant women attend eight ANC visits during the course of their pregnancy. Only about 10% of the female respondents with a live birth in the last two years reported attending ANC at least eight times. About 78% of the women reported attending at least four ANC visits and 94% reported attending at least once.

The Lake Zone (5%) and the Central Highlands (9%) had the lowest proportion of female respondents reporting at least eight ANC visits during their last pregnancy, while the Coastal Zone (16%) reported the highest.

Those in the lowest wealth quintiles and those from rural areas were least likely to attend at least eight ANC visits.

In logistical regression analysis, primary or higher education, higher wealth quintiles, Coastal Zone residence, favorable attitudes toward IPTp, favorable perceptions of malaria in pregnancy providers, and being close to a public/private health facility resulted in higher odds of having at least four ANC visits.



47%

Women reporting receiving three or more doses of SP during their last pregnancy

Women reporting one to three ANC visits were significantly less likely to report receiving three or more doses of SP than their counterparts with four or more ANC visits. This finding aligns with 78% of female respondents reporting receipt of SP from an antenatal care visit. Other notable findings include:

- Only 41% of rural women reported three or more SP doses during their last pregnancy compared to 54% of their urban counterparts.
- Respondents from the Lake Zone (42%) were least likely to receive three or more doses compared to those in other zones.
- The proportion of women with no formal education (31%) who received three or more SP doses was significantly lower than counterparts with primary (47%) or higher (56%) education.
- A statistically significant linear trend was observed by wealth quintile: women in the lower wealth quintiles were less likely to report receiving three or more doses compared to the women in higher wealth quintiles.
- In logistic regression analysis, primary or higher education, the highest wealth quintile, Central Highlands residence, talking to friends or family about malaria, correct comprehensive knowledge of malaria in pregnancy care, favorable attitudes toward IPTp, and being close to a public/private health facility yielded significantly higher odds of taking three or more SP doses.



59%

34%

Perception that most pregnant women to go antenatal care at least eight times

Slightly less than 60% of respondents agreed with the descriptive norm that most pregnant women in their community seek antenatal care at least eight times. Respondents from the Central Highlands (41%) were the least likely to report this descriptive norm.



Women who intend to seek antenatal care at least eight times during their future pregnancy

While 95% of the women who intend to get pregnant intended to take IPTp, and 75% intended to seek ANC care in the first trimester, only 34% intended to attend ANC at least eight times. If the recommendation in Tanzania is for women to get at least eight ANC visits during their pregnancy, it will be important for programs to consult with women to understand why the intention to seek eight ANC visits is so low. Notable findings regarding future intentions include:

- Those with no formal education (14%) and those in the lowest wealth quintile (24%) were least likely to report an intention to seek at least eight ANC visits.
- In logistic regression analysis, rural residence, secondary or higher education, being in higher wealth quintiles, favorable attitudes toward IPTp, equitable gender norms around ANC, favorable perceptions of malaria in pregnancy health providers, and discussing ANC attendance with a spouse/partner resulted in higher odds of intending to seek early ANC.

Strategic Approach 2: Recommendations

- Health Facility Access
 - Households reporting <u>not</u> being near any health facility range from 13%, at the lowest, in the Coastal Zone to 36%, at the highest, in Lake Zone, with rural areas having significantly less access to health facilities. Addressing care-seeking behaviors around malaria including treating children with a fever and for ANC <u>should consider</u> <u>bringing malaria-related healthcare resources and interventions to these communities</u> directly in addition to health facility access-dependent approaches.
- Care-Seeking Behavior for Children Under Five Years
 - Interventions around provider-based counseling and general awareness around malaria testing and treatment should focus on increasing trust in malaria treatment effectiveness, which remains low, at 45%, and on emphasizing testing for malaria before treatment as half of the population thinks parents can diagnose malaria as well as a blood test. This finding also shows up in the self-treatment of a child's fever by caregivers who do not seek formal care and/or receive a malaria test.

- With only 43% reporting prompt (same day or next) and appropriate (health facility/provider), those who live close to any health facility (public or private) were significantly more likely to engage in this behavior than those with no health facility nearby. This finding is supplemented by the difference in those seeking prompt care (91%) compared to those who seeking care first from a health facility/clinic or CHW (56%). A focus on improving care-seeking behavior should account for segments for whom access influences the behavior adoption or maintenance.
- Respondents also noted uncertainty around health facilities and providers having medications in stock for treating malaria, which may illustrate that respondents had experienced effects of stockouts at the health facility level. <u>To promote adopting and</u> <u>maintaining care-seeking behaviors, the resources people are expected to seek must</u> <u>be available. A better understanding may be needed of how widespread the issue of</u> <u>stockouts is on the Mainland.</u>
- Malaria in Pregnancy Behaviors
 - ANC Visits: Women from the Lake Zone and from rural areas were least likely to report four or more ANC visits (and receiving 3+ SP doses) – this aligns with the health facility access data which show that households in the Lake Zone and rural areas report the highest proportion without access to any health facility nearby. This finding is further supported by the logistic regression showing access-related factors such as primary or higher education, higher wealth quintiles, and being near a public/private health facility all result in higher odds of attending four or more ANC visits. Therefore, to address the gap of access, community-based interventions and community-based health care might improve reach of malaria pregnancy care.
 - SP Doses: Improving the number of ANC visits also allows pregnant women to receive three or more doses of SP, as shown by the findings that report the highest proportion receiving three or more SP doses among those who had four or more ANC visits. The same access related factors that were significant for ANC visits were significant for receiving three or more SP doses – suggesting that improving access and incorporating community-based healthcare for malaria in pregnancy would improve this behavioral outcome as well.

Supporting Strategy: SBC and Advocacy

The Supporting Strategy of SBC and Advocacy within the Tanzania Mainland National Malaria Strategic Plan seeks to strengthen the enabling environment where individuals, households, and communities at risk of malaria are empowered to protect themselves and their families from malaria and to seek proper and timely malaria care and treatment. The MBS findings point to key areas that SBC programs can address to improve the adoption and maintenance of malaria-related behaviors.

Media Access and Consumption for SBC Programming

- With around 78% of the respondents reporting access to a mobile phone, SBC interventions could expand their reach with the use of SMS and Interactive Voice Response methods. It will be important to explore further who can actually be reached via mobile phone. The 22% without access must be reached through other approaches and are likely to be among the unserved or underserved.
- As expected, access to items such as radio, TV, and mobile phone is higher with higher access to resources, education, and wealth, so SBC campaigns should prioritize segments of the population that may already be disadvantaged in healthcare resource access to not be left behind in with regards to reach and impact of SBC.
- With slightly more than one-third of the respondents reporting seeing or hearing a malaria message in the six months prior to the survey, expansion of malaria messaging and its reach might be important as new malaria strategies and activities develop.

SBC for ITN Use

- Common misconceptions around ITNs still linger, such as treated nets causing low sex drive in men and attracting bed bugs and other insects. Communication campaigns that employ dialogue with trusted information sources can debunk these myths to increase people's favorable attitudes toward using nets.
- Emphasizing positive community norms around bed net use in SBC communication and community-based activities would improve overall community perception of the prevalence of mosquito net use and support greater household use of nets.
- A significant proportion of the population considers its chances of getting malaria to be the same regardless of mosquito net use, so SBC campaigns should address susceptibility to malaria and the effectiveness of nets.

SBC for IRS programs

• With highly favorable attitudes and willingness to accept IRS reported by respondents, in anticipation of the IRS scale-up, it will be important to communicate through SBC programs what those programs entail, what is expected of people who accept IRS for their homes, and how effective IRS is before implementing IRS in communities. This effort would address the key gaps noted in these findings and go a long way to building trust and acceptance of the program when they reach the communities.

SBC for care-seeking for child with fever

 Communication campaigns focused on care-seeking behaviors could also develop activities and messages that improve people's knowledge of malaria care-seeking and treatment, understanding of their susceptibility to malaria as well as the severe consequences of malaria, and build trust in the effectiveness of malaria tests and treatment that would support careseeking for their child's fever. • While 77% actually sought prompt care for their child with fever, only 62% thought most people in their community did so. SBC programs could highlight this descriptive norm in communities by engaging people in community-based activities designed to increase malaria care-seeking for children under five as well as designing messages that reinforce this as the norm.

SBC for malaria in pregnancy

SBC radio, television, SMS, and/or community-based messages and programs should focus on the following:

- Knowledge of malaria care for pregnancy, given that only 6% of the respondents had comprehensive knowledge of timing of care, number of visits, and number of SP doses.
- Misconceptions, such as not being able to take SP on an empty stomach and that pregnant women should wait a few months to see a health provider for their pregnancy before their first ANC visit.
- The higher risks that pregnant women face with malaria.
- Modeling community norms around pregnant women taking antimalarials.
- Eight ANC visits are recommended in Tanzania, yet only 10% of the women with a live birth report following the recommendation and approximately 30% intend to do so in a future pregnancy. Closing the loop by communicating this recommendation through community and facility-based interactions would be key to improving this care-seeking behavior.

Facility-based counseling and provider interaction SBC programming should address the following:

- The majority of respondents think that providers would turn pregnant women away if not accompanied by their partner and that providers would refuse to give antimalarials to pregnant women who hadn't eaten before the appointment. Attending to these key gaps would build trust into the health system and the interaction itself so pregnant women feel more comfortable seeking malaria care.
- Providers can be trained to counsel women on the higher risks that malaria poses for pregnant women while at the same time reiterating the importance of early, and at least eight, ANC visits to help ensure she can take as many doses as possible of SP to prevent such risks.

Implications for Future Research

Respondents from Mainland Tanzania showed positive attitudes and trust toward health facilities and health providers, as well as willingness to accept government-led malaria prevention and vector control programs. In addition, most respondents with access to a net reported using it consistently, and most caregivers seek prompt care for their child with fever. In multiple areas of malaria prevention explored in the MBS, respondents in rural areas with lower levels of educational attainment, and in the lower wealth quintiles, were less knowledgeable, more uncertain of both ongoing and proposed interventions, and less likely (or less able) to take preventive action than their more privileged counterparts. This finding aligns with the literature regarding health behaviors more broadly, which has demonstrated time

and again that, on average, relative privilege, and therefore access to resources, including healthcare resources, is positively associated with recommended health behaviors. SBC programming should conduct detailed audience segmentation analysis as well as healthcare access landscape analysis to ensure benefits from their programs can be reaped equitably by communities.

Gaps that remain around malaria care-seeking include respondent uncertainty regarding the effectiveness of malaria testing and malaria treatment, individuals' perception of the severity of malaria, and perceptions from either past patient-provider interactions or hearing about such experiences from others may keep people from seeking malaria-related care. A way to expand on the MBS findings and explore these gaps would be through a health facility assessment at public as well as private health facilities that counsel, test, and treat for malaria. This facility assessment would provide insight into the patient-provider interaction around malaria, communication and information given to patients, how decisions are made, and what gaps can be closed within the health facility setting.

Conclusions

In view of malaria transmission trends, risks, ongoing and proposed interventions in Tanzania, the MBS is a critical resource for programmatic and policy decisions. There is much to celebrate in the Mainland Tanzania MBS findings, including the highly positive perceptions of government-led health programs, facility-based healthcare, and community-based providers. This trust can be built upon to extend to the acceptance of new or recently reintroduced community-based malaria programs, such as IRS and Larval Source Management (not included in this survey).

The larger health system as well as individuals and communities also have work to do. ITN access can and should be expanded so that all households have sufficient ITNs for all members. Individuals and communities must commit to and promote consistent ITN use. Health care and health resources access for those disadvantaged and/or remote segments of the populations must also be considered. Improvements in prompt care-seeking for children under five and for pregnant women can also be attained with the involvement across social ecological levels. The findings not only support the work of ongoing and proposed programs to achieve NMCP's strategic goals but also suggest room for expansion in reach and scale for the Mainland's malaria prevention programs.

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Annex A: Data Tables

- A.1 Sample Characteristics
- A.2 Cross-Cutting Ideational Determinants
- A.3 Malaria Case Management
- A.4 Malaria in Pregnancy
- A.5 Insecticide-Treated Net Use
- A.6 Indoor Residual Spraying
- A.7 Media Consumption and Message Exposure

A.1 Sample Characteristics

This subsection provides results for the 2021 Mainland Tanzania MBS, including sample characteristics, disaggregated by zone. Tables may be duplicated or referenced in the main body of the report.

Table A.1.1

Housing Characteristics, by Zone

	Lake (n=710)	Southern Highlands (n=949)	Central Highlands (n=792)	Coastal (n=654)	Total (n=3107)
Average number of people in household	6.1	5.2	5.0	4.6	5.2
Average number of sleeping rooms	2.2	2.2	2.4	2.1	2.2
% of households with electricity***	42.1	61.0	64.1	65.6	58.4
% of households near^ a (public/private) health facility***	64.2	68.9	73.5	86.5	72.7
% of households near^ a public health facility***	60.6	66.1	64.8	84.6	68.4
% of households near^ a private health facility***	29.9	32.7	44.1	36.4	35.7
% of households near^ a pharmacy***	48.7	39.8	59.6	54.4	50.0
% of households with finished floors***	50.3	54.3	65.9	58.4	57.2
% of households with finished roof***	72.8	83.3	87.1	85.0	82.2
% of households with finished walls***	51.7	52.4	70.7	36.8	53.6

Notes: ^Near is defined as located five kilometers or less, 30 minutes or less on foot, or ten minutes or less by car. Significance of differences between zones: *p<0.05; **p<0.01; ***p<0.001

Table A.1.2

Household Assets and Wealth Quintiles, by Zone

	Lake (%) (N=710)	Southern Highlands (%) (N=949)	Central Highlands (%) (N=792)	Coastal (%) (N=654)	Total (%) (N=3105)
Radio***	56.1	58.9	68.7	51.1	59.1
Television***	28.9	30.1	44.7	41.4	35.9
Simple mobile phone***	80.6	85.0	91.8	92.5	87.3
Smartphone***	18.7	17.0	33.6	26.4	23.6
Bicycle***	39.1	21.5	17.8	24.9	25.3
Land	50.1	54.8	51.0	51.2	52.0
Livestock***	42.5	46.1	52.0	21.7	41.7
Wealth Quintile***					
Lowest	26.9	21.2	14.4	17.6	20.0
Second	20.7	21.8	16.3	21.1	20.0
Third	20.0	22.8	18.2	18.2	20.0
Fourth	18.0	21.5	25.4	13.5	20.0
Highest	14.4	12.7	25.8	29.7	20.0

Notes: Significance of differences between zones: *p<0.05; **p<0.01; ***p<0.001

Table A.1.3

Household Population Characteristics, by Zone

	Lake	Southern Highlands	Central Highlands	Coastal	Total
	(%) (n=3657)	(<i>7</i> °) (n=3843)	(%) (n=3483)	(%) (n=2472)	(%) (N=13455)
Sex					
Female	51.5	53.8	54.7	54.5	53.6
Male	48.5	46.2	45.3	45.5	46.4
Residence					
Urban	31.6	42.1	64.2	45.2	45.5
Rural	68.4	57.9	35.8	54.8	54.5
Age Distribution					
0-4	15.2	10.5	11.8	12.5	12.5
5–17	40.6	36.7	36.3	29.0	36.2
≥ 18	44.2	52.8	51.9	58.5	51.3

Table A.1.4

Survey Sample Characteristics, by Zone

	Lake (%)	Southern Highlands (%)	Central Highlands (%) (n=1112)	Coastal (%)	Total (%)
Sex	(11-1004)	(11-1373)	(11-1115)	(11–918)	(11-4408)
Female	74 7	73.8	74 9	78.3	75.2
Male	25.3	26.1	25.1	21.7	24.7
Age***	20.0				
15–19 years	6.9	2.5	3.2	6.4	4.5
20–29 years	30.8	26.0	27.8	28.4	28.1
30–39 years	30.8	30.8	32.4	31.5	31.4
≥ 40 years	31.5	40.6	36.5	33.7	36.0
Residence***					
Urban	35.0	44.9	65.8	47.3	48.2
Rural	65.0	55.1	34.2	52.7	51.7
Education***					
None	18.4	6.3	4.3	7.8	9.0
Primary	62.2	74.4	64.4	69.4	68.0
≥ Secondary	19.4	19.3	31.3	22.8	23.0
Religion***					
Christianity	75.0	83.7	71.2	17.8	65.0
Islam	23.4	15.4	28.7	82.2	34.3
Married*	81.7	83.3	82.3	75.5	81.1
Wealth Quintile***					
Lowest	27.6	20.6	14.6	17.3	20.1
Second	21.0	21.8	15.9	20.8	19.9
Third	18.9	24.0	19.0	18.1	20.3
Fourth	17.6	21.1	25.2	13.7	19.8
Highest	14.9	12.4	25.4	30.1	19.9

Notes: *p<0.05; **p<0.01; ***p<0.001 for differences between zones

A.2 Cross-Cutting Ideational Determinants

This subsection summarizes data from the 2021 Mainland Tanzania MBS related to cross-cutting ideational determinants, including knowledge of malaria, perceived susceptibility and severity of malaria, gender norms related to malaria, perceptions regarding health workers and malaria, and interpersonal communication related to malaria. The tables herein summarize the prevalence of ideational determinants and may be duplicative of tables in the main body of the report.



