Malaria Behavior Survey

Zanzibar 2021

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PMI U.S. PRESIDENT'S MALARIA INITIATIVE
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SMZ SERIKALI YA MAPINDUZI ZANZIBAR

Breakthrough ACTION FOR SOCIAL & BEHAVIOR CHANGE

Acknowledgements

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Acronym List

ACT	Artemisinin-based combination therapies
CCP	Johns Hopkins Center for Communication Programs
EA	Enumeration area
IRS	Indoor residual spraying
ITN	Insecticide-treated net
LSM	Larval source management
MBS	Malaria Behavior Survey
MDA	Mass drug administration
PMI	U.S. President's Malaria Initiative
RCD	Reactive case detection
SBC	Social and behavior change
USAID	United States Agency for International Development
WHO	World Health Organization
ZAMEP	Zanzibar Malaria Elimination Program

Preface

The Zanzibar Malaria Elimination Program (ZAMEP) oriented efforts towards elimination of malaria in Zanzibar and has operated under an elimination-focused strategy since 2012. Significant progress has been made and the rate of malaria transmission has been kept to below one percent for more than a decade.

However, specific challenges need to be overcome to reach the ultimate goal of elimination, which include the broader use and care of insecticide-treated nets (ITNs) for malaria prevention, community-based malaria surveillance, prompt and appropriate care-seeking for fevers that may be malaria, adherence to malaria treatment protocols, and participation in community-based initiatives led by ZAMEP and other stakeholders, such as reactive case detection and community larviciding, and dealing with new challenges of malaria importation.

ZAMEP's elimination-focused strategy operates across three pillars focused on malaria surveillance and outbreak response, in addition to prevention of malaria. Cutting across these pillars is the supporting strategy of social and behavior change (SBC) and communication. There are important roles to be played at the health facility, household, and community levels and these hinge on effective stakeholder engagement and behavior change.

Recognizing this important role of SBC, ZAMEP believes in partnership for successful delivery of malaria elimination interventions and has partnered with the U. S. President's Malaria Initiative (PMI) through Breakthrough ACTION to understand the drivers of human behavior that may impact the optimal implementation of malaria elimination interventions. The implementation of the Malaria Behavior Survey (MBS) will shed light on these important behavioral initiatives. ZAMEP, Breakthrough ACTION and PMI formed an Advisory Group for the Zanzibar MBS, and together the group adapted the global and local MBS protocol and questionnaires for low-transmission settings and collaborated on the preparation and planning of the MBS data collection. Zanzibar is proud to be the first low malaria transmission location to implement the MBS in 2021. Alongside Breakthrough ACTION, the ZAMEP team co-led the data collectors training and supervision of data collection in the field. The MBS report provides contextual data on the behavioral determinants at community level for malaria, that will inform further analysis and research on issues to be addressed by the program and other partners implementing malaria elimination interventions.

ZAMEP is grateful to PMI for the financial support to the study, Breakthrough ACTION for their key role, and all Zanzibaris who participated in the successful implementation of the MBS. The result of this report will go a long way in supporting malaria SBC programming as well as future policy decisions.

Executive Summary

The Zanzibar Malaria Elimination Program (ZAMEP) continues to make dramatic strides in controlling malaria, which is now rare in the Zanzibar archipelago of the United Republic of Tanzania. ZAMEP's integrated package of malaria interventions has been supported by multiple partners, including the U.S. President's Malaria Initiative since 2005. In addition to systemic interventions, malaria elimination depends on human behavior. Understanding local malaria-related knowledge, attitudes, and practices can inform social and behavior change (SBC) programs. The goal of this Malaria Behavior Survey (MBS), focusing on low-transmission areas, is to provide a better understanding of the socio-demographic and ideational characteristics associated with malaria-related behavioral outcomes in Zanzibar and to inform SBC activities designed to improve malaria-related ideational and behavioral outcomes to achieve malaria elimination in Zanzibar.

The MBS was implemented in both Unguja and Pemba, the major islands in Zanzibar. Interviews were conducted with 1,745 individuals (871 women aged 15–49 and 874 men aged 18–59) in 1,007 households. Data analysis employed descriptive statistics and, where methodologically appropriate, tests of significance, as well as bivariate and multivariate logistic regression. The key survey findings are summarized below, reported by zone only if the difference by zone was statistically significant. See the body of the report for the detailed results, including significance levels and odds ratios, as relevant.

Results of the Zanzibar 2021 Malaria Behavior Survey

Household Characteristics

- On average, households in Zanzibar included five residents and three sleeping rooms.
- About 64% of households had electricity (74% in Unguja and 42% in Pemba); 97% of households in Unguja and 87% in Pemba were near a public or private health facility (i.e., within five kilometers, 30 minutes or less on foot or 10 minutes or less by car); and 80% in both zones were near a pharmacy (defined as any place where prescription or nonprescription drugs could be obtained).
- Whereas most (68%) households in Unguja were in urban areas, 92% in Pemba were in rural areas. This difference was reflected in household assets: land and livestock ownership were significantly more common in Pemba (49% and 54%, respectively) than in Unguja (22% and 16%, respectively), and assets such as radios and televisions were respectively more common in Unguja (70% and 58%) than in Pemba (25% and 19%).

Population Characteristics

- Most (98%) survey respondents were Muslim and most were married (76%). In Unguja, 69% of respondents completed secondary or post-secondary studies, and 23% had completed primary school only. In Pemba these rates were 40% and 37%, respectively.
- Only 9% of Unguja respondents but nearly 43% in Pemba lived in households that were in the lowest wealth quintile, while 28% of Unguja respondents compared with only 1% in Pemba lived in households in the highest wealth quintile. This uneven wealth distribution by zone reflects the predominantly urban population in Unguja.

Cross-Cutting Ideational Determinants

- Just over half of participants (51%) believed they were susceptible to malaria, while only 28% of respondents perceived malaria as a severe illness.
- Most participants (86%) perceived equitable gender norms related to malaria, and correct knowledge of malaria was significantly higher in Pemba (73%) than in Unguja (54%).
- Few discussed malaria with a spouse or partner (11%) or with family or friends in the six months prior to the survey (9%).
- Perceptions of health care workers were positive, with nearly 90% reporting favorable perceptions of facility-based health workers, and 75% reporting positive attitudes about community-based health workers.