Correct Knowledge of Malaria, by Zone

	Knows few	ver is main sym	nptom of malar	ia		Knows	Knows malaria is caused by mosquito bite				Knows at least one malaria major prevention measure				
	Lake (%) (n= 1064)	Southern Highlands (%) (n= 1373)	Central Highlands (%) (n= 1113)	Coastal (%) (n= 918)	Total (%) (N= 4468)	Lake (%) (n= 1064)	Southern Highlands (%) (n= 1373)	Central Highlands (%) (n= 1113)	Coastal (%) (n= 918)	Total (%) (N= 4468)	Lake (%) (n= 1163)	Southern Highlands (%) (n= 1373)	Central Highlands (%) (n= 1113)	Coastal (%) (n= 918)	Total (%) (N= 4468)
Sex							**			**					
Female	77.9	72.7	83.4	80.5	78.3	96.3	94.1	98.0	99.7	96.8	96.1	87.5	93.6	98.0	93.3
Male	80.3	71.6	85.3	80.4	78.7	97.0	98.0	98.9	99.5	98.3	96.6	88.3	90.7	98.5	92.8
Age	**							*							
15–24	75.9	72.6	79.2	83.3	77.6	95.9	97.9	96.1	100.0	97.5	94.1	90.5	89.6	97.9	93.2
25–34	80.1	74.3	83.5	77.3	78.8	97.0	94.8	97.9	99.6	97.1	97.0	88.4	93.3	98.5	93.8
35–44	83.3	71.0	85.3	80.6	79.4	96.5	94.3	100.0	99.6	97.3	97.2	87.2	93.7	98.2	93.4
≥ 45	70.8	71.7	85.7	82.3	76.9	96.4	95.0	97.5	99.4	96.7	95.9	86.0	93.3	97.6	91.9
Residence		*				**	*			***					
Urban	75.5	76.0	81.8	78.5	78.4	99.3	96.0	98.4	100.0	98.2	97.5	88.8	92.5	97.3	93.3
Rural	79.1	69.9	86.7	82.3	78.1	94.8	92.5	97.2	99.5	95.5	95.4	86.4	95.8	98.7	93.3
Education	**	**	**		***	***	***	**		***		***	***		***
None	82.1	67.8	64.6	79.2	76.4	90.3	87.4	91.7	100.0	91.6	94.9	75.9	79.2	97.2	89.3
Primary	75.5	70.5	85.6	79.1	77.0	97.7	94.9	98.0	99.7	97.3	96.2	86.7	92.9	98.0	92.6
≥ Secondary	84.5	81.1	83.0	85.2	83.3	98.5	98.5	99.4	99.5	99.0	97.6	95.5	94.8	99.0	96.4
Wealth quintile		*			**	***	***			***	*	**	***		***
Lowest	78.6	65.7	78.4	79.2	74.6	91.5	89.7	96.3	99.4	93.2	93.9	81.3	80.9	98.1	88.3
Second	78.9	73.0	83.6	81.1	78.3	97.3	95.3	97.2	99.5	97.1	95.1	90.0	90.4	98.9	93.3
Middle	77.1	73.2	85.8	81.9	78.6	99.0	95.4	98.6	100.0	97.8	98.0	86.0	93.4	96.4	92.3
Fourth	79.7	72.4	84.3	76.2	78.3	97.9	98.3	98.9	100.0	98.6	98.4	92.4	96.8	97.6	95.8
Highest	78.0	80.7	85.5	81.9	82.1	100.0	97.7	98.9	99.6	99.1	97.5	89.5	97.2	98.9	96.3
Respondents with knowledge (%)	78.5	72.4	83.9	80.5	78.4	96.5	95.1	98.2	99.7	97.2	96.2	87.7	92.9	98.1	93.2

Perceived Susceptibility to Malaria

	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)
DISAGREE: People in this community only catch malaria during the rainy season.***	74.5	38.7	44.6	65.6	54.2
AGREE: Nearly every year, a person in this community gets a severe case of malaria.***	85.9	80.3	63.4	88.3	79.1
AGREE: When your child has a fever, you almost always worry that it might be malaria.***	73.9	72.1	57.4	80.6	70.6
AGREE: During the rainy season, you worry almost every day that a member of your family will get malaria.***	66.3	69.9	51.8	69.2	64.4
Perceived susceptibility to malaria***	77.2	73.1	55.3	83.7	71.8
Sex		*			*
Female	76.5	71.8	55.3	83.7	71.4
Male	79.2	76.9	55.6	83.4	73.2
Age		*			**
15–24	73.2	65.3	46.1	81.2	67.7
25–34	77.0	73.3	55.8	82.0	71.1
35–44	78.6	76.0	58.1	83.7	73.8
≥ 45	79.5	73.7	56.7	88.8	73.3
Residence			***	*	***
Urban	73.4	72.7	48.4	80.6	66.3
Rural	78.1	71.0	68.4	86.5	76.1
Education	*		***	**	***
None	68.4	63.2	45.8	84.7	67.5
Primary	79.1	74.3	62.3	86.5	75.1
≥ Secondary	79.1	71.7	42.2	74.6	63.8
Wealth quintile			*	**	***
Lowest	73.8	72.8	54.3	86.2	72.2
Second	82.5	70.0	57.1	86.9	74.2
Middle	79.6	75.4	63.5	89.8	76.2
Fourth	78.6	75.9	56.1	82.5	71.1
Highest	71.1	70.2	48.1	76.8	65.3

Perceived Severity of Malaria

	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)
DISAGREE: You do not worry about malaria because it can be treated easily.***	43.0	39.1	56.9	54.8	47.7
DISAGREE: Only weak children can die of malaria.***	86.0	80.4	81.3	81.1	82.1
AGREE: Every case of malaria can potentially lead to death.***	13.6	10.4	10.8	12.2	11.6
DISAGREE: When someone you know has malaria, you usually expect them to recover completely within a few days.***	32.7	26.0	24.3	21.9	26.3
Total who perceived severity of malaria	31.3	28.8	29.8	28.2	29.5
Sex					
Female	31.1	28.7	30.5	28.9	29.7
Male	32.0	29.2	28.0	25.6	28.9
Age	*				
15–24	28.2	27.4	29.2	24.5	27.2
25–34	34.7	33.1	27.6	25.6	30.5
35–44	32.1	28.0	32.9	31.1	30.8
≥ 45	27.7	25.8	29.4	31.8	28.1
Residence			***	***	**
Urban	32.0	26.4	26.0	26.2	27.2
Rural	30.6	30.6	38.9	31.4	32.1
Education			**		***
None	29.6	23.0	31.2	36.1	29.5
Primary	33.4	30.2	33.6	28.3	31.3
≥ Secondary	26.2	25.7	21.8	25.4	24.4
Wealth quintile			**		*
Lowest	29.2	31.4	34.6	34.6	31.8
Second	29.6	26.7	33.3	29.3	29.3
Middle	35.8	30.1	34.6	26.5	31.7
Fourth	35.8	27.6	31.8	23.0	30.0
Highest	26.4	28.1	19.4	27.2	24.7
<i>Notes:</i> *p<0.05; **p<0.01; ***p<0.001					

Interpersonal Communication Regarding Malaria

	Has discussed	l malaria with	spouse/partne	r		Has discuss	Has discussed malaria with friend/family					
	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)		
Sex	*	**	**	**	***							
Female	20.2	17.9	15.1	24.8	19.2	18.9	18.4	14.6	32.0	20.5		
Male	27.5	25.9	21.9	35.7	27.0	20.1	20.9	12.5	33.7	20.9		
Age	*			*	*							
15–24	18.6	19.5	15.6	19.8	18.5	18.2	15.8	15.6	33.8	21.0		
25–34	23.3	23.7	19.6	28.2	23.3	20.2	19.0	16.8	30.0	20.8		
35–44	26.4	19.2	15.0	26.5	21.4	22.0	20.2	11.1	29.3	20.3		
≥ 45	16.9	17.1	15.5	34.7	19.8	13.8	19.6	13.0	39.4	20.3		
Residence				***	**		*	**	***	***		
Urban	20.9	19.8	16.4	32.3	21.4	19.1	21.3	17.1	38.8	23.2		
Rural	19.9	16.5	12.6	17.9	17.2	18.8	16.1	9.8	25.9	18.0		
Education												
None	18.4	14.9	14.6	19.4	17.4	19.9	12.6	8.3	27.8	18.4		
Primary	22.8	19.3	17.8	28.9	21.7	17.7	19.4	15.1	33.3	20.9		
≥ Secondary	23.3	24.5	14.9	24.4	21.0	23.3	20.0	12.9	31.1	20.5		
Wealth quintile	*		***		***			*	*	***		
Lowest	20.1	18.7	8.0	25.8	18.5	18.4	19.4	6.8	39.0	20.3		
Second	23.8	16.0	11.9	21.5	183	19.3	13.3	10.7	25.6	16.9		
Middle	14.9	21.6	21.8	25.9	20.9	13.9	21.0	17.1	27.1	19.6		
Fourth	28.9	22.4	16.4	25.4	22.3	23.0	20.7	15.4	30.2	20.8		
Highest	24.5	22.2	21.5	33.3	25.9	22.6	22.2	17.0	37.3	25.3		
Total (%)	22.1	20.0	16.8	27.1	21.2	19.2	19.1	14.1	32.3	20.6		

Perceptions Regarding Facility-Based Health Workers

	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)
Positive general perception toward health providers***	84.9	91.9	96.1	90.6	91.0
All positive perceptions toward health providers providing case management (all statements)***	42.6	57.4	49.1	F	52.0
Positive (score >0) perceptions toward health providers doing case management***	84.2	94.1	95.8	95.6	92.5
All positive perceptions toward health providers providing care for malaria in pregnancy (all statements)***	0.2	1.5	8.5	2	J.2
Positive (score >0) perceptions toward health providers providing care for malaria in pregnancy***	69.5	70.4	.`6	∠0. •.	69.4
Favorable perceptions (score >0) of facility-based health providers***	84.4	·	.3	7.7	93.3
Sex					
Female	84.6	95.1	<u>۶.0</u>	97.5	93.4
Male	83.ι	93.9	<u> </u>	98.5	93.0
Age	**	·		**	**
15–24	76.4	5.3	97.4	94.3	89.9
25–34	8-7	94.	97.2	98.5	94.2
35–44	<u> </u>	۹ <u>5.2</u>	94.9	97.9	94.0
≥ 45	<u>83.t</u>		96.2	100.0	93.5
Residence	<u> </u>			**	***
Urban	90.	96.0	96.9	95.6	95.2
Rural	°1.6 ⊢.	94.3	94.4	99.2	91.6
Education	**	*			***
None	65.3	88.5	100.0	98.6	80.4
Primary	87.5	95.0	95.4	98.3	94.1
≥ Secondary	92.7	95.8	97.7	95.7	95.8
Wealth qui the	***		-		***
Lowert	73.1	94.7	95.1	98.7	88.4
Seconc	83.9	93.0	96.0	98.9	92.6
Middle	91.0	96.0	97.2	98.2	95.6
Fourth	92/5	95.9	97.1	97.6	95.8
Highest	88.0	93.6	95.8	96.0	94.0

Perceptions Regarding Community Health Providers

	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)
Positive general perception toward community health providers***	68.7	76.3	81.9	79.4	76.5
All positive perceptions toward health providers providing case management (all statements)***	51.4	66.2	64.0	- /	64.5
Positive perceptions (score >0) toward community health providers doing case management***	71.0	79.0	79.1	84.2	78.2
Respondents with all favorable perceptions regarding community-based health providers (all statements)***	48.2	62.9		3	ō1.4
Respondents with favorable perceptions (score >0) regarding community-based health providers***	71.6	80.8	81.8	7 6	79.7
Sex			<u> </u>	1	
Female	71.2	<u>80.</u> `	<u>8.</u> 7	84.4	79.6
Male	72.9	81.1	80.6	84.9	79.7
Age	***		**		***
15–24	59.5	81.0	74.0	82.3	73.7
25–34	~?2. <u>2</u>	<u> </u>	81.4	83.9	80.2
35–44		78.5	80.8	86.2	80.5
≥ 45	<u>74</u> `	ر ٢. <u>4</u>	89.1	85.3	82.3
Residence	+ +		***	***	**
Urban	<u>} 1</u>	78.5	77.6	77.3	77.2
Rural	69.6	82.6	91.2	90.8	81.9
Education		*		*	***
None	60.7	72.4	85.4	83.3	70.2
Primary	73.7	82.2	81.3	86.5	81.0
≥ Secondary	75.2	78.5	82.5	78.9	79.3
Wealth quintile		**		*	
Lowest	70.7	87.6	82.7	89.3	81.5
Second	66.4	81.0	83.0	81.7	77.9
Middle	69.1	78.7	82.0	90.4	79.5
Fourth	77.5	81.0	77.5	84.9	79.7
Highest	76.7	73.1	84.8	80.1	79.6

Gender Norms Related to Malaria

	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)
DISAGREE: When there are not enough nets, it is more important that female children sleep under the available nets rather than male children.***	84.3	94.0	91.5	97.8	91.9
DISAGREE: When there are not enough nets, it is more important that male children sleep under the available nets rather than female children. ***	89.2	96.3	93.6	98.5	94.4
AGREE: A pregnant woman should feel comfortable asking her husband/spouse to go to the health facility for a prenatal consultation.***	87.7	86.2	94.6	95.6	90.6
DISAGREE: When there is not enough money, it is more important that male children with fever get medicine rather than female children.***	90.5	96.3	93.9	97.7	94.6
DISAGREE: When there is not enough money, it is more important that female children with fever get medicine rather than male children.***	88.9	97.2	94.2	97.1	94.4
Respondents who have all equitable gender attitudes related to malaria (all statements)***	74.6	79.7	86.1	91.6	82.5
Respondents who have overall positive gender norms related to malaria (score >0)***	89.5	98.2	94.7	99.3	95.5
Sex					*
Female	88.7	97.9	94.1	99.3	96.6
Male	91.8	98.9	96.4	99.5	95.1
Age	*		*		**
15–24	83.6	97.4	94.8	98.4	93.1
25–34	91.2	98.8	93.0	99.6	95.6
35–44	91.5	97.6	97.6	99.6	96.6
≥ 45	89.7	98.6	93.3	99.4	95.6
Residence	***				***
Urban	96.0	98.7	93.1	99.4	96.5
Rural	84.7	97.3	96.1	99.2	93.8
Education	***	***			***
None	69.9	93.1	89.6	98.6	82.4
Primary	92.7	98.2	94.1	99.7	96.4
≥ Secondary	97.6	99.6	96.5	98.6	98.0
Wealth quintile	***				* * *
Lowest	82.6	96.5	93.8	98.7	91.9
Second	87.0	97.7	94.9	100.0	94.9
Middle	93.0	98.8	96.7	99.4	97.1
Fourth	95.7	99.0	94.3	100.0	96.9
Highest	93.7	99.4	94.0	98.9	96.5

A.3 Malaria Case Management

This subsection summarizes results for the 2021 Tanzania MBS for items related to malaria care-seeking and treatment, particularly for children under five years old, including behavior and ideational factors (e.g., knowledge, attitudes, perceived response-efficacy, perceived self-efficacy, gender norms, and perceived community norms). Where appropriate, results are disaggregated by zone. Tables may be duplicated or referenced in the main body of the report.

Table A.3.1

Ideational	Variables	Related	to Malaria	Case	Management

	Knowledge of malaria care- seeking/ treatment (%)	Favorable attitudes toward care- seeking/ treatment (%)	Perceived response- efficacy of malaria testing (%)	Perceived response- efficacy of malaria treatment (%)	Perceived self- efficacy for malaria testing/ treatment (%)	Perceived supportive descriptive community norms of malaria care- seeking /treatment(%)	Perceive equitable gender norms of malaria treatment (%)	Favorable perceptions of health facilities regarding care-seeking/ treatment (%)	Favorable perceptions of community health providers regarding care-seeking /treatment(%)	Favorable perceptions of facility health providers regarding care-seeking /treatment (%)	Involved in decision to go to health facility/ purchase medicine when child has fever^ (%)	Involved in decision about what to do when respondent is sick^ (%)
Zone	***	***	***	***	***	***	***	***	***	***	***	***
Lake	66.1	87.8	80.3	55.9	86.5	69.1	86.9	58.3	71.6	77.3	70.1	67.1
Southern Highlands	61.0	91.0	84.2	40.6	97.6	71.2	95.8	74.5	80.8	89.1	82.3	91.3
Central Highlands	55.4	88.0	84.2	30.5	97.9	68.1	93.5	63.6	81.8	94.4	81.3	90.4
Coastal	85.1	97.3	90.1	54.1	98.7	76.5	96.4	73.4	84.5	90.6	79.1	78.8
Sex											**	
Female	65.3	90.8	84.4	44.6	95.0	71.7	93.4	68.0	79.6	88.0	77.1	82.2
Male	67.1	90.8	84.6	44.0	95.9	68.9	92.8	66.9	79.7	87.8	81.7	84.5
Age	**	**	***		***		**		***	**	***	***
15–24	61.1	87.6	79.1	45.2	89.1	67.9	90.3	68.5	73.7	84.5	70.3	74.3
25–34	67.2	90.3	85.3	43.9	95.8	70.3	93.3	67.4	80.2	87.4	77.1	83.0
35–44	65.0	91.9	86.1	45.2	97.0	72.0	94.6	67.3	80.5	89.1	80.6	84.7
≥ 45	68.3	92.5	85.1	43.7	96.9	73.1	93.5	68.1	82.3	89.9	82.1	84.8
Residence		*	***		***		**		**	***	***	***
Urban	66.0	92.1	87.1	45.6	96.5	71.5	94.9	66.4	77.2	90.8	83.7	88.8
Rural	65.5	89.5	81.9	43.7	93.7	71.8	92.0	69.4	81.9	85.4	71.3	76.4
Education	***	***	***		***		***		***	***	***	***
None	55.1	78.7	69.7	47.1	86.3	73.4	79.4	64.3	70.2	71.0	60.4	63.0
Primary	66.4	91.4	86.0	43.9	96.2	71.0	94.4	67.9	81.0	88.7	79.5	83.9
≥ Secondary	68.0	93.8	85.6	45.2	95.9	70.0	95.2	68.5	79.3	92.3	83.0	88.1
Wealth quintile	***	***	***		***	***	***			***	***	***
Lowest	53.3	84.9	77.5	45.8	89.1	67.5	88.2	70.5	81.5	79.1	71.5	75.7
Second	65.5	88.0	83.0	42.9	94.8	67.2	93.5	67.8	77.9	88.4	75.9	82.5
Middle	68.2	93.0	86.3	42.4	97.6	71.3	94.8	67.1	79.5	91.5	80.6	86.6
Fourth	67.1	94.0	87.4	43.7	97.4	72.2	95.2	66.8	79.7	91.6	82.2	84.4
Highest	74.7	94.0	88.1	47.7	97.4	76.7	94.6	66.2	79.6	89.2	82.4	85.1
Total (%)	65.8	90.8	84.5	44.5	95.3	71.0	93.3	67.7	79.7	88.0	78.5	82.9

Notes: N=4468 overall respondents, ^n=3622 with spouses/partners for questions regarding decision-making; *p<0.05; **p<0.01; ***p<0.001

Malaria Behavior Survey: Tanzania Mainland 2021

Table A.3.2

Logistic Regression Exploring Factors Associated with Prompt and Appropriate Care-seeking

	Percentage	Adjusted	95%
		Odds Ratio	Confidence
			Interval
Age in years			
15–24	38	1.00	n/a
25–34	40	0.97	0.37–2.54
35–44	55	2.40	0.80-7.13
≥ 45	50	0.90	0.13-6.31
Education			
None (reference)	25	1.00	n/a
Primary	40	1.17	0.25-5.40
≥ Secondary	64	6.06 ‡	0.95–38.5
Household wealth quintile			
Lowest (reference)	17	1.00	n/a
Second	38	4.80*	1.25-18.4
Middle	64	9.33**	2.09-41.7
Fourth	53	5.59*	1.29–24.2
Highest	62	4.12 †	0.91–18.6
Zone			
Lake	34	1.00	n/a
Southern Highlands	52	1.12	0.35-3.62
Central Highlands	37	0.35‡	0.11–1.13
Coastal	51	1.42	0.47-4.25
Residence			
Urban (reference)	61	1.00	n/a
Rural	25	0.26**	0.10-0.67
Perceived severity of malaria			
No (reference)	45	1.00	n/a
Yes	36	0.61	0.25–1.44
Perceived susceptibility of malaria			
No (reference)	42	1.00	n/a
Yes	43	1.31	0.46-3.79
Talked about malaria with spouse/friends/family members			
No (reference)	38	1.00	n/a
Yes	47	0.92	0.39-2.12
Knowledge of malaria care-seeking and treatment			
No (reference)	39	1.00	n/a
Yes	45	0.73	0.30–1.79
Favorable attitudes toward care-seeking and treatment			
No (reference)	20	1.00	n/a
Yes	45	4.18	0.64–27.4
Care-seeking and testing perceived as the norm in the community			
No (reference)	35	1.00	n/a
Yes	47	1.52	0.62-3.74

	Percentage	Adjusted Odds Ratio	95% Confidence Interval
Perceive equitable gender norms related to malaria treatment			
No (reference)	28	1.00	n/a
Yes	44	1.88	0.35–10.1
Mentioned at least one incorrect method of malaria transmission			
No (reference)	43	1.00	n/a
Yes	41	1.89	0.56–6.37
Heard a message about malaria on the media			
No (reference)	34	1.00	n/a
Yes	52	1.46-0.66 - 3.22	1
Favorable perceptions of health facilities regarding care-seeking and treatment			
No (reference)	42	1.00	n/a
Yes	43	0.54	0.20–1.45
Favorable perceptions of facility health providers regarding care- seeking and treatment			
No (reference)	45	1.00	n/a
Yes	42	0.19**	0.06-0.67
Favorable perceptions of CHW regarding care-seeking and treatment			
No (reference)	31	1.00	n/a
Yes	47	7.32***	2.47–21.7
Perceived efficacy of malaria testing			
No (reference)	44	1.00	n/a
Yes	43	0.39	0.09–1.66
Perceived efficacy of malaria treatment			
No (reference)	44	1.00	n/a
Yes	41	0.46‡	0.21-1.03

Notes: Number of observations: 197 female respondents reporting on a child under five who had had a fever in the two weeks previous to the survey; $\frac{1}{2} < 0.1$ p < 0.05; **p < 0.01; ***p < 0.001; abbreviations: n/a, not applicable.

Table A.3.3.

Knowledge of Malaria Care-Seeking and Treatment

	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)
Identified ACT as medicine that can be used to effectively treat malaria.***	81.7	73.0	61.5	97.7	77.3
Identified SAME DAY OR NEXT DAY as a time period where one should seek advice or treatment after developing a fever.***	91.4	95.8	96.9	98.5	95.6
Identified BLOOD TEST as the best way to know if someone has malaria.***	85.8	87.1	91 9	8-	88. `
Identified HEALTH FACILITY/CLINIC ¹ as the best place to go in the community if one has malaria.	98.6	99.1	99.2	98.6	98.9
Respondents who have comprehensive knowledge of malaria care-seeking and treatment***	66.1	F1 ^		85.1	65.8
Sex					
Female	65.8	59.	`5.6	84.1	65.3
Male	66.9	65.2	.5	88.4	67.1
Age	**	I	×		**
15–24	-5.9	7 <u>.9</u>	43.5	84.4	61.1
25–34		<u>6</u> . 7	56.3	84.3	67.2
35–44	<u>65.</u>	<u>59.1</u>	54.5	85.5	65.0
≥ 45	_ ¹ .3	1.9	62.6	86.5	68.3
Residence					
Urban	69.0	62.9	56.8	84.2	66.0
Rural	<u> </u>	59.6	52.6	85.8	65.5
Education	***		**		***
None	18.5	54.0	47.9	79.2	55.1
Primary	71.3	61.2	52.3	85.6	66.4
≥ Seconda	66.0	62.6	62.6	85.7	68.0
Weal* ^uintile	***	***	***		***
I.owe.	52.9	48.4	34.0	82.4	53.3
s ond	67.1	59.8	53.1	84.3	65.5
Mia	71.5	62.2	63.6	82.0	68.2
Fourth	69.2	69.5	55.2	84.6	67.1
Highest	78.3	67.3	63.0	89.2	74.7

Notes: ¹Includes public medical sector, private medical sector, and community health provider. Excludes advice or treatment from a traditional practitioner, shop, market, and itinerant drug seller; *p<0.05; **p<0.01; ***p<0.001
Table A.3.4.

Attitudes Toward Malaria Care-Seeking and Treatment

	Lake (%) (n=1064)	Souths 1 Highlands (%) (n=1 3)	Central Highlands (%) 1113)	Coastal (%) (n=918)	Total (%) (N=4468)
AGREE: The health provider is always the best person to talk to when you think your child may have malaria.***	94.7	98.	98.0	98.9	97.4
DISAGREE: One does not need to continue taking all the medicine doses against malaria if he/she is feeling better.***			68.1	85.7	73.5
DISAGREE: A parent should ask for an injection from the health provider or CHW if they think his/her child has malaria.***	SF	55.3	46.9	69.8	58.7
DISAGREE: I prefer that my child receive the medicine to treat malaria by injection rather than by mouth in pill form.***	54.8	42.7	40.4	74.1	53.8
AGREE: A person should only take malaria medicine if a health provider ays that his/ or fever really is caused by malaria.***	93	91.4	95.3	94.2	93.4
DISAGREE: If a health provider says a person does not have malaria, the p tic t should ask for a malaria medication just in case s/he needs it.***	3.3	79.3	80.9	77.7	77.9
DISAGREE: When my child has a fever, it is better to start higiving the hand had had had had had had had had had ha	69.2	73.5	74.3	75.3	73.0
AGREE: Taking all of the antimalarial pills prescribed ure a pupple recover is important.***	90.9	95.0	96.5	96.4	94.7
DISAGREE: When my child has a fever, I do no' to dire div to be heals. facility, I first go elsewhere to buy him/her medicine.***	68.3	75.2	73.9	80.0	74.2
Respondents with favorable attitudes to are alaria care-surving and creatment***	87.8	91.0	88.0	97.3	90.8
Sex					
Female	88.3	91.0	87.4	97.1	90.8
Male	86.2	90.8	90.0	98.0	90.8
Age	04.4	*	*	06.0	**
	84.1	85.8	83.8	96.3	87.6
	88.5	90.4	80.3	97.8	90.3
> 44	00.7 00.2	91.4	91.0	90.5	91.9
	***	>>.o **	00.7	30.0	32.J *
Urban	95.3	93.8	86.0	97.1	92.1

	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)
Rural	84.5	88.7	90.2	97.1	89.5
Education	***	**	**		***
None	70.9	80.5	79.2	97.2	78.7
Primary	90.6	91.8	86.7	96.7	91.4
≥ Secondary	94.7	91.3	91.9	99.0	93.8
Wealth quintile	***	***	*		***
Lowest	78.2	85.9	82.7	97.5	84.9
Second	86.5	88.0	83.0	94.2	88.0
Middle	91.5	93.3	90.0	98.2	93.0
Fourth	95.2	95.5	90.0	97.6	94.0
Highest	93.7	92.4	90.8	98.5	94.0

Notes: *p<0.05; **p<0.01; ***p<0.001

Table A.3.5.

Perceived Response-Efficacy of Malaria Testing

	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)
AGREE: A blood test for malaria is the only way to know if someone really has malaria.***	82.7	95.8	96.7	97.7	93.3
DISAGREE: A person should still take malaria medicine even if the malaria test result says that the fever is not due to malaria.***	22.6	20.1	22.3	13.4	19.9
DISAGREE: Parents can diagnose malaria by a child's symptoms just as well as a blood test for malaria.***	41.6	44.4	59.8	52.1	49.1
Respondents with a high perceived response-efficacy of malaria testing.***	80.3	84.2	84.2	90.1	84.5
Sex					
Female	80.2	83.5	84.2	90.5	84.4
Male	80.3	86.1	84.2	88.4	84.6
Age	***				***
15–24	70.0	77.9	81.8	88.5	79.1
25–34	84.9	85.2	82.4	90.1	85.3
35–44	83.6	84.3	86.8	90.8	86.1
≥ 45	78.5	86.3	84.9	90.6	85.1
Residence	* * *	*			***
Urban	90.3	86.1	83.8	91.2	87.1
Rural	74.8	81.4	84.9	90.0	81.9
Education	***		**		***
None	60.7	75.9	64.6	90.3	69.7
Primary	83.4	85.3	85.4	90.7	86.0
≥ Secondary	88.8	82.6	84.5	88.0	85.6
Wealth quintile	***	***			***
Lowest	68.7	77.4	80.2	91.2	77.5
Second	76.2	83.0	81.9	92.1	83.0
Middle	86.1	83.9	86.3	91.6	86.3
Fourth	89.3	88.3	83.6	91.3	87.4
Highest	89.3	91.2	86.9	86.6	88.1

Notes: *p<0.05; **p<0.01; ***p<0.001

Table A.3.6.

Perceived Response-Efficacy of Malaria Treatment

	Lake (%) (n 1064)	Southern Highlands (%) (n 1373)	Central Highlands (%) (n 1113)	Coastal (%) (n 918)	Total (%) (N 4468)
DISAGREE: An injection to treat malaria is more effective than malaria medicine taken by mouth ***	49.5	30.2	21.0	50.8	36.7
AGREE: Malaria drugs obtained from the health facility are effective in treating malaria.***	86.7	91.5	94.1	96.5	92.0
DISAGREE: The malaria medicines that you buy in the market are as good as the ones distributed at the health facility.***	15.3	13.4	10.0	8.3	12.6
Total with high perceived response-efficacy	55.9	40.6	30.5	54.1	44.5
Sex					
Female	55.1	40.8	30.2	55.2	44.6
Male	58.4	39.8	31.2	50.2	44.0
Age					
15-24	55.9	41.6	29.2	49.5	45.2
25-34	52.3	42.0	28.2	59.0	43.9
35-44	55.0	41.3	31.4	56.2	45.2
≥ 45	63.6	37.5	33.6	48.2	43.7
Residence			**	**	
Urban	56.5	41.1	33.9	61.8	45.6
Rural	54.3	40.6	23.2	49.3	43.7
Education					
None	53.1	29.9	41.7	55.6	47.1
Primary	54.7	40.4	30.5	53.2	43.9
≥ Secondary	62.6	44.5	28.7	56.5	45.2
Wealth quintile	*				
Lowest	59.2	35.7	26.5	58.5	45.8
Second	54.3	38.7	26.5	51.3	42.9
Middle	47.3	44.1	30.8	48.2	42.4
Fourth	55.6	42.8	32.1	54.0	43.7
Highest	63.5	41.5	33.2	57.2	47.7

Notes: *p<0.05; **p<0.01; ***p<0.001

Table A.3.7.

Perceived Self-Efficacy for Malaria Testing and Treatment

	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)
Can find the money to take your child to the health facility at the first sign of malaria.***	83.5	95.8	93.0	87.6	90.5
Get permission from your spouse/partner or other family member to take your child to the health facility/provider when your child has a fever.***	88.3	96.4	96.1	96.8	94.5
Take your child to the health facility the same day or next day they develop a fever.***	82.0	96.9	96.6	96.6	93.2
Request a blood test at the health facility when you think your child might have malaria.***	83.2	89.7	95.1	94.8	90.5
Make sure your child takes the full dose of medicine that s/he is prescribed for malaria.***	88.1	98.0	98.0	98.7	95.8
Find the money to pay for the medication the health provider recommends to treat malaria.***	86.1	96.0	93.6	87.7	91.3
Total who perceived self-efficacy for malaria testing and treatment (%)***	86.5	97.6	97.9	98.7	95.3
Sex					
Female	85.7	97.3	98.3	98.3	95.0
Male	88.8	98.3	96.8	100.0	95.9
Age	***	**	**		***
15–24	73.2	93.7	96.1	97.4	89.1
25–34	88.5	98.5	96.6	99.3	95.8
35–44	91.8	98.1	98.8	98.9	97.0
≥ 45	89.2	98.0	100.0	98.8	96.9
Residence	**		**		* * *
Urban	90.6	97.8	97.4	97.9	96.5
Rural	83.0	97.0	100.0	98.7	93.7
Education	***	* * *			***
None	77.5	89.7	97.9	98.6	86.3
Primary	88.8	98.0	97.8	99.2	96.2
≥ Secondary	87.4	98.5	98.3	97.1	95.9
Wealth quintile	***		**		* * *
Lowest	75.2	96.1	93.8	97.5	89.1
Second	85.2	97.7	97.2	99.5	94.8
Middle	94.5	97.9	98.6	99.4	97.6
Fourth	92.5	98.6	98.6	99.2	97.4
Highest	91.8	97.7	99.6	98.2	97.4

Notes: *p<0.05; **p<0.01; ***p<0.001

Table A.3.8.

Gender Norms Related to Malaria Treatment

	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)
DISAGREE: When there is not enough money, it is more important that male children with fever get medicine rather than female children.***	90.5	96.3	93.9	97.7	94.6
DISAGREE: When there is not enough money, it is more important that female children with fever get medicine rather than male children.***	88.9	97.2	94.2	97.1	94.4
Total who perceive equitable gender norms related to malaria treatment***	86.9	95.8	93.5	96.4	93.3
Sex					
Female	87.2	96.2	93.4	96.4	93.4
Male	86.2	94.7	93.9	96.5	92.8
Age	**		*		**
15-24	80.0	95.3	94.2	94.3	90.3
25-34	88.8	96.3	91.5	97.1	93.3
35-44	89.3	95.0	97.0	97.2	94.6
≥ 45	87.7	96.6	91.6	96.5	93.5
Residence	***				**
Urban	95.0	97.4	92.7	95.3	94.9
Rural	83.0	95.3	94.7	97.4	92.0
Education	***	**	*		***
None	66.8	88.5	85.4	98.6	79.4
Primary	90.3	96.4	93.2	97.0	94.4
≥ Secondary	95.1	96.2	95.4	93.8	95.2
Wealth quintile	***				***
Lowest	76.9	93.3	91.4	96.9	88.2
Second	85.6	96.3	95.5	96.3	93.5
Middle	92.0	95.7	94.3	97.0	94.8
Fourth	93.0	97.2	93.2	98.4	95.2
Highest	93.7	97.1	93.3	94.9	94.6

Notes: *p<0.05; **p<0.01; ***p<0.001

Table A.3.9.

Perceived Community Norms Regarding Malaria Care-Seeking and Treatment

	Agree that most people in the community take their children to a health provider on the same day or day after they develop a fever. (%)	Agree that most children with fever in the community are
Zone	***	***
Lake	63.6	65.0
Southern Highlands	63.4	68.7
Central Highlands	50.9	64.0
Coastal	69.2	74.1
Sex		*
Female	62.0	68.6
Male	60.1	65.3
Age		*
15–24	57.3	63.8
25–34	61.7	66.9
35–44	62.4	69.0
≥45	63.4	70.4
Residence		
Urban	61.6	68.4
Rural	62.3	68.7
Education	*	
None	67.7	67.2
Primary	61.0	68.5
≥ Secondary	60.5	65.9
Wealth quintile	***	**
Lowest	59.1	63.2
Second	57.5	65.4
Middle	62.1	68.9
Fourth	61.2	69.5
Highest	67.8	71.8
Total (%)	61.5	67.8

Notes: *p<0.05; **p<0.01; ***p<0.001

Table A.3.10.

Perceptions of Health Facilities Regarding Malaria Care-Seeking and Treatment

	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)
AGREE: Health facilities always have medication to treat malaria.***	59.3	72.0	61.8	73.0	66.6
AGREE: Health facilities in this community always have the blood test kit to tell if a person has malaria.***	86.6	93.9	90.6	97.1	92.0
Total with favorable perceptions of health facilities regarding malaria care-seeking and treatment***	58.3	74.5	63.6	73.4	67.7
Sex					
Female	59.2	74.8	64.3	72.2	68.0
Male	55.4	73.5	61.6	77.9	66.9
Age					
15–24	58.6	75.3	70.1	71.9	68.5
25–34	59.2	73.3	65.1	71.8	67.4
35–44	59.1	72.7	61.1	75.6	67.3
≥ 45	54.9	77.6	60.5	74.1	68.1
Residence				***	
Urban	61.5	76.0	63.0	62.9	66.4
Rural	58.0	73.9	66.7	80.5	69.4
Education			*		
None	56.1	69.0	81.2	69.4	64.3
Primary	57.8	74.4	61.2	75.3	67.9
≥ Secondary	61.6	76.6	66.1	68.9	68.5
Wealth quintile				*	
Lowest	57.1	80.2	66.7	81.8	70.5
Second	58.3	72.7	71.2	68.1	67.8
Middle	56.7	74.5	60.2	74.1	67.1
Fourth	59.9	73.8	60.0	76.2	66.8
Highest	60.4	69.6	63.2	70.6	66.2

Notes: *p<0.05; **p<0.01; ***p<0.001

Table A.3.11.

Perceptions of Facility Health Workers Regarding Malaria Care-Seeking and Treatment

	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)
AGREE: Health providers in health facilities in this community treat their patients with respect.***	84.9	91.9	96.1	90.6	91.0
AGREE: Health providers at the health facilities in this community know how to treat malaria in children.***	86.1	94.6	96.8	97.8	93.8
DISAGREE: Health providers at the health facility in this community make parents pay for the medication to treat malaria in children less than five years old.***	71.0	78.2	83.2	80.7	78.3
DISAGREE: Health facility providers in your community make parents of children less than five years old pay for the blood test to see if the child has malaria.***	73.8	79.0	83.9	81.6	79.5
Total with favorable perceptions of health facility workers regarding care-seeking/treatment***	77.3	89.1	94.4	90.6	88.0
Sex					
Female	77.6	89.2	94.4	90.4	88.0
Male	76.6	88.9	94.6	91.5	87.8
Age	*			*	**
15–24	70.4	89.5	96.7	85.9	84.5
25–34	77.0	86.9	95.6	89.0	87.4
35–44	80.8	89.5	92.8	93.3	89.1
≥ 45	80.0	91.0	93.3	94.1	89.9
Residence	***	*		***	***
Urban	86.3	91.4	95.4	86.2	90.8
Rural	72.9	87.5	92.3	94.2	85.4
Education	***	*	**		***
None	53.1	80.5	100.0	88.9	71.0
Primary	81.6	89.1	92.9	90.9	88.7
≥ Secondary	86.9	92.1	96.8	90.4	92.3
Wealth quintile	***	**			***
Lowest	61.9	83.4	93.8	88.0	79.1
Second	78.9	88.0	97.2	92.1	88.4
Middle	84.6	92.7	94.8	93.4	91.5
Fourth	88.2	92.4	93.6	90.5	91.6
Highest	81.8	88.3	93.6	89.5	89.2

Notes: *p<0.05; **p<0.01; ***p<0.001

Table A.3.12.

Perceptions of Community Health Workers (CHWs) Regarding Malaria Care-Seeking and Treatment

	Lake (%)	Southern Highlands	Central Highlands	Coastal (%)	Total (%)
	(n=1064)	(%) (n=1373)	(%) (n=1113)	(n=918)	(N=4468)
AGREE: CHWs in the community treat their patients with respect.***	68.7	76.3	81.9	79.4	76.5
AGREE: CHWs always know how to assess a fever for malaria.***	63.5	72.6	75.0	82.6	73.1
AGREE: CHWs in this community always know where to refer you for care and treatment for malaria.***	64.8	77.2	76.1	81.9	75.0
AGREE: CHWs in this community always have referral information to provide on where to seek care for malaria ***	61.4	72.8	70.6	79.8	71.0
Respondents with favorable perceptions of CHWs***	71.6	80.8	81.8	84.5	79.7
Sex					
Female	71.2	80.8	82.2	84.4	79.6
Male	72.9	81.1	80.6	84.9	79.7
Age	***		**		***
15–24	59.5	81.0	74.0	82.3	73.7
25–34	72.2	83.2	81.4	83.9	80.2
35–44	77.4	78.9	80.8	86.2	80.5
≥ 45	74.9	80.4	89.1	85.3	82.3
Residence			***	***	**
Urban	74.1	78.5	77.6	77.3	77.2
Rural	69.6	82.6	91.2	90.8	81.9
Education	**	*		*	***
None	60.7	72.4	85.4	83.3	70.2
Primary	73.7	82.2	81.3	86.5	81.0
≥ Secondary	75.2	78.5	82.5	78.9	79.3
Wealth quintile		**		*	
Lowest	70.7	87.6	82.7	89.3	81.5
Second	66.4	81.0	83.0	81.7	77.9
Middle	69.1	78.7	82.0	90.4	79.5
Fourth	77.5	81.0	77.5	84.9	79.7
Highest	76.7	73.1	84.8	80.1	79.6

Notes: *p<0.05; **p<0.01; ***p<0.001

Table A.3.13.