Case Management for Fever

- Less than half of respondents (47%) believed malaria testing is efficacious at detecting malaria.
- Only 37% perceived malaria treatment as efficacious, with lowest levels reported in Unguja.
- As expected in a low malaria transmission setting, only 9% reported having a fever in the two weeks prior to the survey, among whom 70% sought care. Among those who sought care, 71% sought prompt (within 24 hours of fever onset) and appropriate care (at a health facility or from a community health worker first). We did not have sufficient numbers of fever cases in this low-transmission survey to run logistic regression analysis for care seeking behaviors.

Mosquito Net Use

- About 66% of households reported having at least one insecticide-treated net (ITN), but only 32% had at least one net per two household members. The survey was conducted just before the ITN distribution campaign in July and August of 2021, however, so this percentage likely underestimates current net access.
- While 85% of the nets that were found in households at the time of the survey were used consistently every night of the preceding week, most households did not have sufficient nets for all members.
- Moreover, only 37% of respondents reported they consistently sleep under a net every night of the week.
- The most important ideational factors associated with consistent net use by respondents included their perceived self-efficacy to use nets, favorable attitudes toward net use, and supportive descriptive community norms.
- The odds ratios for consistent net use differed statistically significantly by zone and residence with the highest odds of such use found among residents of Pemba (OR 1.8) and among rural residents (OR 2.4).

Indoor Residual Spraying

- Over half of respondents (58%) reported awareness of an indoor residual spraying program in their community.
- Among respondents who knew about indoor residual spraying, 75% held positive attitudes toward it.
- About 86% stated they would accept indoor residual spraying services if offered.

Larval Source Management

- Only 29% of respondents had heard of larval source management or larviciding.
- Once described to them, nearly 92% had favorable attitudes regarding larviciding.

Media Consumption

- Most respondents (80%) owned a mobile phone or tablet, and fewer listened to the radio (49%) or watched TV (42% overall; Unguja 52%, Pemba 23%) at least once a week.
- Though 66% of respondents in Unguja and 44% in Pemba were able to complete the Zanzibar malaria campaign slogan, only 44% in Unguja and 31% in Pemba reported having seen or heard a malaria message in the six months preceding the survey.

Reactive Case Detection

- Respondents were asked about their awareness of reactive case detection and about 28% of respondents in Pemba and 22% in Unguja had heard of this reactive case detection or similar program.
- About 82% of all respondents (Pemba 86%, Unguja 80%) had favorable attitudes regarding reactive case detection.
- Nearly 79% expressed a willingness to participate in such a program.

Mass Drug Administration

- Respondents were asked about their awareness of mass drug administration ("Are you aware of programs that involve administering drugs to everyone living in a community to treat malaria?") and about 16% stated they were aware of the program.
- More than two-thirds (69%) of respondents noted they would be willing to accept mass drug administration if offered.

Recommendations (Presented by Strategy)

Strategy 1. Malaria Diagnosis and Treatment: Ensure High-quality Diagnosis and Appropriate Case Management in all Health Facilities and at the Community Level.

Individual Level

- Address low trust in negative malaria test results with SBC programs that model the appropriate behavior for clients and health providers when a malaria test is negative and inform on the options that febrile patients with a negative malaria test have.
- Address low perceived effectiveness for malaria treatment, including the preference for injections over pills, by reinforcing that malaria treatment will cure the infection in the majority of cases if the full course of pills is taken and that injections are only appropriate in extenuating circumstances.

Clinic and Policy Level

- Health care providers can be an important support for behavior change among clients. Ensure proper counseling from providers to clients on topics such as the importance of completing malaria medication even when patients feel better and the inappropriateness of ACT use after a negative malaria test.
- Encourage health care providers to inform patients reporting with fever that malaria testing and treatment are efficacious and that they can have confidence in these services.

SBC Programming

- Develop SBC activities to increase the confidence in malaria testing and ACTs as efficacious for detecting and treating malaria, respectively, among the population.

- Considering Zanzibaris' high levels of acceptance and willingness to participate in a mass drug administration program, SBC programs to prepare for such a rollout should be designed and disseminated.
- The findings regarding mass drug administration suggest that Zanzibaris may also be receptive to reactive drug administration without testing. As ZAMEP is planning to implement reactive drug administration, SBC programs should be designed and implemented beforehand to introduce or reinforce this program and its benefits to the community.

Strategy 2. Integrated Malaria Vector Control: Increase Appropriate Vector Control Measures to At-risk Populations.

- About 35% of households reported they had no mosquito nets (treated or untreated), but the survey was conducted before a recent mass distribution campaign in July and August of 2021. As 85% of nets were reported to be in use but only 37% of respondents reported consistently sleeping under a net, access to nets appears to be insufficient and access should be improved through net distributions. More recent data from the 2022 Malaria Indicator Survey should be assessed to determine how the 2021 mass distribution campaign changed net access and use.
- Respondents' high levels of acceptance and willingness to participate in indoor residual spraying and larviciding programs reflect a solid foundation for increasing coverage and scale-up of these programs.
- For community-based programs, such as indoor residual spraying or larviciding, announcing the purpose and plan for how community and individual resident visits will be conducted (before implementation) can increase knowledge and awareness as well as maintain trust.

Strategy 3. Surveillance, Monitoring, and Evaluation: Actively Investigate and Classify 100% of Confirmed Cases of Malaria and Initiate Entomological Surveillance in 100% of Malaria Foci.

- Respondents indicated strong support for reactive case detection but, as with other programs, announcements about the timing and purpose of such visits should be widely disseminated.