Decision-Making for Malaria Care and Treatment

	Will go to health facility when child has a fever				Will purchase medicine when child has malaria					
	Lake (%) (n=869)	Southern Highlands (%) (n=1144)	Central Highlands (%) (n=916)	Coastal (%) (n=693)	Total (%) (n=3622)	Lake (%) (n=869)	Southern Highlands (%) (n=1144)	Central Highlands (%) (n=916)	Coastal (%) (n=693)	Total (%) (n=3622)
Sex	*	***	* * *	* * *		***			***	***
Female	74.1	92.7	92.7	82.8	86.3	67.3	84.7	84.6	74.2	78.5
Male	81.6	85.5	79.0	95.3	84.7	84.3	84.1	82.7	97.9	86.2
Age	**			**	***	***		**	**	***
15–24	63.3	89.9	85.7	75.3	78.3	57.0	81.4	79.6	71.1	71.9
25–34	76.1	91.4	87.6	87.8	85.9	73.0	86.3	78.5	78.4	79.4
35–44	81.6	91.6	89.5	86.5	87.7	75.6	84.1	89.5	81.7	82.9
≥ 45	78.2	88.1	90.6	91.0	87.2	78.2	84.3	87.6	89.6	84.8
Residence	***				***	***			**	***
Urban	91.1	94.2	91.8	85.3	91.1	82.7	87.2	85.1	80.0	84.3
Rural	65.5	91.6	94.3	80.8	82.1	59.5	82.8	83.8	69.6	73.3
Education	***	**			***	***	*			***
None	52.6	77.4	85.4	86.4	68.0	53.2	72.6	80.5	79.7	65.5
Primary	80.1	91.4	88.5	85.3	87.0	73.9	85.3	83.4	80.9	81.5
≥ Secondary	87.1	90.6	89.4	90.4	89.4	87.1	84.6	86.3	80.8	85.0
Wealth quintile	***		*		***	***		**		***
Lowest	62.6	90.9	81.7	89.0	79.7	59.1	82.6	72.3	83.9	73.3
Second	73.0	87.6	87.3	83.0	82.9	70.3	83.5	82.3	81.6	79.5
Middle	81.0	90.6	90.1	88.4	88.0	76.1	85.4	88.9	82.2	83.6
Fourth	89.0	92.5	89.4	82.5	89.4	83.1	86.3	85.4	73.2	83.6
Highest	84.7	90.9	91.9	87.5	89.0	81.7	84.6	87.4	81.2	84.0
Total	76.4	90.5	88.6	86.3	85.8	72.5	84.5	84.1	80.8	80.8

Notes: Total (n=3622) for this table only includes respondents who are married or living as if married; *p<0.05; **p<0.01; ***p<0.001

Table A.3.14.

Involvement in Decision-Making for Malaria Care and Treatment among Respondents with Spouses/Partners

	Lake (%) (n=869)	Southern Highlands (%) (n=1144)	Central Highlands (%) (n=916)	Coastal (%) (n=693)	Total (%) (n=3622)
Sex	***	*	***	**	
Female	62.1	92.7	93.0	75.8	82.2
Male	78.3	88.3	84.2	86.5	84.5
Age	**	*			***
15–24	53.1	87.6	87.8	71.1	74.3
25–34	67.2	94.3	87.9	78.8	83.0
35–44	71.7	91.9	91.6	80.4	84.7
≥ 45	69.7	88.8	94.1	81.2	84.8
Residence	***			**	***
Urban	78.7	93.9	93.0	82.2	88.8
Rural	53.7	91.8	93.0	70.6	76.4
Education	***	*			***
None	46.1	83.9	85.4	69.5	63.0
Primary	68.5	91.2	90.3	80.3	83.9
≥ Secondary	83.7	94.1	91.4	76.8	88.1
Wealth quintile	***		**		***
Lowest	53.9	89.1	83.2	83.0	75.7
Second	66.5	90.5	90.5	80.8	82.5
Middle	69.9	94.1	94.2	80.6	86.6
Fourth	76.6	90.0	88.9	72.2	84.4
Highest	75.9	93.0	93.3	76.9	85.1
Total	67.1	91.3	90.4	78.8	82.9

Notes: Total (n=3622) for this table only includes respondents who are married or living as if married. *p<0.05; **p<0.01; ***p<0.001

Table A.3.15.

Care-Seeking and Testing of Children With Fever in Two Weeks Before the Survey

	Caregivers with a child with fever in the two weeks preceding the survey (%) (n=1478)	Caregivers who sought advice or treatment for the child with fever (%) (n=197)	Caregivers who sought advice or treatment the same day or day after onset of fever (%) (n=167)	Caregivers who sought advice or treatment first from a health facility/clinic or CHW^ (%) (n=167)	Caregivers who sought prompt AND appropriate care after onset of fever (%) (n=1	Caregivers who report their child receiving a malaria blood test (%) (n=167)
Zone		**				
Lake	13.9	75.9	90.9	52.3	34	7. 7
Southern Highlands	11.0	90.5	92.1	60.5	52.4	71.0
Central Highlands	12.9	77.1	81.1	56.8	٥. ^٢	59.5
Coastal	15.9	98.0	97.9	5/	51	81.2
Caregiver age						
15–24	15.8	84.5	89.8	51.0	3. 9	73.5
25-34	13.0	81.6	90.1	55.	10.∠	74.6
35-44	11.7	88.6	92.3	66.7	54.6	66.7
≥ 45	12.1	100.0 (8)	100.0 (8)	50.0	50.0	75.0
Residence				··*	***	
Urban	14.6	89.8	94.3	70.5	61.2	75.0
Rural	12.3	79.8	87.3	39.2	25.3	69.6
Education					*	
None	11.0	75.0	<u> </u>	`1.7	25.0	58.3
Primary	14.4	·	<u></u>	52.8	40.1	71.2
≥ Secondary	11.0	< <u>8.2</u>	<u> </u>	73.3	64.7	83.3
Wealth quintile	*		*	***	***	
Lowest	17.6	78.0	78.3	30.4	17.0	60.9
Second	_11	<u>8^2</u>	96	46.7	38.2	63.3
Middle	1	Jo.2	96.0	76.0	64.3	76.0
Fourth	11.5	<u>.</u> 1.8	96.4	67.9	52.9	89.3
Highest	15.8	90	94.7	71.0	61.9	78.9
Health facility Cress						
Not near any Hi	11.	72.3**	88.2	38.2*	23.4**	67.7
Near any H.	+ ^ _	88.7**	91.7	60.2*	49.3**	73.7
Near a Public r.	14.6	88.3	93.0	62.5	51.0	73.4
Near a Private HF	6	93.7	93.7	63.5	51.4	77.8
Total (%)	13.5	84.8	91.0	55.7	43.2	72.5

Notes: Sample for this table only includes mothers/caregivers of children under five: n=1478; and caregivers only report on one child who most recently had a fever in the two week period in the household; ^Includes advice or treatment from: public medical sector, private medical sector, or CHW. Excludes advice or treatment from a traditional practitioner, shop, market, and itinerant drug seller; ⁺includes any HF public or private. Abbreviations: CHW, community health worker. *p<0.05; **p<0.01; ***p<0.001

Table A.3.16.

Treatment of Children with Fever

	Children under five tested for malaria (n=121) and confirmed positive (%)	Children under five with confirmed malaria (n=65) who received ACT (%)	Children under five with confirmed malaria (n=65) who received ACT promptly (%)
Zone	***	**	*
Lake	81.8	81.5	77.8
Southern Highlands	63.0	41.2	41.2
Central Highlands	36.4	87.5	75.0
Coastal	33.3	92.3	92.3
Mother/caregiver Age			
15–24	50.0	83.3	77.8
25–34	50.9	77.8	74.1
35–44	57.7	60.0	60.0
≥ 45	83.3	60.0	60.0
Residence			
Urban	47.0	67.7	64.5
Rural	61.8	79.4	76.5
Wealth quintile	***		
Lowest	85.7	70.8	70.8
Second	63.2	91.7	83.3
Middle	47.4	66.7	55.6
Fourth	44.0	54.5	54.5
Highest	30.0	88.9	88.9
Total (n)	53.7 (65)	73.8 (48)	70.8 (46)

Notes: Sample for this table only includes one child (per mother/caregiver) who most recently had a fever in the two week period before the survey and got tested for malaria: n=121; *p<0.05; **p<0.01; ***p<0.001

Table A.3.17.

Treatment of All Children Under Five with Fever

	Received any medication (%)	Received ACT (%)	Received ACT promptly (%)
Zone	**		*
Lake	74.1	44.8	43.1
Southern Highlands	90.5	26.2	26.2
Central Highlands	72.9	20.8	18.7
Coastal	98.0	32.6	32.6
Mother/caregiver Age			
15-24	81.0	34.5	32.8
25-34	81.6	31.0	29.9
35-44	86.4	27.3	27.3
≥ 45	100.0 (8)	50.0	50.0
Residence	*		
Urban	88.8	25.5	24.5
Rural	77.8	38.4	37.4
Wealth quintile		*	*
Lowest	76.3	40.7	40.7
Second	88.2	50.0	47.1
Middle	86.2	24.1	20.7
Fourth	81.8	18.2	18.2
Highest	88.1	21.4	21.4
Total (n)	83.2 (164)	32.0 (63)	31.0 (61)

Notes: N=197; sample for this table includes one child (per mother/caregiver) who most recently had a fever in the two week period before the survey: n=197; *p<0.05; **p<0.01; ***p<0.001

Table A.3.18.

	Intended to seek prompt care and treatment for child under five with fever (%)	Intended to seek advice or treatment first from a health facility or community health provider^ (%)	Intended to seek prompt and appropriate care and treatment for child under five with fever (%)
Zone	***		***
Lake	94.8	99.7	94.8
Southern Highlands	98.0	99.5	97.5
Central Highlands	90.5	99.8	90.7
Coastal	98.0	99.0	97.3
Caregiver Age			
15–24	94.8	99.7	94.8
25–34	95.7	99.5	95.3
35–44	95.2	99.2	95.0
≥ 45	91.3	100.0	91.2
Residence			
Urban	95.4	99.4	95.2
Rural	94.8	99.6	94.5
Education	**		**
None	91.5	99.3	91.3
Primary	94.6	99.4	94.2
≥ Secondary	98.2	100.0	98.5
Wealth quintile	***		***
Lowest	89.1	98.8	88.3
Second	93.8	99.7	93.5
Middle	97.6	99.7	97.3
Fourth	98.0	99.7	98.0
Highest	97.9	100.0	98.3
Total	95.1	99.5	94.9

Intention to Seek Care and Treatment for Malaria for Child under Five Years with a Fever

Notes: n=1478 mothers/caregivers of children under five. [^]Includes advice or treatment from the following sources: public medical sector, private medical sector, or CHW. Excludes advice or treatment from a traditional practitioner, shop, market and independent drug seller. *p<0.05; **p<0.01; ***p<0.001

A.4 Malaria in Pregnancy

This subsection provides all data tables related to media consumption and exposure to malaria messages for the 2021 Mainland Tanzania MBS. Where appropriate, results are disaggregated by zone. The following tables may have been duplicated or referenced in the main body of the report.

Table A.4.1.

Logistic Regression Exploring Factors Associated with Intention For Early ANC

	Percentage	Adjusted Odds	95% Confidence
		Ratio	Interval
Age in years			
15–24	72.5	1.00	n/a
25–34	79.2	1.25	0.84-1.85
35–44	70.5	0.86	0.52-1.42
≥ 45	46.7	0.29	0.08-1.02
Residence			
Urban (reference)	75.5	1.00	n/a
Rural	75.2	1.64*	1.06-2.56
Education			
None (reference)	57.6	1.00	n/a
Primary completed	73.4	1.35	0.68-2.69
≥ Secondary	84.4	2.53*	1.13-5.66
Household wealth quintile			
Lowest (reference)	60.9	1.00	n/a
Second	75.0	2.03*	1.19-3.48
Middle	80.4	2.38**	1.32-4.29
Fourth	79.9	3.16***	1.73-5.75
Highest	79.3	1.86±	1.00-3.45
Zone			
Lake (reference)	73 5	1 00	n/a
Southern Highlands	77.7	1 21	0 72-2 05
Central Highlands	71.0	0.91	0.54-1.53
Coastal	80.6	1.26	0.72-2.22
Perceived severity of malaria			
No (reference)	74.6	1.00	n/a
Yes	77.2	1.30	0.89-1.90
Perceived susceptibility			
No (reference)	71.7	1.00	n/a
Yes	76.9	1.07	0.72-1.59
Talked about malaria with spouse/friends/family members			
No (reference)	76.1	1.00	n/a
Yes	73.5	0.74	0 50-1 10
Correct knowledge related to malaria in pregnancy	, 0.0		0.00 1.10
No (reference)	75 5	1 00	n/a
Yes	74.0	1 11	0.64-1.92
Eavorable attitudes toward IPTp	7.110		0.0.1.2.02
No (reference)	58.3	1 00	n/a
Yes	77.0	1.65±	0 92-2 94
Perceived severity of malaria in pregnancy	77.0	1.05	0.52 2.54
No (reference)	77.9	1.00	n/a
Vac	7/ 3	0.83	0 55-1 27
Perceived response-efficacy of IPTn	74.5	0.05	0.33-1.27
No (reference)	58.8	1.00	n/a
	J0.0 7E 7	1.00	11/a 0.12.1.00
162	/5./	0.49	0.12-1.90

	Percentage	Adjusted Odds	95% Confidence
		Ratio	Interval
Eight antenatal care visits perceived as the norm in the			
community			
No (reference)	71.1	1.00	n/a
Yes	78.6	1.37	0.90-2.10
IPTp perceived as the norm in the community			
No (reference)	72.4	1.00	n/a
Yes	76.4	0.89	0.57-1.39
Perceived injunctive norms on IPTp			
No (reference)	65.2	1.00	n/a
Yes	77.5	1.36	0.88-2.11
Perceived equitable gender norms regarding antenatal care			
No (reference)	59.3	1.00	n/a
Yes	77.0	1.62 ‡	0.92-2.84
Favorable perceptions of malaria in pregnancy health			
providers			
No (reference)	70.3	1.00	n/a
Yes	77.1	1.45‡	0.98-2.13
Involved in decision-making regarding antenatal care			
No (reference)	63.6	1.00	n/a
Yes	75.2	1.41	0.87-2.27
Discussed ANC attendance with spouse/partner			
No (reference)	60.9	1.00	n/a
Yes	77.7	1.85**	1.24-2.75
Close to any health facility (public/private)			
No (reference)	71.6	1.00	n/a
Yes	76.7	0.62	0.24-1.64

Notes: Number of observations: 954 women who intend to get pregnant in the future; ‡ p<0.1 * p<0.05; **

p<0.01; *** p<0.001; abbreviations: IPTp, intermittent preventive treatment of malaria in pregnancy; n/a: not applicable.

Table A.4.2.

Knowledge of IPTp

Respondents that correctly answer the following questions:	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)
When should a pregnant woman go for pregnancy care for the first time?***	27.4	17.4	20.0	17.8	20.5
How many times should a woman receive a check-up during one pregnancy?***	52.1	56.1	62.8	69.7	59.6
How many times during her pregnancy should a woman receive medicine to keep her from getting sick from malaria?***	33.7	37.2	49.5	46.0	41.2
Respondents with comprehensive (all three from above) knowledge of IPTp*	7.5	4.6	6.9	7.1	6.4
Sex	***	***	***	***	***
Female	10.1	6.2	9.2	9.0	8.5
Male	0.0	0.0	0.0	0.0	0.0
Age	*			**	**
15-24	6.8	5.8	8.4	5.2	6.5
25-34	9.1	4.9	8.0	5.9	6.9
35-44	9.1	5.2	5.4	11.7	7.5
≥ 45	3.1	2.8	6.3	3.5	3.8
Residence	*				
Urban	10.0	4.6	6.8	7.0	6.8
Rural	6.2	4.6	7.1	7.1	6.0
Education	*			*	**
None	4.6	5.7	8.3	8.3	6.0
Primary	9.2	5.0	7.7	8.5	7.3
≥ Secondary	4.8	2.6	5.2	2.4	3.9
Wealth quintile					
Lowest	4.8	3.9	11.7	8.2	6.3
Second	7.7	4.3	4.5	8.9	6.2
Middle	10.5	4.3	6.7	8.1	6.9
Fourth	6.9	6.1	7.5	5.4	6.6
Highest	9.3	4.1	5.3	5.4	5.8

Notes: * p<0.05; ** p<0.01; *** p<0.001.

Table A.4.3.Attitudes toward IPTp

	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Lake (%) (n=918)	Total (%) (N=4468)
AGREE: It is okay for pregnant women to take the medicine to prevent getting sick from malaria on an empty stomach.***	15.8	24.4	37.4	10.5	22.7
DISAGREE: Even if a woman thinks she may be pregnant, she should wait a few months before she sees a health provider.***	54.6	57.8	55.2	59.8	56.8
DISAGREE: A woman who has given birth before does not need to see a health provider as soon as she thinks she might be pregnant.***	76.8	71.2	78.5	64.8	73.0
AGREE: The medications given to pregnant women to prevent them from getting sick from malaria are safe for them and their babies.***	86.9	94.7	96.0	94.5	93.1
AGREE: A pregnant woman must take several doses of the medicine to prevent getting sick from malaria during pregnancy.***	85.4	907	96.2	93.6	91.4
Favorable attitudes toward IPTp***	81.0	89.5	92.4	78.9	86.0
Sex					
Female	82.1	89.5	93.0	78.4	86.3
Male	77.7	89.4	90.7	80.4	85.3
Age	**				**
15-24	72.3	90.0	89.6	79.2	82.0
25–34	84.6	90.1	93.0	82.4	88.1
35–44	81.4	90.7	92.2	77.7	86.2
≥ 45	84.1	87.1	93.7	74.7	85.9
Residence	***			***	***
Urban	87.1	91.1	92.3	84.7	89.6
Rural	77.8	88.2	92.7	74.1	82.8
Education	***	***	***	*	***
None	66.8	77.0	75.0	79.2	72.2
Primary	84.0	90.1	92.3	76.6	86.5
≥ Secondary	84.9	91.3	95.1	85.6	90.2
Wealth quintile	***		***	***	***
Lowest	71.3	88.3	82.1	67.9	78.0
Second	78.8	89.0	91.0	75.9	84.1
Middle	87.0	91.6	92.3	75.8	87.9
Fourth	84.0	88.1	96.4	85.4	89.5
Highest	90.7	90.6	95.4	85.9	90.7

Notes: * p<0.05; ** p<0.01; *** p<0.001

Table A.4.4.

Perceived Severity of Malaria in Pregnancy

	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)
AGREE: When a pregnant woman gets malaria, the effect on her and her unborn child is very serious.***	85.1	93.2	86.3	96.1	90.2
AGREE:_Pregnant women are more likely to die from malaria compared to women who are not pregnant.***	58.6	74.5	77.4	61.4	68.7
Respondents with perceived severity of malaria in pregnancy***	59.6	83.3	81.5	65.8	73.6
Sex					
Female	59.6	83.7	81.8	64.9	73.5
Male	59.5	82.2	80.6	68.8	73.9
Age	*			***	***
15–24	51.4	81.0	83.1	59.4	67.3
25–34	60.4	81.2	80.4	61.2	72.1
35-44	62.3	84.1	82.6	67.1	75.1
≥ 45	63.1	86.0	80.7	78.2	78.6
Residence				*	
Urban	58.5	84.6	82.6	61.6	74.9
Rural	60.2	82.3	79.3	69.2	72.4
Education		**	* * *	***	***
None	57.6	85.1	79.2	63.9	67.2
Primary	62.1	85.0	88.0	70.3	77.6
≥ Secondary	53.4	76.2	68.4	52.6	64.2
Wealth quintile				**	***
Lowest	55.3	86.9	81.5	67.3	72.1
Second	60.8	84.0	84.7	68.6	75.1
Middle	64.5	84.2	84.7	75.8	78.4
Fourth	63.3	81.4	78.3	63.1	73.9
Highest	55.3	77.8	80.3	58.5	68.5

Notes: * p<0.05; ** p<0.01; *** p<0.001

Table A.4.5.