Introduction

Malaria in Zanzibar

Malaria is a major public health concern across mainland Tanzania, with 6,001,518 confirmed cases in 2020 and 93% of the mainland population living in areas where malaria is transmitted during at least one month per year (USAID, 2018; Tanzania Ministry of Health and Social Welfare, 2014). According to the Tanzania Ministry of Health and Social Welfare (2014) and WHO (2018), about 61% of the population of Zanzibar live in high-transmission areas (>1 case per 1,000 population), and 39% live in low-transmission areas (0–1 case per 1,000 population).

Using an integrated vector management approach, the autonomous region of Zanzibar within Tanzania significantly reduced its malaria burden from 35% to 40% in 1995 to less than 2% in 2010 (Zanzibar Malaria Elimination Program, 2016). This dramatic decline is attributed to extensive use of indoor residual spraying (IRS), increased distribution of insecticide-treated nets (ITNs), and increased treatment of diagnosed cases with artemisinin-based combination therapy (ACT). Zanzibar has maintained a malaria prevalence below 1% for the past decade and remains in the pre-elimination phase. In 2017, the prevalence of fever among children under five years old in Zanzibar was 10% in Unguja zone and 23% in Pemba zone (Ministry of Health, Community Development, Gender, Elderly, and Children, 2017). Malaria can affect nutritional status, weakening children's immunity to infectious diseases (Eswarappa et al., 2012).

Malaria Interventions in Zanzibar

As malaria prevalence in Zanzibar is very low, the Zanzibar Malaria Elimination Program (ZAMEP) implements an elimination-focused strategy with corresponding interventions for a low-prevalence setting.

Key malaria elimination interventions include IRS, ITNs, ACT, and use of rapid diagnostic tests in all public and private health care facilities (Zanzibar Malaria Elimination Program, 2016). Despite these efforts, total elimination of malaria in Zanzibar remains difficult to achieve. The persistence of endemic malaria transmission in surrounding mainland Tanzania and Kenya, as well as imported cases, leave the Zanzibar islands vulnerable to outbreaks, in addition to continued local transmission especially in Pemba.

In 2005, Tanzania was selected as one of the first three focus countries of the U.S. President's Malaria Initiative. With two Ministries of Health (one in mainland Tanzania and one in Zanzibar), this initiative operates in collaboration with the National Malaria Control Program and ZAMEP. The Government of Tanzania operates a decentralized health system on the mainland, and government structures in Zanzibar operate mostly independent of mainland Tanzania.

The main objective of ZAMEP's elimination-focused strategy (2018–2023) is to provide direction for conducting malaria surveillance and responding to abnormal increases in cases (i.e., levels exceeding thresholds). ZAMEP's specific objectives are to provide reference and guidance to district response teams to (1) detect malaria outbreaks using health facility and community-based surveillance systems; (2) to respond to malaria outbreaks by supporting health facilities, households, and communities; and (3) to ensure availability of commodities to handle malaria outbreaks at the facility, household, and community levels.

The incidence of symptomatic malaria at health facilities in Zanzibar decreased by 94% between 2003 and 2015, with trends indicating higher incidences in those older than five years, in certain seasons, and among those with travel history to or from mainland Tanzania (Björkman et al., 2019). In 2017, 80% of households in Unguja and 84% in Pemba reported having at least one ITN (Ministry of Health, Community Development, Gender, Elderly, and Children, 2017). According to the 2017 Tanzania Malaria Indicator Survey, 67% of children under five and 65% of pregnant women in Zanzibar slept under an ITN the night before the survey.

Rationale for Malaria Behavior Survey (MBS) in Zanzibar

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 in order to effectively improve them. Representative data on the prevalence of relevant behavioral indicators in Zanzibar may be outdated, however, as data are currently mostly sourced from the 2015 Tanzania Demographic and Health Survey and the 2017 Malaria Indicator Survey.

The primary focus of this study is on such ideational, or *intermediate*, variables associated with malaria-related 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 behavioral change communication messaging while also accounting for structural factors that may inhibit or enable individuals' ability to act.

Goals and Objectives of the Zanzibar MBS

Zanzibar has achieved pre-elimination status with respect to malaria transmission and thus warrants a separate study from the mainland Tanzania survey, which was fielded during the same timeframe, using MBS questionnaires adapted to the low-transmission context of Zanzibar. The low-transmission questionnaire does not include questions about malaria in pregnancy because malaria incidence in Zanzibar is associated with reported travel history to or from the Tanzania mainland. Additionally, malaria incidence in Zanzibar is higher in age groups older than five years of age. As such, this low-transmission setting survey focused on case management of survey respondents rather than on children under five years old, which is the focus in the standard MBS.

The goal of this study is two-fold: to provide better understanding of the socio-demographic and ideational characteristics associated with malaria-related behavioral outcomes in the Zanzibar region of 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, care, and repair

2. Care-seeking for fevers and malaria case detection and management, including active case detection
3. Acceptance of IRS
4. Participation in larval source management
5. Acceptance of reactive case management and mass drug administration

The MBS will provide direction for the focus of future programs designed to promote appropriate malaria prevention and treatment behaviors in Zanzibar.

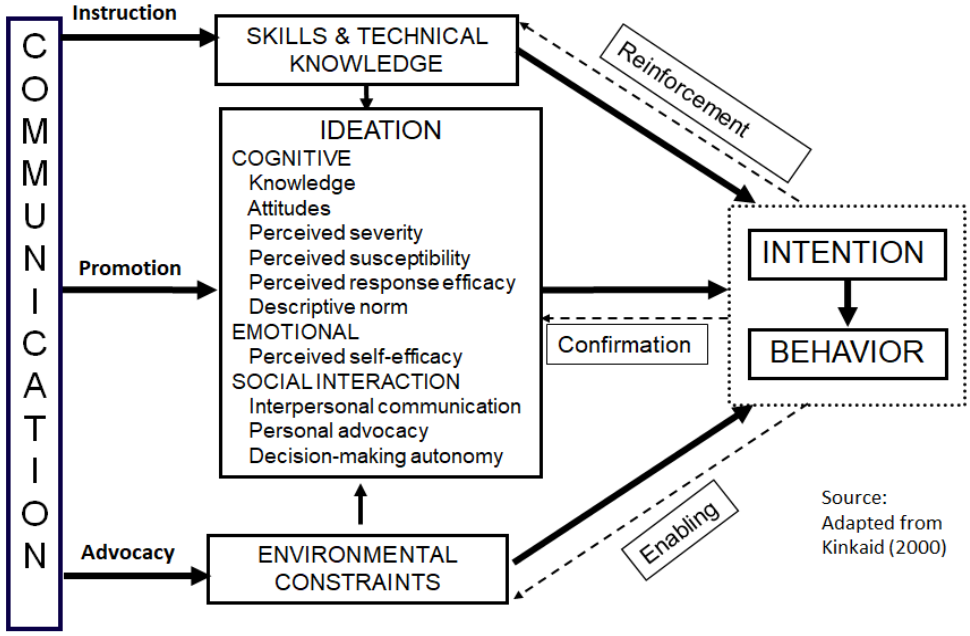
Conceptual Model

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 care-seeking for children under five.

The model also includes environmental constraints, which are often under-emphasized in social and behavioral 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 WHO (2018). These determinants constitute structural mechanisms that create favorable or unfavorable conditions for behavior change. The extent to which they are measured in this study, whether directly or by proxy, is discussed in the Results section.

Figure 1.

Ideation Model of Strategic Communication and Behavior Change



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 consequences of malaria are severe.
- Perceived response efficacy is the belief that recommended actions (e.g., prompt care-seeking, mass drug administration, use of ITNs, IRS, larviciding, and reactive case detection) can help avoid or minimize malaria transmission.
- Perceived self-efficacy is the belief in one's ability to take relevant actions related to 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 is 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 the methodological elements of the study, including the design, sampling, data collection, data analysis, and research ethics.

Survey Design

This study relied on a cross-sectional design using a randomly selected sample of women and men interviewed at one point in time using a structured questionnaire. Respondents were selected using a multi-stage random process yielding a representative sample for each zone (regional group). The primary geopolitical subdivision in Zanzibar is the region. Zanzibar is an autonomous area divided into five administrative regions on two islands across from mainland Tanzania (see Figure 2). Three administrative regions (Zanzibar Central/South, Zanzibar North, and Zanzibar Urban/West) are in Unguja, and two (Pemba North and Pemba South) are in Pemba. Regions are divided into districts, which are further subdivided into *shehias*, the smallest official administrative unit.

To determine sample sizes, we sampled all *shehias* and randomly selected enumeration areas (EAs) from each survey stratum (administrative regions divided into rural and urban strata) using probability-proportional-to-size sampling. Given the differences in high- and low- transmission areas (i.e., much of Zanzibar has very low transmission) and to ensure sufficient data from those areas, we doubled the sample in the top 25% of high-transmission *shehias*, where 37% of the total population of Zanzibar reside. High transmission was defined as more than five cases per 1,000 residents (or >0.5%) and low transmission as five or fewer cases per 1,000 (or ≤0.5%).

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 bed net use, and prevalence of positive attitudes towards consistent use of bed nets. The following formula is applied to estimate the required sample size:

$$n = d * \frac{z^2_{1-\frac{\alpha}{2}} * p(1-p)}{\delta^2 * R_h * R_i},$$

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 Malaria Indicator Survey 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 the percentage of women who approved of consistent bed net use (we used the former indicator, which was 69.8%); **δ** is the desired margin of error (our sample sizes use δ = 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 of 740 households. Adding the oversampling from the top quadrant (25%) of high-transmission areas in Zanzibar by 100% increases it to 898 households. We sought to interview one woman and one man per household.

Given the range of sample sizes required for each outcome and accounting for probability proportional to size, we anticipated a sample frame of 898 households, 898 female respondents, and 898 male respondents, which we rounded to **925 households**, and 925 women and 925 men, or **1,850 individuals**. This design accounts for potential non-responses at the household and individual levels and allows valid estimation of key malaria behavioral and ideational indicators.

Participant Inclusion and Exclusion Criteria

The inclusion criteria for participant selection were as follows:

- Within reproductive age, which is defined as 15 to 49 years for women and 18 to 59 years for men
- Parental permission obtained for non-emancipated female adolescents aged 15 to 17
- 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:

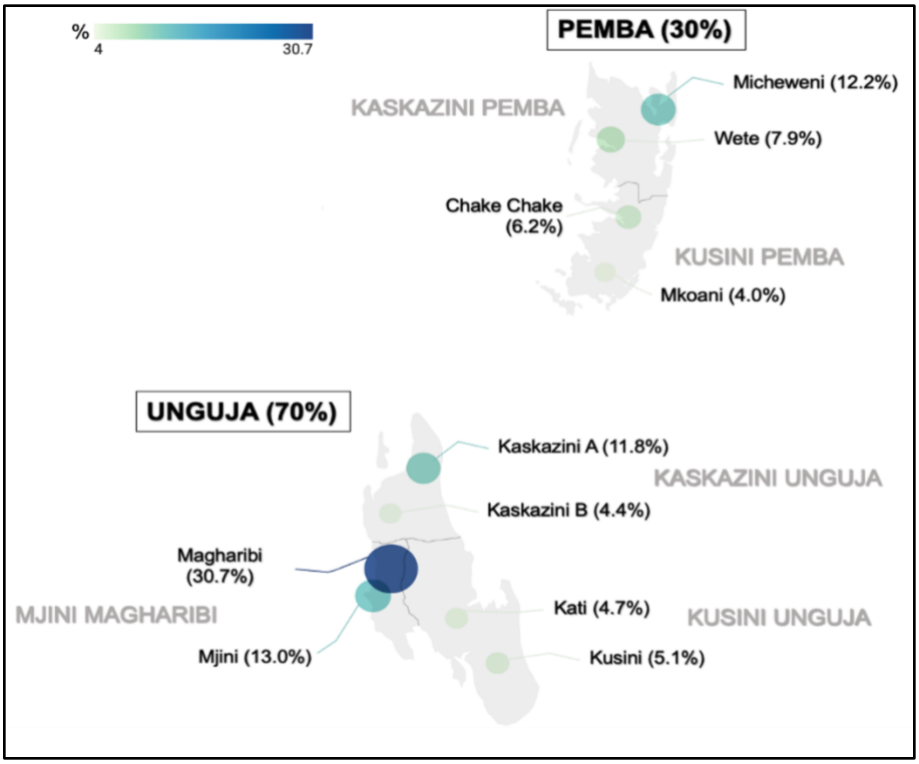
- Inability to consent to participate in the study
- Inability to understand the questions or respond intelligibly
- Ill at the time of data collection
- Refused to complete or provide information on COVID-19 precaution checks, such as illness history and potential exposure