Perceived Response-efficacy of IPTp

	Lake (%) (n=1064)	Southern Highlands (%)	Central Highlands (%)	Coastal (%) (n=918)	Total (%) (N=4468)
AGREE with the following statements:		(n=13/3)	(n=1113)		
Consulting health facility providers during pregnancy is a way to make sure the baby and mother are healthy.***	92.3	97.3	99.1	98.7	96.8
The medicine given to pregnant women to prevent getting sick from malaria works well to keep the mother healthy.***	86.3	94.9	98.2	95.4	93.8
Pregnant women should still take the medicine that is meant to keep them from getting sick from malaria even if they sleep under nets every night.***	86.1	92.5	95.8	96.3	92.6
Respondents with perceived response-efficacy of IPTp***	90.6	97.9	99.5	99.1	96.8
Sex					
Female	90.3	97.7	99.3	99.2	96.7
Male	91.4	98.3	100.0	99.0	97.2
Age	***	*			***
15–24	78.6	95.3	100.0	98.4	92.2
25–34	92.4	98.8	99.0	98.5	97.3
35–44	95.0	97.4	99.7	99.6	97.9
≥ 45	93.8	98.9	99.6	100.0	98.2
Residence	**				***
Urban	94.1	98.5	99.3	98.8	98.1
Rural	88.7	97.4	99.7	99.4	95.6
Education	***	***			***
None	79.1	88.5	97.9	98.6	86.8
Primary	94.1	98.5	99.4	99.4	98.0
≥ Secondary	90.3	98.5	99.7	98.6	97.3
Wealth quintile	***		**		***
Lowest	83.3	96.8	97.5	98.7	92.9
Second	92.3	97.0	99.4	100.0	97.0
Middle	93.5	99.1	99.5	99.4	98.0
Fourth	93.1	98.6	100.0	100.0	98.1
Highest	95.0	97.7	100.0	98.2	98.1

Notes: * p<0.05; ** p<0.01; *** p<0.001

Table A.4.6.

Perceived Self-Efficacy for IPTp—Women

AGREE with the following statements:	Lake (%) (n=795)	Southern Highlands (%) (n=1014)	Central Highlands (%) (n=834)	Coastal (%) (n=719)	Total (%) (N=3362)
Go for antenatal care as soon as I think I					
might be pregnant***	80.9	95.5	98.4	98.5	93.4
Convince my spouse to accompany me					
spouse/partner to the health facility for	82.9	91.4	90.5	96.1	90.2
antenatal care***					
Go to at least eight antenatal care	80.7	<u>م</u> ر ت	80.0	96.1	80 5
appointments at the health facility***	00.7	92.2	09.0	50.1	89.5
Go for antenatal care even if my religious	89.2	96.2	96.3	97.4	94.8
leader does not agree***	0012	5012	5010	5711	5 110
Take the medicine to prevent getting sick					
from malaria at least four times during	85.2	94.6	96.2	94.4	92.7
pregnancy***					
Request the medicine that helps to prevent	82.0	80.4	02.2	0F 1	00.2
antenatal care***	65.9	69.4	95.2	95.1	90.5
Female respondents with perceived self-					
efficacy for IPTp***	86.2	96.8	98.6	99.0	95.2
Age	***	*			***
15–24	70.2	93.1	97.2	97.8	88.5
25–34	90.6	98.2	99.0	99.1	96.9
35–44	95.1	97.1	98.3	99.6	97.5
≥ 45	87.2	97.5	99.3	100.0	96.2
Residence	***				***
Urban	92.1	97.8	98.2	98.5	97.1
Rural	83.0	96.1	99.3	99.5	93.4
Education	***	***			***
None	78.9	83.3	94.9	98.5	85.3
Primary	90.0	98.0	98.3	99.6	96.7
≥ Secondary	81.1	96.6	99.6	97.5	95.0
Wealth quintile	***		**	*	***
Lowest	77.1	95.3	94.3	96.7	89.3
Second	85.7	95.5	98.5	100.0	94.7
Middle	93.5	99.1	99.3	100.0	98.0
Fourth	90.8	97.7	99.1	99.0	96.9
Highest	89.4	96.1	100.0	99.1	97.2

Notes: *p<0.05, **p<0.01, ***p<0.001

Table A.4.7.

Perceived Self-Efficacy for IPTp-Men

AGREE with the following statements:	Lake (%) (n=269)	Southern Highlands (%) (n=359)	Central Highlands (%) (n=279)	Coastal (%) (n=199)	Total (%) (N=1106)
Support my spouse (partner to go for		(11-333)	(11-275)		
antenatal care as soon as she thinks she might be pregnant.***	88.1	94.2	95.3	98.0	93.8
Accompany my spouse/partner to the health facility for antenatal care.*	89.6	93.9	91.8	97.5	92.9
Support my spouse/partner to go for at least eight antenatal care appointments at the health facility during pregnancy.***	82.2	84.4	77.1	93.5	83.6
Support my spouse/partner to go for antenatal care even if my religious leader does not agree.*	92.2	93.9	95.0	97.0	94.3
Support my spouse/partner to take the medicine to prevent getting sick from malaria at least four times during pregnancy.*	84.4	86.3	89.2	95.5	88.2
Support my spouse/partner to request the medicine that helps to prevent getting sick malaria when she goes for antenatal care.***	88.1	95.3	97.1	98.0	94.5
Perceived self-efficacy for IPTp**	91.4	96.1	96.1	99.0	95.5
Age					
15–24	93.3	93.7	90.9	91.7	92.6
25–34	89.3	97.3	95.9	100.0	95.1
35–44	92.5	96.5	94.8	100.0	95.6
≥ 45	91.9	95.5	98.0	98.9	96.0
Residence					
Urban	93.5	95.4	94.5	97.2	95.0
Rural	90.3	96.6	99.0	100.0	95.9
Education	***	*			***
None	64.0	85.7	100.0	100.0	80.6
Primary	92.9	96.0	94.2	99.3	95.5
≥ Secondary	97.3	98.8	99.0	98.0	98.4
Wealth quintile	**		**		**
Lowest	80.3	97.2	84.6	100.0	90.2
Second	91.8	97.4	95.7	100.0	96.0
Middle	97.9	93.4	98.3	100.0	96.6
Fourth	91.5	97.3	98.5	96.4	96.3
Highest	100.0	95.4	98.5	98.1	98.1

Notes: *p<0.05, **p<0.01, ***p<0.001

Table A.4.8.

Perceived Community Norms Regarding IPTp

	Agree most women in the community go to antenatal care at least eight times when they are pregnant (%)	Agree most women in the community take medicine to prevent getting sick from malaria when they are pregnant (%)	Agree most people in the community approve of pregnant women taking the medicine to prevent getting sick from malaria (%) (n=3362)^
Zone	***		***
Lake	71.2	69.7	65.7
Southern Highlands	60.3	66.6	76.7
Central Highlands	41.4	65.0	84.8
Coastal	63.5	68.5	77.7
Sex	*	***	
Female	59.9	71.1	100.0
Male	55.6	55.9	-
Age	*	***	***
15-24	53.7	61.6	65.4
25-34	59.1	70.8	77.9
35-44	60.2	68.6	80.7
≥ 45	60.7	64.9	79.2
Residence			*
Urban	58.5	66.2	78.2
Rural	59.1	68.4	74.6
Education		**	***
None	63.5	63.5	57.5
Primary	58.3	68.9	79.0
≥ Secondary	58.6	64.0	76.8
Wealth quintile	**	*	***
Lowest	58.2	63.8	69.1
Second	56.8	65.6	75.3
Middle	59.2	69.3	80.0
Fourth	55.9	69.0	79.3
Highest	64.2	68.9	78.1
Total	58.9	67.3	76.3

Notes: *p<0.05, **p<0.01, ***p<0.001; ^This question was only answered by female respondents (n=3362)

Table A.4.9.

Perceived Gender Norms Regarding Malaria in Pregnancy

AGREE with the following statement:	Lake (%) (n=1068)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)
A pregnant woman should feel comfortable asking her spouse/partner to go to the health facility for an antenatal consultation.***	87.7	86.2	94.6	95.6	90.6
Sex	* *	**	***	**	* * *
Female	85.8	84.7	93.2	94.6	89.2
Male	93.3	90.5	98.9	99.5	94.9
Age	***	*	**	*	***
15–24	77.7	80.5	88.3	91.7	84.1
25–34	89.7	86.9	95.9	96.3	91.9
35–44	90.6	85.3	95.2	96.5	91.3
≥ 45	90.8	89.6	95.8	97.6	92.8
Residence				**	
Urban	89.8	85.4	94.0	93.2	90.6
Rural	86.6	86.9	95.8	97.6	90.6
Education	***			*	***
None	78.1	83.9	89.6	98.6	84.4
Primary	91.1	86.8	94.1	96.4	91.5
≥ Secondary	85.9	84.9	96.3	92.3	80.5
Wealth quintile	**				***
Lowest	81.2	84.4	92.6	96.2	87.0
Second	88.3	86.0	94.9	96.9	90.7
Middle	91.5	84.2	96.2	95.6	90.7
Fourth	89.9	89.1	96.1	93.8	92.2
Highest	91.3	88.3	93.0	95.3	92.5

Notes: *p<0.05, **p<0.01, ***p<0.001

Table A.4.10.

Table A.4.10. Perceptions of Health Providers Regarding Malaria In Pregnancy								
	Lake (%) (n=1068)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468			
DISAGREE: In your community, providers at the health facility make pregnant women pay for SP, the medicine to prevent malaria.***	75.0	72.2	77.4	82.2	76.2			
AGREE: Prenatal/antenatal health providers in this community generally treat pregnant women with respect.***	79.9	84.1	85.5	87.4	84.1			
AGREE: Health providers at the health facility in this community always offer the medicine to pregnant women to prevent getting sick from malaria.***	72.4	84.1	85.3	84.5	81.7			
DISAGREE: Health providers at the health facilities in this community only give pregnant women the medicine to prevent getting sick from malaria if she's eaten beforehand.***	22.7	11.6	21.7	18.1	18.1			
DISAGREE: If a woman goes to the health facility during the first two months of her pregnancy, the health providers will send her away.***	69.5	67.4	68.5	53.5	65.3			
DISAGREE: If a pregnant woman goes to the health facility without her spouse/partner, the health providers will send her away***	13.1	20.3	43.8	12.3	22.8			
Favorable perceptions of health providers giving malaria-specific pregnancy care***	69.5	70.4	78.6	56.4	69.4			
Sex								
Female	70.7	70.5	79.5	56.3	69.7			
Male	66.2	70.2	76.0	56.8	68.3			

Age	***	*			***
15–24	54.5	63.2	78.6	57.8	62.4
25–34	74.9	74.8	78.8	57.5	72.6
35–44	74.8	71.7	80.5	54.1	70.9
≥ 45	68.7	67.8	75.6	57.1	68.0
Residence	***			**	***
Urban	78.2	70.9	77.3	61.2	72.5
Rural	64.9	70.0	81.1	52.6	66.6
Education	***				***
None	54.1	60.9	75.0	51.4	57.6
Primary	72.4	71.4	76.7	56.8	69.8
≥ Secondary	75.2	69.8	83.0	56.9	72.8
Wealth quintile	***	*			***
Lowest	56.0	61.8	74.7	48.4	59.9
Second	69.4	71.1	82.5	60.2	70.6
Middle	78.5	72.8	80.9	53.4	72.4
Fourth	75.5	73.6	78.6	60.0	73.6
Highest	76.4	73.7	76.8	58.5	70.4

Notes: *p<0.05, **p<0.01, ***p<0.001

Table A.4.11.

	Lake (%) (n=869)	Southern Highlands (%) (n=1144)	Central Highlands (%) (n=916)	Coastal (%) (n=693)	Total (%) (n=3622)^
Sex		***	***		***
Female	71.5	91.1	93.2	82.6	86.5
Male	76.7	83.8	79.0	81.8	79.2
Age	**				**
15–24	64.8	88.4	88.8	78.3	79.6
25–34	77.8	89.1	87.9	81.1	84.5
35–44	79.1	88.7	90.9	86.1	86.4
≥ 45	71.5	88.8	88.1	81.2	83.7
Residence	***			*	***
Urban	88.0	89.4	87.7	86.0	87.9
Rural	68.6	88.4	91.4	79.7	81.2
Education	***	*			***
None	48.7	79.0	85.4	78.0	64.9
Primary	80.3	89.4	89.3	82.5	86.0
≥ Secondary	83.0	89.1	88.6	84.0	86.8
Wealth quintile	***				***
Lowest	61.6	87.4	83.9	82.2	77.6
Second	73.4	86.8	89.2	76.6	82.0
Middle	80.9	91.5	88.3	86.4	87.6
Fourth	87.1	89.8	88.1	83.0	87.8
Highest	79.9	87.4	93.3	83.7	86.7
Total	75.1	88.8	89.0	82.4	84.3

Notes: *p<0.05, **p<0.01, ***p<0.001; ^Sample for this table only includes respondents who are married or living as if married (n=3622)

Table A.4.12.

Interpersonal Communication Regarding Antenatal Care

	Lake (%)	Southern Highlands (%)	Central Highlands (%)	Coastal (%)	Total (%)
	(n=869)	(n=1144)	(n=916)	(n=693)	(n=3622)^
Sex				*	
Female	65.1	74.4	60.9	80.2	69.9
Male	59.5	75.4	64.3	88.0	71.0
Age					
15–24	60.9	76.0	50.0	81.4	67.3
25–34	63.8	76.0	63.9	82.9	71.0
35–44	63.6	75.7	61.9	82.2	70.7
≥ 45	64.2	71.4	64.4	82.6	70.2
Residence	**			***	*
Urban	71.0	75.7	61.5	89.8	72.3
Rural	59.5	73.9	62.6	77.0	68.4
Education	* * *	**			***
None	36.4	54.8	63.4	74.6	50.6
Primary	67.1	75.6	60.8	82.3	71.5
≥ Secondary	77.5	77.2	64.3	86.4	74.3
Wealth quintile	*	*	***		***
Lowest	55.0	70.0	57.7	79.7	64.4
Second	64.7	70.4	48.1	80.1	66.0
Middle	66.7	81.6	67.2	80.0	74.8
Fourth	62.6	76.3	58.1	89.0	69.5
Highest	72.7	73.4	74.0	83.7	76.5
Total	63.4	74.7	61.9	82.4	70.2

Notes: *p<0.05, **p<0.01, ***p<0.001; ^Sample for this table only includes respondents who are married or living as if married (n=3622)

Table A.4.13.

Intention to use Intermittent preventive treatment of malaria in pregnancy (IPTp), to attend at least 8 ANC visits, and to attend ANC in the first trimester

	Intend to use IPTp in next pregnancy			Intend to attend at least 8 ANC visits				Intend to attend ANC in the first trimester							
	Lake (n=219)	Southern Highlands (n=211)	Central Highlands (n=297)	Coastal (n=227)	Total (n=954)^	Lake (n=219)	Southern Highlands (n=211)	Central Highlands (n=297)	Coastal (n=227)	Total (n=954)^	Lake (n=219)	Southern Highlands (n=211)	Central Highlands (n=297)	Coastal (n=227)	Total (n=954)^
Age											**		**		**
15–24	95.5	95.4	94.9	98.6	96.1	20.9	30.8	32.0	52.9	34.3	68.7	78.5	60.3	84.3	72.5
25–34	96.5	91.7	94.9	97.2	95.11	16.4	33.9	35.0	50.0	33.7	81.0	78.9	76.8	81.5	79.2
35–44	94.1	91.4	84.8	93.6	91.3	11.8	28.6	42.4	51.1	34.9	61.8	71.4	75.8	72.3	70.5
≥ 45	100.0 (2)	100.0(2)	100.0 (9)	100.0 (2)	100.0	0.0 (2)	0.0 (2)	11.1	100.0 (2)	20.0	0.0 (2)	100.0 (2)	33.3	100.0 (2)	46.7
Residence									***		*				
Urban	97.8	90.8	94.7	97.1	95.2	18.5	36.8	34.8	35.0	32.3	80.4	75.9	71.0	78.6	75.5
Rural	94.5	94.3	92.2	96.5	94.4	15.7	28.2	33.3	78.2	35.7	68.5	79.0	71.1	83.9	75.2
Education						**		*		***	*		***		***
None	96.9	80.0	86.7	100.0 (7)	93.2	0.0	0.0 (5)	20.0	71.4	13.6	56.2	40.0	46.7	100.0 (7)	57.6
Primary	96.4	94.2	93.9	96.9	95.3	17.7	31.0	30.0	49.1	32.4	73.0	80.0	62.8	79.1	73.4
≥ Secondary	93.5	90.2	95.1	96.5	94.1	26.1	37.2	44.1	56.1	42.2	87.0	74.5	89.2	82.5	84.4
Wealth quintile			**		**			**	*	**	*	*	***		***
Lowest	93.4	91.1	84.3	95.4	90.5	14.7	20.0	13.7	77.3	23.5	62.3	71.1	41.2	81.8	60.9
Second	100.0	95.6	100.0	97.4	98.3	11.9	28.9	27.4	63.2	31.8	78.6	71.1	66.7	86.8	75.0
Middle	92.3	94.7	88.9	93.5	92.2	17.9	39.5	35.6	58.1	36.6	64.1	92.1	80.0	87.1	80.4
Fourth	97.8	90.9	97.4	100.0	96.6	20.0	43.2	36.4	44.2	35.9	84.4	86.4	72.7	81.4	79.9
Highest	96.9	92.3	95.9	96.8	95.8	21.9	28.2	50.7	41.9	39.7	84.4	69.2	87.7	75.3	79.3
Total	95.9	92.9	93.9	96.9	94.9	16.9	31.7	34.3	51.5	33.9	73.5	77.7	71.0	80.6	75.4

Notes: *p<0.05, **p<0.01, ***p<0.001; ^Only women who indicated that they want to get pregnant in the future are included in this sample (n=954)

Table A.4.14.

Antenatal Care (ANC) Attendance

	Attending at least 1 ANC visit (%) (n=1013)^	Attending at least 4 ANC visits (%) (n=991) ⁺	Attending at least 8 ANC visits (%) (n=991) ⁺	Attending first ANC visit in between 1-4 months of pregnancy (%) (n=991) ⁺	Attending at least 1 ANC visit accompanied by spouse (%) (n=991) ⁺	Attending at least 1 ANC visit and receiving a mosquito net (%) (n=991) ⁺
Age				**		**
15–24	93.2	77.4	11.8	69.4	74.0	80.6
25–34	94.0	76.4	11.1	75.5	76.1	80.9
35–44	95.1	79.2	5.4	62.9	74.6	72.9
≥ 45	91.7	87.0	8.7	73.9	82.6	56.5
Residence	*	*				
Urban	95.9	81.2	11.5	73.6	73.8	77.1
Rural	92.3	74.5	8.5	68.1	76.6	79.4
Zone		*	***	***	***	
Lake	92.7	76.4	5.3	62.5	73.4	80.1
Southern Highlands	92.2	72.7	10.2	81.5	82.9	73.6
Central Highlands	94.3	76.1	9.0	65.4	66.7	79.0
Coastal	97.0	85.3	16.4	76.6	79.6	79.6
Wealth quintile	**	***	***	***		
Lowest	89.3	62.2	5.6	60.1	72.5	75.5
Second	94.4	79.3	8.3	66.3	71.5	79.8
Middle	92.9	78.4	7.2	72.9	81.8	82.9
Fourth	97.5	83.1	9.0	73.1	73.6	81.6
Highest	96.8	88.5	20.8	83.6	78.1	72.1
Total	94.0	77.6	9.9	70.6	75.3	78.3

Notes: *p<0.05, **p<0.01, ***p<0.001; ^This sample is among women who had a live birth in the two years before the survey (n=1013); * This sample is among women who reported seeking any ANC care for the youngest child's live birth (n=991)

Table A.4.15.

	Received one or more doses of sulfadoxine pyrimethamine (%)(n=992)^	Received two or more doses of sulfadoxine pyrimethamine (n=992)^	Received three or more doses of sulfadoxine pyrimethamine (n=992)^
Age			
15–24			
25–34			
35–44			
≥ 45	83.3	70.8	50.0
Number antenatal care visits	**	***	***
0	77.5	67.5	47.5
1–3	86.9	62.8	32.2
4–7	91.4	77.0	49.2
8+	93.9	90.8	62.2
Residence		**	***
Urban	91.3	79.2	54.3
Rural	89.2	72.1	41.1
Zone		**	**
Lake	89.4	70.5	42.0
Southern Highlands	87.5	74.1	45.8
Central Highlands	93.8	83.1	56.8
Coastal	90.0	74.9	45.4
Education	*	**	***
None	82.3	61.5	31.2
Primary	91.0	76.4	46.9
≥ Secondary	91.3	78.4	55.8
Wealth quintile		**	***
Lowest	86.7	67.1	37.6
Second	90.2	75.1	44.6
Middle	91.7	75.7	46.4
Fourth	92.0	79.6	50.7
Highest	91.3	81.4	59.6
Total	90.2	75.4	47.3

Use of Intermittent Preventive Treatment (IPTp) by Women During Pregnancy

Notes: *p<0.05, **p<0.01, ***p<0.001; ^ Sample includes women who reported taking IPTp during the last live birth pregnancy (n=992); includes women who reported taking SP but reported not attending any ANC care

Table A.4.16.

	Sources of sulfadoxine pyrimethamine doses among those who received at least one dose (n=895)						
	Antenatal care visit (%)	Non-antenatal visit at health facility (%)	Pharmacy^ (%)				
Age	*	***					
15–24	82.0	0.8	0.0				
25–34	77.8	0.8	0.0				
35–44	77.0	0.9	0.0				
≥ 45	55.0	15.0	0.0				
Residence	***						
Urban	68.0	1.2	0.0				
Rural	87.5	1.1	0.0				
Zone	***	*					
Lake	84.1	0.7	0.0				
Southern Highlands	68.8	3.2	0.0				
Central Highlands	86.4	0.9	0.0				
Coastal	70.7	0.0	0.0				
Wealth quintile	***						
Lowest	81.3	1.5	0.0				
Second	89.7	1.1	0.0				
Middle	78.9	1.2	0.0				
Fourth	75.1	1.6	0.0				
Highest	65.9	0.0	0.0				
Total	78.3	1.1	0.0^				

Source of IPTp

Notes: *p<0.05, **p<0.01, ***p<0.001; ^Only 2 women reported Pharmacy as the source for SP: 25-44 years; one urban, one rural; one from Southern Highlands, other from Central Highlands; both from lowest wealth quintile.

A.5 Insecticide-Treated Net Use

This subsection provides all data tables related to ITN use for the 2021 Mainland Tanzania MBS, including data related to respondent knowledge of malaria prevention using ITNs; attitudes toward ITNs in general; attitudes toward ITN care and repair; perceived response-efficacy and perceived self-efficacy of ITNs; respondents' perceived community norms and gender norms regarding ITNs; household possession, access, and use of ITNs; ITN characteristics; ITN care and repurposing behavior; and sleep patterns, including seasonality of outdoor sleeping. Where appropriate, results are disaggregated by zone. The following tables or and figures may have been duplicated or referenced in the main body of the report.
Table A.5.1.

Summary of Ideational Variables Related to Net Use

	Knowledge of using treated or untreated mosquito net (%)	Favorable attitudes toward mosquito nets (%)	Favorable attitudes toward net care (%)	Perceived response- efficacy of nets (%)	Perceived self- efficacy to use nets (%)	Perceived supportive descriptive community norms (%)	Perceived supportive descriptive community norms toward net sharing (%)	Perceived equitable gender attitudes related to net use (%)
Zone	***	***	***	***	***	***	***	***
Lake	95.3	86.1	92.8	68.1	82.7	59.0	14.7	82.8
Southern Highlands	86.7	92.6	91.2	64.1	85.0	43.2	16.5	93.7
Central Highlands	91.4	87.3	91.8	74.5	86.9	47.8	5.8	91.6
Coastal	96.8	96.7	98.9	58.3	98.2	66.2	13.8	97.3
Sex						*		
Female	92.2	90.6	93.7	65.8	87.9	53.8	13.1	91.1
Male	91.5	90.7	92.1	68.4	86.7	50.0	12.1	91.8
Age		*			*			**
15-24	92.1	88.2	92.9	65.3	84.1	51.3	13.1	87.6
25-34	92.6	91.3	94.3	67.7	89.0	54.2	12.9	91.8
35-44	92.1	92.0	93.4	67.9	88.3	54.0	12.9	92.5
≥45	90.8	89.4	92.1	63.5	87.5	50.4	12.5	91.8
Residence	*	**		*				***
Urban	91.1	91.9	93.3	68.0	88.2	51.3	13.1	93.6
Rural	92.8	89.5	93.3	65.1	87.1	54.2	12.7	89.2
Education	***	***	***	***	***		***	***
None	87.3	75.9	85.6	53.9	76.2	55.8	20.4	74.7
Primary	91.5	91.1	93.2	66.2	87.8	53.4	12.3	92.6
≥ Secondary	95.2	94.8	96.6	72.3	91.6	49.9	11.7	94.0
Wealth quintile	***	***	***	***	***	***	*	***
Lowest	87.4	84.4	87.7	58.4	79.9	47.7	15.8	85.6
Second	91.8	88.8	91.5	65.8	85.2	49.1	11.3	90.1
Middle	91.9	93.4	94.2	65.9	88.7	54.3	11.4	93.7
Fourth	93.9	93.1	96.5	70.1	91.7	55.3	12.8	93.3
Highest	95.0	93.4	96.6	72.1	92.6	57.9	12.9	93.7
Total	92.0	90.6	93.3	66.5	87.6	52.8	12.9	91.3

Notes: *p<0.05; **p<0.01; ***p<0.001

Malaria Behavior Survey: Tanzania Mainland 2021

Table A.5.2.

Logistic Regression Exploring Factors Associated with Consistent Net Use

	Percentage	Adjusted Odds Batio	95% Confidence
Age in years			Interval
15–24 (reference)	73 5	1 00	n/a
25-34	76.5	1 39±	0 99-1 97
35-44	72.9	0.96	0 67-1 38
> 45	69.5	0.83	0 56-1 22
Sex	03.5	0.00	0.50 1.22
Male (reference)	72.3	1.00	n/a
Female	73.7	1.41*	1.08-1.84
Education			
None (reference)	60.3	1.00	n/a
Primary completed	74.5	1.49±	0.97-2.29
> Secondary	75.3	1 20	0 73-1 99
Household wealth quintile			00 2.00
Lowest (reference)	64 7	1 00	n/a
Second	71.2	1.00	0.84-1.77
Middle	76.4	1.22	0.74-1.56
Fourth	77.4	1.00	0.74-1.50
Highest	77.4	1.10	0.67-1.62
Zone	77.4	1.04	0.07 1.02
Lake (reference)	78 7	1.00	n/a
Southern Highlands	70.7	0.99	0.70-1.39
Central Highlands	58.0	0.33	0.70-1.39
Coastal	93.6	1.01	0.27-0.33
Posidonco	85.0	1.01	0.08-1.49
Lithan (reference)	75.0	1.00	n/2
Burgl	73.3	1.00	11/a 0 50 0 97
Nuldi	/1.1	0.00	0.50-0.87
No (reference)	50 F	1.00	n/2
	30.3 7E 0	1.00	11/a 1.07.4.50
Yes	/5.8	2.98	1.97-4.50
Ne (reference)	72 5	1.00	n la
	72.5	1.00	n/a
Yes	75.5	1.17	0.90-1.51
Ne (reference)	64.7	1.00	
No (reference)	61.7	1.00	n/a
Yes	/8.0	1.33*	1.02-1.72
Talked about malaria with spouse, family or friends	<u> </u>	4.00	,
No (reference)	69.7	1.00	n/a
Yes	83.5	1.55**	1.15-2.10
Perceived mosquito net effectiveness			,
No (reference)	69.5	1.00	n/a
Yes	75.4	0.76 †	0.58-1.00
Perceived self-efficacy for mosquito net use			
No (reference)	36.0	1.00	n/a
Yes	78.7	5.12***	3.56-7.37

	Percentage	Adjusted Odds Ratio	95% Confidence Interval
Use of mosquito nets perceived as the norm in the community			
No (reference)	60.4	1.00	n/a
Yes	85.0	2.26***	1.77-2.89
Mentioned at least one incorrect method of transmitting malaria			
No (reference)	73.4	1.00	n/a
Yes	73.3	1.32	0.88-1.96
Saw/heard a message about malaria in the past six months			
No (reference)	69.5	1.00	n/a
Yes	80.2	0.89	0.69-1.15
Number of bed nets	n/a	1.53***	1.33-1.75
Number of observations	3382		

Notes: **‡** p<0.1 * p<0.05; ** p<0.01; *** p<0.001; Abbreviations: n/a, not applicable

Table A.5.3.

Knowledge of Malaria Prevention Using Mosquito Nets

	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)
Sex					
Female	94.8	86.7	92.2	96.8	92.2
Male	96.7	86.6	88.9	97.0	91.5
Age					
15–24	93.2	88.4	89.0	96.9	92.1
25–34	95.8	87.7	92.3	96.7	92.6
35–44	96.5	86.5	90.7	97.2	92.1
≥ 45	94.9	84.9	92.4	96.5	90.8
Residence			**	**	*
Urban	96.5	87.7	89.3	94.7	91.1
Rural	94.7	85.9	95.3	98.6	92.8
Education		***	**		***
None	92.9	71.3	79.2	97.2	87.3
Primary	95.5	85.8	91.2	96.9	91.5
≥ Secondary	97.1	95.1	93.4	96.7	95.2
Wealth quintile	*	**	***		***
Lowest	92.8	80.2	79.6	98.1	87.4
Second	93.7	87.4	89.8	98.4	91.8
Middle	97.5	86.4	91.9	96.3	91.9
Fourth	96.8	90.9	94.7	94.6	93.9
Highest	97.5	89.5	95.4	96.4	95.0
Total***	95.3	86.7	91.4	96.8	92.0

Table A.5.4.

Knowledge of Malaria Prevention Using ITNs

	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)
Sex					
Female	34.3	20.6	37.4	31.0	30.3
Male	32.7	20.9	34.8	36.2	30.0
Age			**	*	***
15–24	35.0	19.5	26.0	37.5	29.9
25–34	36.3	24.9	41.9	35.9	34.5
35–44	33.3	19.2	36.8	28.3	28.8
≥ 45	29.7	18.2	35.3	26.5	26.3
Residence		***		*	*
Urban	30.2	25.5	36.0	36.4	32.0
Rural	35.9	16.9	38.2	28.7	28.5
Education		*		*	**
None	35.7	10.3	27.1	22.2	26.8
Primary	33.2	20.6	35.8	30.8	29.1
≥ Secondary	34.5	24.5	39.9	39.7	34.8
Wealth quintile			**	*	***
Lowest	30.7	21.2	29.6	26.4	26.8
Second	37.8	19.9	31.1	28.3	28.4
Middle	36.5	18.6	33.0	28.0	27.7
Fourth	36.7	22.0	38.8	33.1	32.0
Highest	28.0	22.8	45.1	40.1	36.2
Total***	33.9	20.7	36.8	32.1	30.2

Table A.5.5.

Favorable Attitudes toward Mosquito Nets

	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)
AGREE: It is easier to get a good night's sleep when I sleep under a mosquito net.***	86.5	86.7	84.7	95.3	87.9
DISAGREE: It is not easy to sleep under a net because every night you have to unfold it and cover the sleeping space.***	72.9	67.4	68.2	75.5	70.6
DISAGREE: I do not like sleeping under a mosquito net when the weather is too warm.***	78.0	73.6	68.2	83.3	75.3
DISAGREE: Sleeping under a net is an inconvenience for a couple that wants to make children.***	77.5	80.4	76.1	87.9	80.2
DISAGREE: The smell of the insecticide makes it uncomfortable for me to sleep under a mosquito net.***	76.2	76.0	67.5	75.3	73.8
AGREE: Mosquito nets are generally easy to use for sleeping.***	85.6	84.7	86.0	95.3	87.4
AGREE: Insecticide-treated nets (ITNs) do not pose a risk to one's health.***	67.9	72.6	78.5	84.3	75.4
AGREE: Mosquito nets are very useful.***	92.4	92.2	95.1	98.9	94.3
DISAGREE: More expensive mosquito nets are more effective than cheaper or free mosquito nets.***	60.7	46.0	31.4	41.6	44.9
DISAGREE: Sleeping under a treated net causes low sex drive in men.***	68.4	72.6	59.9	78.4	69.7
DISAGREE: Treated mosquito nets attract bed bugs and other insects.***	59.5	64.6	64.3	68.2	64.1
AGREE: I would use a net to sleep under regardless of its color.***	90.0	90.0	83.6	98.0	90.0
Favorable attitudes toward mosquito nets (characteristic)***	86.1	92.6	87.3	96.7	90.6
Sex					
Female	85.9	92.4	87.3	96.9	90.6
Male	86.6	93.3	87.5	96.0	90.7
Age	*		*		*
15–24	79.6	91.6	85.7	96.9	88.2
25–34	86.4	93.6	88.9	97.4	91.3
35–44	89.6	91.5	90.4	97.5	92.0
≥ 45	87.2	93.6	81.5	94.1	89.4
Residence	***	*	*		**
Urban	93.5	94.4	85.6	97.6	91.9
Rural	82.1	91.2	90.6	96.1	89.5
Education	***	**	**		***
None	62.2	86.2	81.3	97.2	75.9
Primary	90.8	92.0	85.4	96.6	91.1
≥ Secondary	93.7	97.4	92.2	97.1	94.8
Wealth guintile	***	***			***

	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)
Lowest	73.0	87.6	86.4	97.5	84.4
Second	85.6	90.7	83.1	94.8	88.8
Middle	91.5	93.8	90.9	98.1	93.4
Fourth	94.7	96.3	87.9	94.6	93.1
Highest	93.8	95.9	87.3	97.8	93.4

Table A.5.6.

Favorable Attitudes Toward Net Care

	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)
AGREE: I can take actions to help my mosquito net last long.***	81.2	73.6	80.7	90.5	80.6
AGREE:I can protect my family against malaria by taking care of my mosquito net.***	89.4	87.0	88.3	98.4	90.2
AGREE: Other people in this community take care of their mosquito nets.***	66.3	54.0	61.1	90.2	66.1
AGREE: I am confident I can fold or tie up the nets in my home every day after using them.***	89.3	83.0	83.7	97.7	87.7
AGREE: Taking time to care for my mosquito net is worthwhile.***	87.6	84.4	85.6	97.3	88.1
AGREE: I am confident that I can prevent children from playing with the net.***	89.0	84.7	88.3	98.3	89.4
AGREE: An old net can still protect against malaria if it is well cared for.***	80.3	78.1	85.4	91.9	83.3
Favorable attitudes toward net care (characteristic)***	92.8	91.2	91.8	98.9	93.3
Sex					
Female	93.1	91.3	92.5	99.2	93.7
Male	91.8	90.8	90.0	98.0	92.1
Age	*		*		
15–24	88.6	91.1	93.5	99.0	92.9
25–34	93.7	91.6	94.1	99.6	94.3
35–44	95.0	90.0	91.3	98.9	93.4
≥45	92.3	92.2	87.8	97.7	92.1
Residence			***		
Urban	94.6	92.8	89.7	99.0	93.3
Rural	91.8	89.9	95.8	98.8	93.3
Education	***	***	**		***
None	83.7	79.3	87.5	97.2	85.6
Primary	94.7	91.1	90.0	98.7	93.2
≥ Secondary	95.2	95.5	96.3	100.0	96.6
Wealth quintile	***	***	***		***
Lowest	84.0	86.9	85.8	98.1	87.7
Second	94.1	89.0	85.9	97.4	91.5
Middle	97.5	90.7	91.9	100.0	94.2
Fourth	95.2	96.6	96.1	99.2	96.5
Highest	98.1	93.6	94.7	99.6	96.6

Table A.5.7.

Perceived Response-efficacy of Nets

	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)
DISAGREE: Mosquito nets prevent mosquito bites only when used on a bed.***	31.1	26.2	29.8	19.8	27.0
DISAGREE: My chances of getting malaria are the same whether or not I sleep under a mosquito net.***	62.9	59.1	70.7	52.6	61.6
AGREE: Sleeping under a mosquito net every night is the best way to avoid getting malaria.***	89.4	89.9	94.8	98.6	92.8
Respondents with perceived response-efficacy of nets (characteristic)***	68.1	64.1	74.5	58.3	66.5
Sex		*			
Female	68.4	62.5	74.2	57.9	65.8
Male	67.3	68.5	75.3	59.8	68.4
Age	*				
15–24	70.0	64.2	70.8	56.8	65.3
25–34	69.8	64.4	74.9	59.7	67.7
35–44	70.4	65.3	77.0	58.0	67.9
≥ 45	59.5	62.2	72.7	58.2	63.5
Residence			**	***	*
Urban	68.7	63.1	71.8	67.7	68.0
Rural	67.8	64.9	79.6	50.6	65.1
Education	***	*	***		***
None	56.6	51.7	52.1	50.0	53.9
Primary	69.5	64.2	73.4	57.8	66.2
≥ Secondary	74.8	67.9	79.9	62.7	72.3
Wealth quintile				***	***
Lowest	63.5	59.0	67.9	38.4	58.4
Second	69.4	63.8	74.0	57.1	65.8
Middle	66.0	63.5	77.5	55.3	65.9
Fourth	72.3	68.8	73.0	63.9	70.1
Highest	72.7	66.1	77.8	69.7	72.1

Table A.5.8.

Perceived Self-Efficacy to Use Nets

	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)
Sleep under a mosquito net for the entire night when there are lots of mosquitoes.***	86.3	88.0	93.5	98.5	91.1
Sleep under a mosquito net for the entire night when there are few mosquitoes.***	83.4	86.1	87.3	98.3	88.3
Sleep under a mosquito net every night of the year.***	83.0	86.4	81.9	96.5	86.6
Get all of their children to sleep under a mosquito net every night of the year.***	85.6	87.8	86.6	98.8	89.2
Respondents with perceived self-efficacy to use nets (characteristic)***	82.7	85.0	86.9	98.2	87.6
Sex					
Female	83.9	84.2	87.7	97.9	87.9
Male	79.2	87.2	84.6	99.0	86.7
Age				*	*
15–24	78.2	80.0	83.1	95.8	84.1
25–34	84.9	86.9	88.1	98.2	89.0
35–44	85.2	83.6	88.0	98.9	88.3
≥ 45	80.0	87.1	85.7	99.4	87.5
Residence	***		***	*	
Urban	89.0	87.0	83.9	97.1	88.2
Rural	79.4	83.4	92.7	99.0	87.1
Education	***	**	**		***
None	68.4	78.2	72.9	97.2	76.2
Primary	84.9	83.8	86.5	98.6	87.8
≥ Secondary	89.3	91.7	89.7	97.1	91.6
Wealth quintile	***	***	***		***
Lowest	70.3	80.9	77.2	98.7	79.9
Second	82.9	80.7	81.9	97.9	85.2
Middle	84.5	83.5	91.9	100.0	88.7
Fourth	89.4	92.2	90.0	97.7	91.7
Highest	95.0	89.5	88.7	97.1	92.6

Table A.5.9.