Participant Selection

Study participants were selected using a multi-step process of successive and random household and individual EAs. For EA selection, the study team obtained a comprehensive list and sketch maps of enumeration areas from the National Bureau of Statistics. Each of the five administrative regions was divided into an urban or rural stratum. From each stratum, enumeration areas were selected using probability-proportional-to-size sampling. In each of the EA, the study team obtained approval from community leaders and updated the sketch map with help from these leaders. Figure 2 shows the sample distribution.

Figure 2.

Proportion of Sampled Households in Zanzibar, by District and Zone



Household Selection

The study team conducted a census of households in the selected enumeration areas and recorded the information on a household listing form. For 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 or a man aged 18–59. The study team then randomly selected 20 households from the list of eligible households in the EA plus six replacement households in the event that households refused to participate in the survey or remained unavailable despite attempts to reach them.

For the household questionnaire, interviewers identified a man or woman aged 18 or older who was knowledgeable about the household, obtained their written informed consent, and administered the household questionnaire. To administer the individual questionnaire, the interviewer randomly selected, from all household residents, one eligible man and woman in each household and invited them to consent and participate. If the selected female participant was aged 15-17, unmarried and with no children, parental permission and minor assent were obtained as well.

We expected to collect information from a maximum of 925 households, following the random sampling strategy described above. Since not all households had both an eligible man and an eligible woman, we included 1,007 households to yield sufficient numbers of interviews with both men and women. **The final sample size thus comprised 1,007 households, 871 men, and 874 women, or 1,745 *total respondents* and 2,752 *completed questionnaires.*** This number was well within the necessary range of the sample calculation above. Fewer than 1% of potential households and respondents 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. The same questionnaire was used for women and men, with gender-specific questions included. Interviewers were instructed to read the gender-appropriate question as applicable to the gender of the respondent. The questionnaire included modules assessing net use, care, and disposal; care-seeking for adults with fever; IRS; larval source management; 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. The questionnaire also explored recall of malaria-related communication interventions.

Data Collection and Treatment

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 the household listing procedures. The team next co-facilitated a four-day training of data collectors and team leaders, followed by one day of pretesting the data collection instruments and procedures in non-survey enumeration areas. Four teams of data collectors conducted the fieldwork in June and July of 2021. During this time, Breakthrough ACTION and ZAMEP staff visited teams in the field to monitor their progress and provide needed support. At the end of data collection, DAMAX submitted two clean datasets, one for households and one for individual women and men, to the Johns Hopkins Center for Communication Programs for analyses using Stata 16.0.

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 properly fitting face mask during data collection.
- All respondents were verbally screened for COVID-19 symptoms using a screening questionnaire that was administered by interviewers upon approaching a household. If the screening indicated a suspected case of COVID-19, that household was provided with local information on where to get tested for COVID-19.
- Regular hand sanitizer use and physical distancing of at least two meters were ensured.

Data Analysis

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.

Complete knowledge was defined as having correct responses to all relevant knowledge questions. For questions assessing attitudes or perceptions, variables were re coded 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 relevant discussions related to malaria with a spouse/partner or family/friends.

The key behavioral outcomes were as follows:

- ITN use and care
- Prompt and appropriate care-seeking defined as seeking treatment the same or next day following the onset of fever, first seeking care in a health facility or from a community health worker (CHW)
- IRS acceptance
- Larval source management acceptance
- Reactive case detection acceptance
- Mass drug administration acceptance

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 behavioral 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 potential explanatory variables of interest were first examined using simple logistic regressions and were included in the final multivariate models only when found to be associated at the $p<0.2$ level with the outcome at the bivariate (unadjusted) level. 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

The institutional review boards at the Zanzibar Health Research Ethical Committee (Protocol #03/June/2021/10) and Johns Hopkins Bloomberg School of Public Health (Institutional Review Board #15871) approved the study protocols and tools. 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 were not required to answer any questions. To protect the identity of participants, nicknames were used instead of legal names, when possible. Upon completion of data collection in an EA, the household listing sheet for that enumeration area was destroyed. Signed consent/assent forms were kept in secure locations at all times.

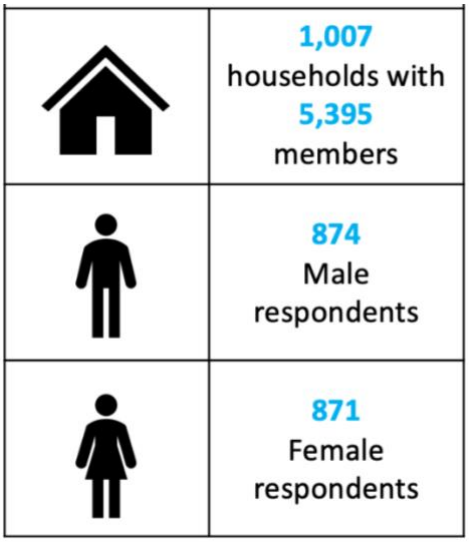
Results

This section summarizes the results of the MBS on the topics of structural factors, cross-cutting ideational factors, case management for fever in adults, ITN use and care, IRS, larval source management, reactive case detection, mass drug administration, and media consumption and message exposure. The low-transmission survey does not include questions on malaria in pregnancy.

This section summarizes the characteristics of participants' households, including a basic description, physical characteristics, and household assets. Basic sociodemographic characteristics of respondents, such as level of education and age category, are also presented. Interviews were conducted at 1,007 households (Figure 3) and 871 women and 874 men participated.

Figure 3.

Study Sample



Please note: For all results sections below only statistically significant differences by background characteristics at the p<0.05 level are reported in this narrative. Additionally, p-values are reported in the tables but not in the text. Please refer to the tables for the full results.

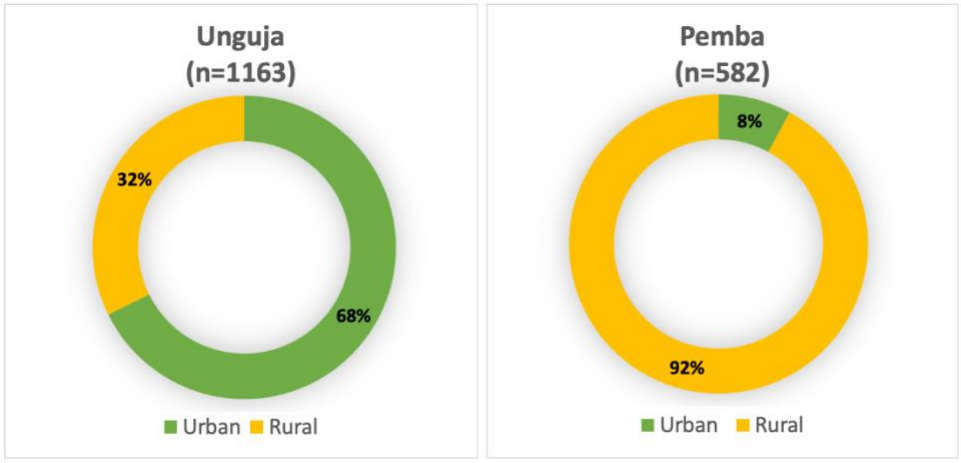
Sample Description

Household Characteristics

On average, households in both Unguja and Pemba had five residents and three sleeping rooms. Certain housing characteristics differed between Unguja, which was 68% urban, and Pemba, which was 92% rural (Figure 4). Statistically significant differences between Unguja and Pemba also were found with respect to finished walls (93% versus 61%), finished roofs (97% versus 73%), and finished floors (89% versus 61%), all with p<0.05. Also, 74% of Unguja households had electricity, compared to 41% of Pemba households. Most respondents had access to or were near (defined as within five kilometers, 30 minutes or less on foot or 10 minutes or less by car) public health facilities (Unguja: 96%; Pemba: 85%). About 80% of households in both zones were near a pharmacy, and 70% of households in Unguja and 61% in Pemba were near a private health facility. See Annex Table A.1.1 for a summary of the sample characteristics.

Figure 4.

Urban versus Rural Survey Participants, by Zone

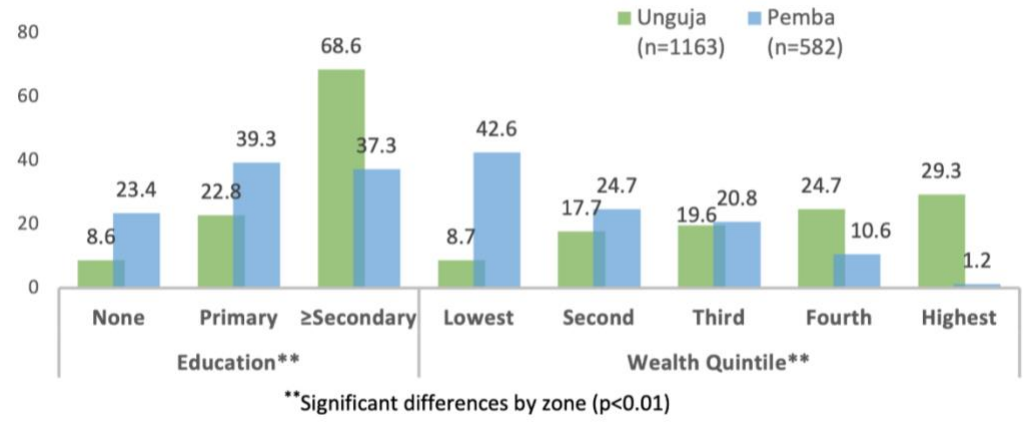


Household Assets and Wealth Quintiles

Asset ownership differed between the two zones for most reported assets. In Unguja,70% of households reported ownership of a radio and 58% had a television; these assets were far less common in Pemba (25% and 19%, respectively). Household ownership of a mobile phone was higher in Unguja than in Pemba (87% and 78%, respectively; total: 84%), but the difference was not statistically significant. Smartphone ownership, however, was significantly different (Unguja: 53%; Pemba: 15%). On average, about 40% of respondents in the two zones owned bicycles. As anticipated, land and livestock ownership were much more common in Pemba (49% and 54%, respectively) than in Unguja (16% and 22%, respectively). Figure 5 and Annex Table A.1.2 summarize the results.

Figure 5.

Education and Wealth Quintile Distribution (N = 1,745)



Population Characteristics

Surveyed households were home to 5,395 individuals. The household census data collected revealed that households participating in the survey included a very large youth population (approximately 45%

under 18 years of age). Slightly more household members in Zanzibar were women (51.5%), and 56% were 18 years old or older (see Annex Table A.1.3). Eligible survey respondents were drawn from this pool of household members.

The sample of respondents for the survey was designed to interview equal numbers of men and women. Table 1 lists characteristics of the men and women who participated in the survey. Only 6% of respondents were aged 19 or younger. Residency type differed significantly, with 32% of respondents in Unguja and 92% in Pemba living in rural areas. As described in the Methodology section, close to 37% of the population resided in high-transmission areas. About two-thirds (69%) of respondents in Unguja and one-third (37%) in Pemba completed secondary or tertiary education. Nearly all survey respondents were Muslim (98%), and most were married (76%). Only 9% of Unguja residents but nearly 43% of Pemba residents were in the lowest wealth quintile (lowest 20th percentile), and 28% of households in Unguja were in the top quintile (80th percentile and above), compared to only 1% in Pemba, reflecting the predominance of urban dwellers in Unguja. Table 1 summarizes the respondent characteristics.