Perceived Community Norms Regarding Nets

	Most people in your community who have nets sleep under them every night				At least half of the people in your community would call you names if they knew that you sleep under a net every night				Most people in your community if they had extra nets, would share the nets with their neighbors						
	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)
Sex					*										
Female	60.1	43.7	48.3	67.3	53.8	15.6	7.1	9.4	2.9	8.8	15.1	16.6	6.1	14.1	13.1
Male	55.8	41.8	46.2	62.3	50.0	16.0	6.7	7.9	2.5	8.5	13.4	16.4	4.7	13.1	12.1
Age				*		*		*		*				*	
15–24	55.5	42.1	49.4	57.3	51.3	21.8	7.9	9.7	1.6	10.7	19.1	17.4	4.6	8.9	13.1
25–34	59.8	44.2	48.6	70.3	54.2	15.1	8.6	10.9	2.9	9.7	14.2	15.6	6.2	16.9	12.9
35–44	60.1	44.2	47.0	70.0	54.0	13.2	6.2	4.8	4.2	7.1	12.3	16.9	5.4	16.6	12.9
≥ 45	60.0	41.5	46.6	63.5	50.4	13.9	5.6	11.3	1.8	8.0	14.4	16.8	6.3	10.0	12.5
Residence	*		**			***			*	***	*	**		*	
Urban	63.1	43.5	44.6	64.3	51.3	7.0	5.6	9.7	4.1	7.0	11.6	19.7	6.2	16.8	13.1
Rural	56.9	42.9	53.9	67.8	54.2	20.4	8.1	7.6	1.8	10.3	16.3	14.0	5.0	11.5	12.7
Education						***		*		***	***		**		***
None	62.8	31.0	50.0	70.8	55.8	40.8	5.8	14.6	0.0	22.8	29.1	10.3	16.7	11.1	20.4
Primary	58.9	44.1	49.2	67.5	53.4	10.7	6.7	10.3	3.3	7.7	12.1	16.7	5.7	12.7	12.3
≥ Secondary	55.8	43.8	44.5	60.8	49.9	7.8	8.7	5.5	2.4	6.1	9.2	18.1	4.3	18.2	11.7
Wealth quintile	***	*	**		***	***	**			***	***			**	*
Lowest	49.2	41.7	37.7	66.0	47.7	28.0	12.4	9.9	0.6	14.9	23.2	18.7	5.6	7.6	15.8
Second	58.1	36.2	40.7	66.5	49.1	17.6	6.6	7.3	2.6	8.6	14.9	13.3	6.2	8.9	11.3
Middle	66.5	44.3	47.9	67.7	54.3	10.5	6.8	7.2	4.4	7.3	6.5	18.0	4.3	13.7	11.4
Fourth	68.1	49.2	51.3	59.2	55.3	7.5	4.8	10.3	3.9	6.9	12.2	19.0	4.6	16.9	12.8
Highest	58.4	45.6	54.6	68.6	57.9	6.8	2.9	9.5	2.9	5.7	11.8	11.7	7.8	19.5	12.9
Total***	59.0	43.2	47.8	66.2	52.8	15.7	7.0	9.0	2.8	8.7	14.7	16.5	5.8	13.8	12.9

Notes: *p<0.05; **p<0.01; ***p<0.001

Malaria Behavior Survey: Tanzania Mainland 2021

Table A.5.10.

Perceived Gender Norms Regarding Nets

	Respondents who <u>disagree</u> with the following statements: When there are not enough nets										
	It is more in available ne	nportant that ets rather thar	female childro male childre	en sleep unde n.	er the	It is more important that male children sleep under the available nets rather than female children.					
	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)	
Sex											
Female	84.5	93.8	91.1	97.5	91.7	89.1	96.1	93.1	98.3	94.1	
Male	83.6	94.7	92.8	99.0	92.3	89.6	96.9	95.3	99.0	95.1	
Age	*				*	*		*		*	
15–24	76.8	91.6	89.6	95.8	88.0	82.3	95.6	92.9	97.4	91.7	
25–34	86.7	94.1	90.7	97.8	92.1	92.2	95.8	91.7	99.3	94.5	
35–44	87.1	94.5	93.1	98.9	93.4	91.2	96.0	96.4	98.9	95.6	
≥45	84.1	94.7	92.0	98.2	92.5	88.7	97.5	93.3	97.7	94.7	
Residence	***	*		*	**	***	*			***	
Urban	92.7	96.2	91.2	96.6	94.0	94.6	98.2	93.2	98.1	95.8	
Rural	79.8	92.3	92.2	98.8	90.0	86.3	94.8	94.5	98.8	93.1	
Education	***	**			***	***	**			***	
None	62.8	88.5	85.4	98.6	77.4	69.4	88.5	91.7	98.6	81.4	
Primary	87.9	94.2	91.4	98.4	93.1	93.1	96.4	93.0	98.7	95.4	
≥ Secondary	93.2	95.1	92.8	95.7	94.1	95.6	98.5	95.1	97.6	96.6	
Wealth quintile	***	*	*		***	***	**			**	
Lowest	72.7	91.2	89.5	98.7	86.2	82.6	92.6	93.8	98.7	90.6	
Second	82.4	93.0	91.5	96.9	90.9	87.4	95.0	93.2	99.0	93.6	
Middle	91.5	93.8	95.7	98.8	94.6	93.0	97.2	95.2	98.1	96.0	
Fourth	91.5	96.3	90.4	98.5	93.7	94.7	98.6	94.0	98.5	96.3	
Highest	90.7	97.1	90.9	97.1	94.0	92.6	98.8	92.3	98.2	95.4	
Total***	84.3	94.0	91.6	97.8	91.9	89.2	96.3	93.6	98.5	94.4	

Notes: *p<0.05; **p<0.01; ***p<0.001

Malaria Behavior Survey: Tanzania Mainland 2021

Table A.5.11.

Household Possession of Mosquito Nets

	Households with any mosquito nets (%)	Households with at least one ITN^ (%)	Households with at least one net for every two persons (%)
Residence	***	*	
Urban	78.5	54.6	52.9
Rural	73.2	50.1	50.4
Zone			
Lake	80.6	57.6	58.2
Southern Highlands	74.1	51.8	53.9
Central Highlands	64.9	44.2	41.9
Coastal	83.9	56.7	52.9
Wealth quintile	***	***	***
Lowest	64.1	40.4	37.7
Second	72.3	51.4	49.3
Middle	78.6	55.7	55.2
Fourth	79.9	57.0	58.3
Highest	81.6	56.7	57.5
Total	75.3	55.2	51.6

Notes: ^An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment; *p<0.05; **p<0.01; ***p<0.001

Table A.5.12.

Access to an ITN

	Lake (n=3657)	Southern Highlands (n=3843)	Central Highlands (n=3483)	Coastal (n=2472)	Total (N=13455)
Residence^	***	*	*	* *	***
Urban	65.8	58.3	49.1	61.9	57.0
Rural	57.8	53.2	44.6	56.1	53.8
Wealth quintile	***	***	***	***	***
Lowest	47.7	39.6	36.3	48.5	43.4
Second	61.9	53.3	44.1	61.9	55.4
Middle	60.5	60.9	53.0	61.4	59.1
Fourth	72.1	63.0	45.9	64.1	59.7
Highest	68.5	60.1	54.5	58.5	59.4
Total ***	60.3	55.4	47.5	58.7	55.3

Notes: ^Percentage of de facto household population who could sleep under an ITN if each ITN in the household were used by up to two people.

Table A.5.13.

llse o	f Mose	nuito	Nets	on the	Niaht	Refore	the Surve	vh	, Persons	in the	Household
USE U	j iviosi	juito	INCLS	UII UIE	nigitt	DEJUIE	LITE SUIVE	уIJ	1 FEISUIIS	III LIIC	nousenoiu

	Lake (%) (n=3657)	Southern Highlands (%) (n=3843)	Central Highlands (%) (n=3483)	Coastal (%) (n=2472)	Total (%) (N=13455)
Age	***	***	*	***	***
0–4	46.5	58.9	41.4	50.5	49.8
5–14	52.1	49.4	39.9	43.1	46.5
15–24	60.9	52.9	50.8	61.0	56.4
≥ 25	50.1	48.6	42.7	55.3	48.8
Sex			***		
Male	51.3	51.7	38.4	54.3	48.6
Female	51.4	49.8	45.5	50.7	49.3
Residence	***	**		**	***
Urban	57.9	53.1	43.3	55.4	50.9
Rural	48.3	48.8	40.4	49.9	47.4
Wealth quintile	***	***	***	***	***
Lowest	38.2	34.4	33.5	43.3	37.0
Second	53.0	50.2	37.4	56.3	49.4
Middle	51.9	53.4	47.2	52.2	51.4
Fourth	63.9	59.1	41.7	59.1	54.5
Highest	58.9	57.3	48.3	52.1	53.0
Household ITN supply					
<1 net per 2 people	5.6	9.6	5.6	10.0	7.5
≥1 net per 2 people	85.2	91.4	89.7	88.8	88.6
Total	51.4	50.6	42.3	52.4	49.0

Table A.5.14.

	Available nets used the previous night				Net used every night of the previous week					
	Lake (%) (n=809)	Southern Highlands (%) (n=1393)	Central Highlands (%) (n=1165)	Coastal (%) (n=911)	Total (%) (N=4278)	Lake (%) (n=809)	Southern Highlands (%) (n=1393)	Central Highlands (%) (n=1165)	Coastal (%) (n=911)	Total (%) (N=4278)
Residence										
Urban	89.6	89.0	87.2	89.3	88.5	85.2	88.4	82.6	86.4	85.1
Rural	88.0	89.1	87.7	89.1	88.7	85.7	87.9	85.2	89.6	87.2
Wealth quintile				***	*					
Lowest	90.0	88.2	89.6	93.6	89.8	84.7	87.3	82.4	90.0	86.0
Second	85.4	86.7	90.8	85.3	86.8	83.8	85.9	84.7	89.0	85.8
Middle	85.3	89.4	86.5	91.6	88.4	85.3	88.1	81.6	92.4	86.7
Fourth	95.2	92.3	85.5	93.2	90.1	89.3	91.9	86.6	85.9	88.1
Highest	90.1	92.9	87.4	86.0	87.7	90.1	90.8	79.6	84.2	83.5
Total	88.6	89.1	87.3	89.2	88.6	85.5	88.1	82.9	87.2	86.0

Table A.5.15.

Characteristics of Nets in the Household

	Lake (%) (n=809)	Southern Highlands (%) (n=1393)	Central Highlands (%) (n=1165)	Coastal (%) (n=911)	Total (%) (N=4278)
Nets that are ITN^***	62.9	58.6	47.8	55.1	55.7
Nets obtained for free	84.5	88.1	89.8	88.5	87.8
Source of net (treated/untreated)***					
Mass distribution campaign	32.1	30.3	37.4	32.3	33.0
Antenatal care consultation	19.5	23.2	18.5	19.3	20.4
Immunization	2.0	1.4	1.3	2.5	1.7
Shop/Market/Street Vendor	24.7	30.2	23.6	29.6	27.3
Other	21.6	14.9	19.1	16.3	17.6
Age of net***					
<12 months	65.0	56.6	67.3	62.5	62.3
12–24 months	12.1	15.2	13.0	12.6	13.4
25–36 months	1.4	1.4	1.6	2.4	1.7
>36 months	16.1	22.3	15.0	16.6	17.9
Don't Know	5.4	4.6	3.2	5.9	4.7
Color of net***					
White	25.0	25.8	23.8	21.8	24.3
Blue	66.9	62.2	68.8	68.1	66.2
Green	4.3	4.2	2.3	3.3	3.5
Other color	3.8	7.7	5.1	6.8	6.1

Notes: ^An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment.

Table A.5.16.

Washing of Existing Household Nets

	Lake (%) (n=809)	Southern Highlands (%) (n=1393)	Central Highlands (%) (n=1165)	Coastal (%) (n=911)	Total (%) (N=4278)
Net ever washed*	80.8	86.0	82.1	84.5	83.6
	Lake (n=654)	Southern Highlands (n=1198)	Central Highlands (n=956)	Coastal (n=770)	Total (n=3578)
Product used to wash net					
Bar Soap	28.4	27.5	27.6	30.7	28.4
Detergent	69.6	70.5	70.6	67.4	69.7
Mix	0.8	1.2	1.2	1.0	1.1
Bleach	0.2	0.1	0.4	0.0	0.2
Nothing	0.3	0.4	0.2	0.8	0.4
Where net was dried**					
Outside in the Shade	4.3	8.7	7.2	6.8	7.1
Outside in the Sun	95.6	91.1	92.7	92.7	92.7
Inside	0.0	0.3	0.1	0.5	0.2
Other	0.2	0.0	0.0	0.0	0.0

Table A.5.17.

Reported	Net Care	and Re	epurposina	Practices

	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)
Engage in any net care***	86.9	80.6	77.2	85.6	82.3
Roll up or tie when not in use***	35.9	36.4	36.6	21.3	33.2
Handle nets with care***	9.7	21.6	21.1	20.5	18.4
Keep nets away from children	23.8	21.7	20.1	21.9	21.9
Repurpose nets***	13.4	7.4	13.1	6.2	10.0
Protection for seedlings/crops***	5.2	1.4	2.5	3.5	3.0
Bedding/Padding***	3.5	0.4	0.9	0.0	1.2
Fencing***	0.5	0.7	3.3	1.3	1.4
Rope/tying things***	2.6	2.0	5.2	0.4	2.6
Protecting domesticated animals**	0.9	1.2	2.9	2.1	1.8

Table A.5.18.Consistent Net Use

	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)
Sex					
Female	79.5	73.7	59.6	83.9	73.7
Male	76.2	76.0	56.6	82.4	72.3
Age			*	**	**
15–24	75.5	75.3	62.3	78.7	73.5
25–34	81.3	76.3	63.6	89.4	76.5
35–44	78.6	74.1	56.9	83.4	72.9
≥ 45	78.0	71.7	51.7	80.0	69.5
Residence	***	***	**		***
Urban	86.5	81.8	61.7	83.0	75.9
Rural	74.5	68.3	53.4	84.0	71.1
Education	***	***	*		***
None	63.3	46.0	41.7	81.9	60.3
Primary	80.8	74.4	59.3	85.1	74.5
≥ Secondary	86.4	83.0	60.3	79.4	75.3
Wealth quintile	***	***	***	*	***
Lowest	65.5	64.0	43.2	86.2	64.7
Second	76.6	67.4	52.0	88.5	71.2
Middle	83.5	76.5	61.2	87.0	76.4
Fourth	89.9	83.4	61.2	80.8	77.4
Highest	86.3	83.6	68.0	78.0	77.4
Total***	78.7	74.3	58.9	83.6	73.4

A.6 Indoor Residual Spraying

This subsection provides all data tables related to indoor residual spraying for the 2021 Mainland Tanzania MBS, including data related to respondent knowledge and awareness of IRS; attitudes toward IRS; perceived response-efficacy and perceived self-efficacy of IRS; respondents' willingness to accept IRS in their community; and IRS coverage. Where appropriate, results are disaggregated by zone. The following tables or and figures may have been duplicated or referenced in the main body of the report.



Table A.6.1.

Summary of Ideational Variables Related to Indoor Residual Spraying

	Awareness of IRS program (%) (N=4468)	Favorable attitudes toward IRS^ (%) (n=802)	Perceived IRS as effective^ (%) (n=802)	Perceived self- efficacy for IRS behaviors^ (%) (n=802)
Zone	***	**	**	***
Lake	50.4	75.9	32.8	23.9
Southern Highlands	7.8	82.2	43.0	38.3
Central Highlands	5.9	72.7	51.5	51.5
Coastal	10.1	77.4	38.7	31.2
Sex	**		***	***
Female	16.8	77.0	17.3	7.6
Male	21.3	75.9	82.2	80.1
Age			***	***
15-24	17.2	72.3	20.8	15.4
25-34	17.8	79.1	32.9	21.7
35-44	18.4	77.2	39.2	30.8
≥ 45	18.0	75.7	49.1	46.8
Residence	***			*
Urban	15.3	79.1	39.7	33.5
Rural	20.3	75.1	34.2	25.8
Level of education	***		***	***
None	32.3	70.8	20.8	8.5
Primary	16.2	78.5	38.3	30.6
≥ Secondary	17.4	76.0	42.5	39.1
Wealth quintile	**	***		
Lowest	22.2	70.9	34.2	24.1
Second	17.0	73.5	37.1	25.8
Middle	16.2	89.0	33.1	26.9
Fourth	15.7	82.1	33.6	31.4
Highest	18.7	71.3	43.7	37.1
Total	18.0	76.7	36.4	28.9

Notes: ^Only those respondents who were aware of the IRS program were asked these set of questions (n=802); *p<0.05; **p<0.01; ***p<0.001

Table A.6.2.

Awareness of IRS Programs

	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)
Respondents who know about the IRS	50.4	7.8	5.9	10.1	18.0
Program***:					
Sex	*		**		**
Female	48.4	7.3	4.7	9.5	16.8
Male	56.1	9.2	9.7	12.6	21.3
Age					
15–24	45.0	6.8	3.3	6.8	17.2
25–34	47.7	8.9	4.7	13.6	17.8
35–44	53.8	6.7	6.9	9.9	18.4
≥ 45	55.4	8.4	8.4	8.8	18.0
Residence	***	***	***	***	***
Urban	22.7	11.0	7.8	18.5	15.3
Rural	59.3	5.2	2.4	3.4	20.3
Level of education	***	**	**	**	***
None	59.7	8.1	0.0 (48)	8.3	32.3
Primary	51.4	6.6	4.5	8.5	16.2
≥ Secondary	38.4	12.5	9.8	15.8	17.4
Wealth guintile	***	**	***	***	**
Lowest	59.7	6.7	1.2	1.9	22.2
Second	57.2	3.7	1.7	5.2	17.0
Middle	47.0	8.7	4.8	8.1	16.2
Fourth	42.6	8.1	6.4	13.9	15.7
Highest	37.3	14.6	11.6	17.7	18.7
Notes: *p<0.05; **p<0.01; ***p<0.001					

Table A.6.3.

Attitudes toward IRS

	Lake (%) (n=536)^	Southern Highlands (%) (n=107)^	Central Highlands (%) (n=66)^	Coastal (%) (n=93)	Total (%) (n=802) ^
DISAGREE: Many people develop skin problems (rashes, itching) after the walls inside their houses are sprayed with insecticide.***	55.4	47.7	31.8	57.0	52.6
AGREE: After spraying the interior walls of a household with insecticide, a person can touch the walls safely once the spray has dried.***	74.3	50.5	37.9	61.3	66.6
DISAGREE: People have problems with bugs/bed bugs after the walls are sprayed.***	50.4	56.1	42.4	60.2	51.6
AGREE: The benefits of having my house sprayed is worth the effort needed to move my belongings out so it can be sprayed.***	81.0	79.4	81.8	74.2	80.1
DISAGREE: It bothers me to leave my possessions outside of my house while my walls are being sprayed.***	66.8	56.1	56.1	61.3	63.8
AGREE: Spraying the inside walls of a house to kill mosquitoes does not cause any health problems for the people living in the house.***	75.8	60.8	56.1	72.0	71.7
Favorable attitudes toward IRS**	75.9	82.2	72.7	77.4	76.7
Sex				*	
Female	75.8	81.1	69.2	83.8	77.0
Male	76.2	84.9	77.8	60.0	75.9
Age					
15–24	72.7	84.6	80.0	53.9	72.3
25–34	80.4	77.8	61.1	83.8	79.1
35–44	74.3	78.6	87.0	85.7	77.2
≥ 45	75.0	90.0	65.0	66.7	75.7
Residence					
Urban	81.6	83.6	71.9	76.3	79.1
Rural	74.2	80.0	77.8	82.4	75.1

	Lake (%) (n=536)^	Southern Highlands (%) (n=107)^	Central Highlands (%) (n=66)^	Coastal (%) (n=93)	Total (%) (n=802) ^
Level of education	*				
None	67.6	100.0 (7)	75.0	100.0 (6)	70.8
Primary	78.8	79.1	70.6	77.8	78.5
≥ Secondary	76.0	84.9	72.7	72.7	76.0
Wealth quintile	***				***
Lowest	69.7	84.2	50.0	66.7	70.9
Second	71.7	81.8	100.0 (3)	80.0	73.5
Middle	93.6	78.6	80.0	84.6	89.0
Fourth	81.3	83.3	88.9	77.8	82.1
Highest	68.3	84.0	60.6	75.5	71.3
Total	75.9	82.2	72.7	77.4	76.7

Notes: ^Only those respondents who were aware of the IRS program were asked these set of questions (n=802);

*p<0.05; **p<0.01; ***p<0.001

Table A.6.4.