Table 1.

Sociodemographic and Structural Characteristics of Survey Respondents, by Zone

	Unguja % (n=1163)	Pemba % (n=582)	Total % (N=1745)
Sex			
Female	49.4	50.9	49.9
Male	50.6	49.1	50.1
Age			
15-19 years	5.9	6.9	6.2
20-29 years	32.5	26.8	30.6
30-39 years	29.5	28.5	29.2
≥40 years	32.1	37.8	34.0
Residence***			
Urban	67.7	7.9	47.7
Rural	32.3	92.1	52.3
Transmission risk			
High (>5/1000 or >0.5%)	35.7	39.0	36.8
Low (≤5/1000 or ≤0.5%)	64.3	61.0	63.2
Highest Education Level Attained***			
None	8.6	23.4	13.5
Primary	22.8	39.3	28.3
≥ Secondary	68.6	37.3	58.2
Religion			
Islam	98.4	98.6	98.4
Christianity	1.6	1.4	1.6
Married or living with someone as if married	71.6	85.2	76.2
Wealth Quintile***			
Lowest (0-20th percentile)	8.7	42.6	20.0
Second (21-40th percentile)	17.7	24.7	20.1
Third (41-60th percentile)	19.6	20.8	20.0
Fourth (61-80th percentile)	24.7	10.6	20.0
Highest (81-100th percentile)	29.3	1.2	19.9

Note. ***p<0.001 for differences between Unguja and Pemba.

Supplemental Information

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

- Table A.1.1. Household Characteristics
- Table A.1.2. Household Assets and Wealth Quintiles
- Table A.1.3. Characteristics of Household Members
- Table A.1.4 Characteristics of Respondents

Cross-cutting Ideational Factors

Cross-cutting ideational factors related to malaria in Zanzibar included general correct knowledge of malaria, perceived severity of and susceptibility to malaria, malaria-related interpersonal communication, perceptions of facility- and community-based health workers, and perceived gender norms related to malaria.

Table 2. at the end of this section summarizes the cross-cutting ideational factors related to malaria. Correct knowledge regarding malaria was statistically significantly higher in Pemba (74%) than in Unguja (54%) and among those aged 35 years or older and living in a rural area. Interestingly, knowledge was negatively associated with wealth: the highest scores were reported in the lower wealth quintiles.

Most respondents (86%) reported equitable gender norms regarding malaria prevention and treatment. Women (88%) were more likely than men (82%) to report equitable gender norms and this difference was statistically significant.

Most (86%) reported favorable attitudes towards health workers in general. Nearly 90% reported favorable attitudes towards facility-based health workers. Having a favorable attitude was significantly and positively associated with female respondents, rural residence, living in a high-transmission area, and belonging to a lower wealth quintiles. Overall, 75% of respondents had favorable attitudes towards community-based health providers, mostly among women, older respondents, and those living in high-transmission areas.

Figure 6.

Malaria-related Ideational Factors at a Glance

	**86%** perceived equitable gender norms
	**86%** overall favorable perceptions of health workers
	**51%** perceived susceptibility
	**28%** perceived severity
	**11%** interpersonal communication with spouse/partner

Overall, 51% of respondents reported that they or their children were at risk of contracting malaria (perceived susceptibility). Perceived susceptibility was assessed by measuring a respondent's agreement

with 10 related statements. Residents of high-transmission areas were statistically significantly more likely than those in low-transmission areas to report perceived susceptibility (57% and 47%, respectively). No differences in perceived susceptibility were observed for other background characteristics. Only 28% of respondents perceived that the consequences of acquiring malaria would be severe (perceived severity). The sole statistically significant difference in perceived severity was between high- and low-transmission areas (24% and 30%, respectively).

Few participants reported discussing malaria with a spouse or partner (11%) or with a friend or family member (9%) in the six months prior to the survey. Educational attainment was positively associated with malaria-related conversations with friends. Figure 6 summarizes the results.

Supplemental Information

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

- Table A.2.1. Respondents' Malaria Knowledge
- Table A.2.2. Perceived Susceptibility to Malaria
- Table A.2.3. Perceived Severity of Malaria
- Table A.2.4. Interpersonal Communication About Malaria in Six Months Prior to Survey
- Table A.2.5. Perceptions of Facility-based Health Workers
- Table A.2.6. Perceptions of Community-based Health Providers
- Table A.2.7. Gender Norms Related to Malaria

Table 2.

Summary of Cross-Cutting Ideational Factors Related to Malaria

	Correct Knowledge	Perceived Susceptibility	Perceived Severity	Discussion with Spouse or Partner	Discussion with Friends or Family	Favorable Perception of Facility-based Health Providers	Favorable Perceptions of Community-based Health Providers	Perceived Equitable Gender Norms
Zone	***							
Unguja	53.9	48.0	22.7	10.6	7.7	88.4	74.7	84.9
Pemba	73.4	56.0	29.2	12.3	11.2	92.1	75.9	89.5
Sex						*	*	
Female	60.7	50.7	27.3	12.2	8.7	91.4	77.4	88.1
Male	60.1	50.6	27.7	10.3	9.0	87.9	72.9	84.9
Age	**						*	
15-24	54.2	44.6	25.1	5.6	8.2	87.2	70.3	84.8
25-34	57.8	51.5	28.3	10.7	8.0	88.7	73.1	88.5
35-44	64.9	52.0	27.8	13.2	7.7	91.4	78.6	86.9
≥45	64.2	53.1	28.1	14.8	12.1	91.0	78.1	84.5
Residence	***					**		
Urban	55.9	48.9	25.9	10.8	7.8	87.4	74.7	85.8
Rural	64.5	52.3	28.9	11.6	9.9	91.7	75.5	87.1
Transmission risk		***	**			**	***	
High (>5/1000 or >0.5%)	60.9	57.2	23.5	10.6	8.4	92.5	82.1	88.5
Low (≤5/1000 or ≤0.5%)	60.1	46.9	29.8	11.6	9.2	87.9	71.1	85.3
Education					*			
None	58.9	49.6	26.3	9.9	4.2	89.0	74.6	88.6
Primary	63.4	52.2	27.3	10.7	8.7	88.9	76.7	83.0
≥Secondary	59.3	50.1	27.9	11.7	10.0	90.1	74.5	87.7
Wealth quintile	***					*		
Lowest	71.3	53.6	26.9	11.8	9.2	93.4	77.1	88.2
Second	62.3	49.4	29.7	10.5	8.9	88.0	75.1	86.0
Middle	61.6	48.1	30.4	11.3	7.4	91.1	74.2	86.5
Fourth	55.3	49.6	22.3	12.2	9.5	90.0	75.4	87.4
Highest	51.4	52.6	28.2	10.2	9.5	85.6	73.8	84.2
Total	60.4	50.7	27.5	11.2	8.9	89.6	75.1	86.5