Perceived Response-efficacy of IRS

	Lake (%) (n=536)^	Southern Highlands (%) (n=107)^	Central Highlands (%) (n=66)^	Coastal (%) (n=93)^	Total (%) (n=802) ^
AGREE: Spraying the inside walls of a house is an effective way to prevent malaria	84.7	84.1	84.9	85.0	84.7
AGREE: People who live in houses that have been sprayed are less likely to get malaria	34.9	41.1	48.5	40.9	37.5
Total who perceived indoor residual spraying efficacy **	32.8	43.0	51.5	38.7	36.4
Sex	***	***	***	***	***
Female	13.3	24.3	28.2	26.5	17.3
Male	82.8	84.9	85.2	72.0	82.2
Age	**			**	***
15–24	19.2	23.1	20.0	30.8	20.8
25–34	31.0	41.7	50.0	24.3	32.9
35–44	37.4	50.0	39.1	39.3	39.2
≥ 45	40.7	46.7	75.0	80.0	49.1
Residence					
Urban	33.6	41.8	49.1	40.8	39.7
Rural	32.6	45.0	67.0	29.4	34.2
Level of education	***				***
None	18.0	57.1	(0)	33.3	20.8
Primary	35.0	40.3	62.5	42.6	38.3
≥ Secondary	45.6	45.5	41.2	33.3	42.5
Wealth quintile					
Lowest	32.0	47.4	100.0 (2)	33.3	34.2
Second	35.4	63.6	100.0 (3)	10.0	37.1
Middle	29.8	28.6	50.0	53.9	33.1
Fourth	28.8	45.8	38.9	33.3	33.6
Highest	40.0	44.0	51.5	42.9	43.7
Total	32.8	43.0	51.5	38.7	36.4

Notes: ^Only those respondents who were aware of the IRS program were asked these set of questions (n=802); *p<0.05; **p<0.01; ***p<0.001

Table A.6.5.

Perceived Self-Efficacy for IRS Behaviors

Table A.O.J.					
Perceived Self-Efficacy for IRS Behaviors					
	Lake (%) (n=536)^	Southern Highlands (%) (n=107)^	Central Highlands (%) (n=66)^	Coastal (%) (n=93)^	Total (%) (n=802)^
AGREE: I can move all my furniture out of my house to prepare the house for spraying**	27.8	39.3	51.5	33.3	31.9
AGREE: I can sleep in my house on the night it is sprayed***	25.9	42.1	63.6	33.3	32.0
Total who perceived self-efficacy for indoor residual spraying behaviors ***	23.9	38.3	51.5	31.2	28.9
Sex	***	***	***	***	***
Female	3.6	14.9	28.2	10.3	7.6
Male	75.5	90.9	85.2	88.0	80.1
Age	***			**	***
15–24	10.1	23.1	20.0	46.2	15.4
25–34	19.6	30.6	44.4	10.8	21.7
35–44	26.9	42.9	43.5	32.1	30.8
≥ 45	38.0	50.0	75.0	66.7	46.8
Residence					*
Urban	26.4	37.3	49.1	30.3	33.5
Rural	23.1	40.0	66.7	35.3	25.8
Level of education	***				***
None	6.0	57.1	56.3	0.0 (6)	8.5
Primary	25.9	37.3	47.1	37.0	30.6
≥ Secondary	41.8	36.4	51.5	27.3	39.1
Wealth quintile					
Lowest	21.7	42.1	100.0 (2)	0.0 (3)	24.1
Second	22.8	45.5	66.7	30.0	25.8
Middle	24.5	28.6	50.0	23.1	26.9
Fourth	23.8	45.8	44.4	33.3	31.4
Highest	31.7	36.0	51.5	34.7	37.1
Total	23.9	38.3	51.5	31.2	28.9

Notes: ^Only those respondents who were aware of the IRS program were asked these set of questions (n=802); *p<0.05; **p<0.01; ***p<0.001

Table A.6.6.

Willingness to Accept IRS					
	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)
Prior knowledge of IRS program***					
Yes	50.4	7.8	5.9	10.1	18.0
No	49.6	92.2	94.1	89.9	82.1
Sex		**	*	**	***
Female	78.9	72.5	76.3	84.0	77.4
Male	80.3	80.2	83.5	93.0	83.4
Age	**	**	**	***	***
15–24	70.9	65.3	67.5	74.0	69.6
25–34	82.5	78.8	78.8	90.1	81.9
35–44	82.1	72.5	83.8	87.3	80.6
≥ 45	78.5	77.0	75.6	90.6	79.4
Residence				***	*
Urban	78.4	75.2	77.3	80.1	77.4
Rural	79.7	74.0	79.6	90.7	80.2
Level of education	*		*		
None	79.6	70.1	66.7	81.9	76.4
Primary	81.3	75.0	77.1	87.4	79.5
≥ Secondary	72.3	74.0	81.6	82.8	78.0
Wealth quintile				**	
Lowest	79.9	71.0	79.0	85.5	77.9
Second	75.7	75.4	79.1	86.9	78.7
Middle	82.5	73.7	81.8	94.4	81.3
Fourth	83.5	75.9	79.4	83.9	79.8
Highest	73.9	77.8	72.9	81.6	76.7
Total***	79.3	74.5	78.1	86.0	78.9

Table A.6.7.

Reported Acceptance of IRS

	Lake (%) (n=710)	Southern Highlands (%) (n=949)	Central Highlands (%) (n=792)	Coastal (%) (n=654)	Total (%) (N=3105)
Households reporting anyone asking to spray their dwelling in past 12 months***	16.1	0.1	0.8	1.8	4.3
	Lake (n=114)	Southern Highlands (n=1)	Central Highlands (n=6)	Coastal (n=12)	Total (n=133)
Households that reported accepting indoor residual spraying in past 12 months***	92.1	0.0	33.3	75.0	87.2
Residence					
Urban	95.0	0.0	50.0	72.7	80.5
Rural	91.5		0.0 (2)	100.0 (1)	89.7
Wealth quintile					
Lowest	94.3		33.3		89.5
Second	93.6		0.0 (2)		87.9
Third	83.3	0.0			80.7
Fourth	100.0 (15)			80.0	95.0
Highest	100.0 (3)		100.0 (1)	71.4	81.8

A.7 Media Consumption and Message Exposure

This subsection provides all data tables related to media consumption and exposure to malaria messages for the 2021 Mainland Tanzania MBS. Where appropriate, results are disaggregated by zone. The following tables may have been duplicated or referenced in the main body of the report.

Table A.7.1.

Variables Related to Media Consumption

	Listens to radio at least	Watches TV at least	Owns mobile	Seen or heard message about	Identified a campaign
	once a week (%)	once a week (%)	phone (%)	malaria in past 6 months (%)	logo (%)
Zone	***	***	***	***	***
Lake	56.3	35.6	57.0	27.4	30.9
Southern Highlands	61.7	34.6	77.1	39.2	27.1
Central Highlands	66.4	50.6	84.3	40.3	29.1
Coastal	59.7	48.4	75.8	39.2	37.4
Sex	***	**	***		***
Female	57.8	40.3	69.3	37.1	32.5
Male	71.5	45.8	87.5	35.4	24.8
Age	***		***		
15–24	54.9	40.1	58.7	36.5	31.6
25–34	62.3	43.0	76.2	38.9	29.2
35–44	60.3	41.2	74.8	36.3	30.9
≥ 45	65.7	41.6	81.0	34.1	31.5
Residence	***	***	***	***	
Urban	69.8	58.7	84.8	44.7	31.2
Rural	53.4	26.2	63.9	29.4	30.1
Education	***	***	***	***	
None	39.0	23.1	35.5	16.4	31.0
Primary	60.8	36.2	74.7	35.4	30.4
≥ Secondary	71.1	65.1	86.4	48.4	31.0
Wealth quintile	***	***	***	***	*
Lowest	34.8	12.3	45.2	21.0	33.1
Second	50.1	15.9	66.8	27.8	28.0
Middle	65.0	30.2	79.5	36.1	29.0
Fourth	76.1	63.1	87.4	43.9	39.8
Highest	80.1	86.8	90.5	54.7	33.3
Total	61.2	41.7	78.3	36.7	30.6

Table A.7.2.

Radio Listenership at Least Once a Week

	All respondents Respondents with a radio in the household									
	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)	Lake (%) (n=605)	Southern Highlands (%) (n=814)	Central Highlands (%) (n=770)	Coastal (%) (n=485)	Total (%) (n=2674)
Sex	***	***	***	*	***	*	***	***		***
Female	53.1	57.2	63.0	57.7	57.8	74.1	82.9	78.2	78.7	78.8
Male	65.8	74.4	76.7	66.8	71.5	83.9	95.5	91.3	81.7	89.3
Age	*	**			***		**			***
15–24	50.0	53.2	62.3	56.3	54.9	68.2	76.0	80.4	74.8	74.7
25–34	60.1	60.7	64.1	64.8	62.3	78.8	87.2	79.3	81.0	81.7
35–44	53.1	61.3	66.8	59.0	60.3	76.8	85.4	81.4	82.5	81.8
≥ 45	62.1	67.8	72.3	56.5	65.7	81.9	90.9	85.8	77.1	85.6
Residence	***	***	***	*	***	**		***		***
Urban	70.1	69.8	72.9	63.8	69.8	82.0	88.2	84.9	78.3	84.2
Rural	48.9	55.2	53.9	56.3	53.4	72.7	84.3	73.5	80.6	78.2
Education	***	***	***		***	**	***			***
None	37.2	35.6	33.3	51.4	39.0	60.9	62.5	70.6	79.2	65.7
Primary	59.1	61.1	63.3	59.0	60.8	79.7	86.7	79.8	79.7	82.1
≥ Secondary	65.5	72.5	77.3	64.6	71.1	76.3	89.5	85.1	78.7	83.2
Wealth quintile	***	***	***	***	***		***	***	*	***
Lowest	37.5	31.1	30.3	40.9	34.8	66.7	63.0	52.9	72.0	64.7
Second	51.4	49.2	50.3	49.7	50.1	73.8	82.0	69.3	86.0	77.1
Middle	60.0	70.9	68.4	54.7	65.0	78.7	88.5	78.7	69.1	81.0
Fourth	72.9	81.4	76.9	66.9	76.1	81.8	91.6	84.6	76.5	85.4
Highest	73.3	83.0	85.2	76.9	80.1	76.1	87.0	87.0	83.1	83.8
Total ***	56.3	61.7	66.4	59.7	61.2	76.9	86.4	81.6	79.4	81.6

Table A.7.3.

Preferred Time to Listen to Radio

	Early	Late	Afternoon	Early evening	Late	Night
	morning	morning			evening	
Zone***						
Lake	22.8	8.8	20.8	18.3	28.0	1.3
Southern Highlands	15.5	21.8	13.9	21.4	26.5	0.8
Central Highlands	25.8	17.4	19.7	14.7	22.0	0.5
Coastal	12.8	18.3	27.2	24.0	17.2	0.5
Sex***						
Female	15.3	18.8	23.9	18.4	23.0	0.6
Male	29.3	12.8	9.5	22.2	25.0	1.1
Age***						
15–24	13.2	17.3	28.9	17.5	23.0	0.0
25–34	19.1	18.2	21.8	19.1	21.2	0.6
35–44	20.2	15.7	19.3	20.2	23.7	0.9
≥ 45	22.4	17.1	11.7	20.5	27.1	1.2
Residence***						
Urban	21.7	18.8	18.5	16.3	24.1	0.6
Rural	16.3	15.1	21.4	23.4	23.0	0.9
Education***						
No education	18.9	17.1	23.4	17.7	21.5	1.3
Primary	16.9	16.5	20.1	20.1	25.7	0.8
≥ Secondary	25.3	18.7	18.4	18.4	18.7	0.5
Wealth quintile***						
Lowest	13.2	13.2	22.6	20.4	30.1	0.6
Second	16.0	14.8	19.9	28.4	20.3	0.6
Middle	15.6	14.4	21.0	19.7	28.3	1.0
Fourth	19.6	18.8	19.2	18.1	23.8	0.4
Highest	26.5	20.8	18.3	14.5	18.9	1.1
Respondents who prefer to						
listen to radio at certain times ***	19.3	17.1	19.8	19.5	23.6	0.8

Notes: ^n=2890 includes only those who reported listening to the radio at least once a week *p<0.05; **p<0.01; ***p<0.001

Table A.7.4.Television Viewership at Least Once a Week

	All Respond	ents				Respondent	Respondents with Television in the Household			
	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)	Lake (%) (n=310)	Southern Highlands (%) (n=421)	Central Highlands (%) (n=494)	Coastal (%) (n=390)	Total (%) (n=1615)
Sex	**	**			**					*
Female	33.2	32.0	50.4	48.3	40.3	82.3	82.8	84.8	81.6	83.0
Male	42.8	42.1	51.3	48.7	45.8	90.5	90.3	86.4	86.4	88.4
Age				***					*	*
15–24	29.6	33.7	49.4	51.0	40.1	76.9	84.3	82.5	74.4	79.0
25–34	37.5	32.4	48.6	57.5	43.0	90.1	82.6	86.4	88.8	86.8
35–44	35.5	34.7	49.7	47.4	41.2	84.4	84.8	88.0	84.0	85.5
≥ 45	39.5	37.5	55.9	32.4	41.6	83.1	86.9	81.7	76.4	83.0
Residence	***	***	***	***	***	*		**	*	***
Urban	58.2	52.4	60.7	65.1	58.7	88.2	86.2	88.0	85.5	87.0
Rural	23.5	20.4	31.2	34.8	26.2	77.6	81.2	75.0	76.2	77.6
Level of education	***	***	***	***	***			***		**
None	22.5	20.7	18.8	30.6	23.1	74.1	81.8	66.7	80.0	76.3
Primary	33.2	29.2	42.3	43.6	36.2	86.1	83.0	79.6	81.4	82.2
≥ Secondary	55.8	60.0	72.1	68.9	65.1	84.6	88.3	91.9	84.9	88.2
Wealth quintile	***	***	***	***	***			***	***	***
Lowest	15.4	7.4	11.1	16.4	12.3	(0)	(0)	(0)	(0)	(0)
Second	18.5	10.0	16.4	22.0	15.9	83.3	80.0	0.0 (2)	83.3	77.4
Middle	21.5	28.2	34.0	40.4	30.2	86.4	83.1	57.9	71.4	76.8
Fourth	59.6	62.4	69.0	56.9	63.1	82.6	82.0	81.6	69.0	80.0
Highest	85.7	87.1	88.4	85.6	86.8	85.7	89.0	90.3	89.0	88.8
Total	35.6***	34.6***	50.6***	48.4***	41.7***	84.5	84.8	85.2	82.6	84.3

Notes: *p<0.05; **p<0.01; ***p<0.001

Malaria Behavior Survey: Tanzania Mainland 2021

Table A.7.5.

Prejerred Time to Watch Television Among Those who watch at Least Once a week, (^n=2056	Preferred Time to Watch	Television Among	Those Who Watch at	Least Once a Week, (^r	า=2056)
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	Early morning (%)	Late morning (%)	Afternoon (%)	Early evening (%)	Late evening (%)	Night (%)
Zone***						
Lake	11.4	2.4	8.7	20.8	56.3	0.5
Southern Highlands	3.0	2.6	7.8	27.5	57.7	1.4
Central Highlands	1.6	0.8	4.7	33.0	58.5	1.5
Coastal	2.7	1.7	17.2	22.7	54.9	0.8
Sex***						
Female	4.3	1.8	11.7	25.6	55.3	1.3
Male	4.0	1.7	3.6	29.0	61.2	0.5
Age**						
15–24	6.5	3.3	14.5	26.1	48.4	1.2
25–34	4.0	1.4	9.8	24.0	59.8	1.1
35–44	3.1	1.6	8.6	28.9	56.9	0.8
≥ 45	4.2	1.6	6.0	27.6	59.4	1.3
Residence***						
Urban	3.0	1.6	7.7	25.8	60.6	1.3
Rural	6.6	2.1	12.7	28.1	49.9	0.6
Education***						
No education	25.8	2.3	9.0	23.6	39.3	0.0
Primary	3.6	1.8	10.9	27.3	55.4	1.0
Secondary +	2.5	1.8	6.7	25.8	61.9	1.3
Wealth quintile***						
Lowest	16.5	3.3	14.1	33.9	32.2	0.0
Second	7.8	2.1	16.2	32.8	40.6	0.5
Middle	4.6	2.5	11.9	31.2	49.2	0.6
Fourth	2.6	1.0	8.2	26.3	60.8	1.1
Highest	2.5	1.9	7.0	22.4	64.8	1.5
Total	4.18	1.8	9.4	26.6	57.0	1.1

Notes: ^n=2056 includes only those who reported watching television at least once a week. *p<0.05; **p<0.01; ***p<0.001

Table A.7.6.

Mobile Phone or Tablet Ownership

	Lake (%) (n=1064)	Southern Highlands (%) (n=1373)	Central Highlands (%) (n=1113)	Coastal (%) (n=918)	Total (%) (N=4468)
Sex	***	***	***	***	***
Female	50.4	72.7	81.5	71.4	69.3
Male	76.2	89.7	92.5	92.0	87.5
Age	***	***	**	**	***
15–24	36.4	65.3	74.0	65.6	58.7
25–34	60.1	78.0	85.0	80.2	76.2
35–44	62.3	74.4	85.9	76.3	74.8
≥ 45	66.2	85.7	87.4	79.4	81.0
Residence	***	***	*	***	***
Urban	78.4	86.5	85.9	86.2	84.8
Rural	45.5	69.6	81.2	67.4	63.9
Level of education	***	***	***	***	***
None	20.9	47.1	45.8	54.2	35.5
Primary	60.7	76.7	83.7	75.8	74.7
≥ Secondary	79.1	88.7	90.8	83.3	86.4
Wealth quintile	***	***	***	***	***
Lowest	27.7	49.5	61.7	52.8	45.2
Second	50.9	71.4	79.7	66.0	66.8
Middle	68.0	83.3	87.1	76.4	79.5
Fourth	77.1	93.9	91.5	78.5	87.4
Highest	81.4	92.4	90.9	94.2	90.5
Total ***	57.0	77.1	84.3	75.8	73.8

Table A.7.7.					
Exposure to Malaria Messages					

	Correctly states malaria message "kabla hujalala, chandarua ni lazima" (%)	Correctly completes malaria message "sio kila homa ni malaria- nenda kapime" (%)	Correct completes "ziro malaria inaanza na mimi" (%)	Correctly recognizes malaria campaign logo (%)
Zone	***	***	***	***
Lake	46.9	50.5	18.1	30.9
Southern Highlands	42.2	60.5	17.6	27.1
Central Highlands	23.9	61.7	7.9	29.1
Coastal	35.1	75.8	6.9	37.4
Sex				***
Female	37.8	61.8	13.0	32.5
Male	36.0	60.9	13.3	24.8
Age				
15–24	37.0	58.6	12.3	31.6
25–34	37.8	63.1	13.5	29.2
35–44	38.1	62.5	12.7	30.9
≥ 45	35.7	60.3	13.7	31.5
Residence	**	**	***	
Urban	39.6	64.1	15.1	31.2
Rural	35.2	59.3	11.3	30.1
Education	***	***	*	
No education	24.8	38.7	9.2	31.0
Primary	38.0	61.8	13.0	30.4
≥ Secondary	40.2	69.8	15.0	31.0
Wealth quintile	***	***	***	*
Lowest	31.6	46.5	9.1	33.1
Second	34.1	55.7	10.3	28.0
Middle	42.1	67.6	14.5	29.0
Fourth	40.0	65.3	16.7	39.8
Highest	38.8	72.8	14.9	33.3
Total	37.3	61.6	13.1	30.6