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

Malaria Case Management for Respondents

As previously noted, malaria incidence in Zanzibar is higher in age groups older than five years of age and is associated with reported travel history to or from the Tanzania mainland. For that reason, this low-transmission setting survey focused on case management of survey respondents rather than on children under five years old, as with the standard MBS. In Zanzibar, malaria diagnostic testing and treatment are provided at health facilities and by community-based health providers. This section describes the relationship between ideational, sociodemographic/structural, and behavioral variables regarding management of fever and malaria in respondents.

Appropriate care-seeking for fever is defined as an individual visiting a health facility or seeking care from a community health worker (CHW), whereas prompt and appropriate care-seeking is defined as visiting a facility or community health provider on the day of or day after fever onset. To the low number of respondents reporting a fever in the two weeks prior to the survey – a result to be expected in this low malaria transmission setting - we did not conduct logistic regression analyses on care-seeking outcomes.

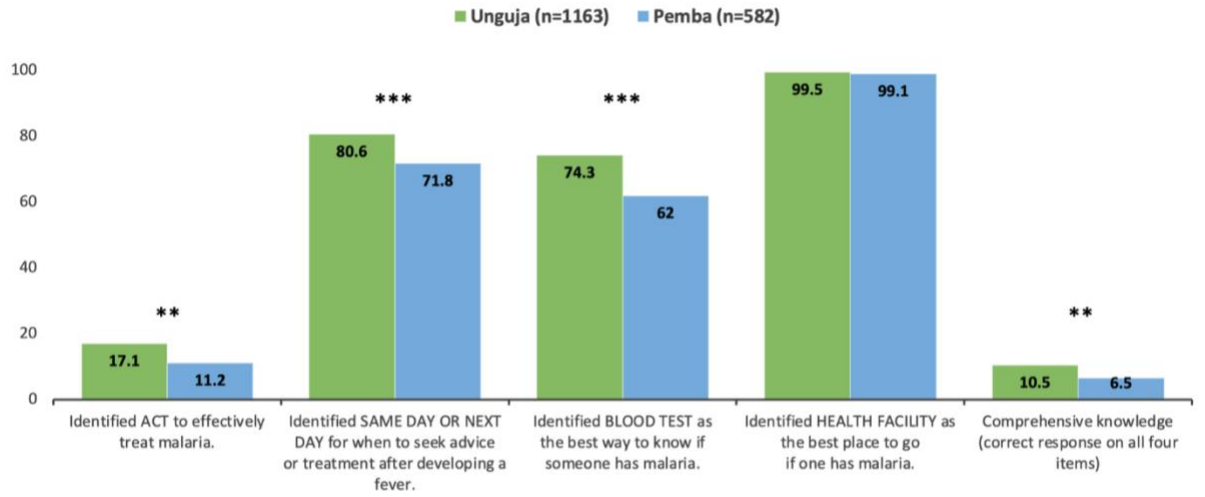
Ideational Variables Linked with Care-Seeking

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 malaria diagnostic testing, treatment, and prompt care-seeking; descriptive and injunctive norms of prompt care-seeking; perceptions of health facilities and of facility- and community-based health providers regarding treatment of malaria; and decision-making related to malaria case management. Annex Table A.3.1 summarizes the data for each of these variables.

Comprehensive knowledge (i.e., correct responses to all four knowledge questions) was low in both Unguja and Pemba (10% and 6%, respectively), mainly because only a few knew that artemisinin-based combination therapy (ACT) is an effective treatment for malaria. Figure 7 illustrates the results.

Figure 7.

Percentage of Respondents with Specific Knowledge of Malaria Care-seeking and Treatment (N=1745)



Significance levels: *p<0.05; **p<0.01; ***p<0.001
Health Facility 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 itinerant drug seller.

Most respondents held favorable attitudes related to care-seeking and treatment for malaria, and most respondents (Unguja 95%, Pemba 91%) reported confidence (self-efficacy) in seeking malaria testing and treatment when needed. See Annex Table A.3.1 for details.

Less than half of respondents (47%) perceived response efficacy regarding malaria testing, primarily due to the belief among about half that "a person should still take malaria medicine even if the malaria test result says that the fever is not due to malaria." This response may reflect a lack of confidence in the accuracy of the test. Subgroups with comparatively lower levels of perceived response efficacy included respondents in Unguja (39%), urban areas (34%), and the top wealth quintile (36%). Figure 8 illustrates some of these findings.

Figure 8.

Malaria Care-seeking and Treatment: Ideational Factors at a Glance

	**93%** Perceived self-efficacy to seek testing
	**47%** Perceived response efficacy of malaria testing
	**52%** Perception that most people seek prompt care (descriptive norm)
	**80%** Perceived equitable gender norms
	**88%** Favorable perceptions of facility-based health workers
	**75%** Favorable perceptions of community health workers
	**88%** Involved in decision to seek care when has a fever

Only 37% of respondents perceived response efficacy for malaria treatment. Several factors contributed to this outcome: greater confidence in the effectiveness of injections than in oral medicine, the belief that medicines purchased in the market are as good as those distributed by clinics, and the belief that herbal products are as good as malaria medicines provided by health facilities (see Annex Table A.3.3). Low levels of perceived response efficacy for malaria treatment were reported by those in Unguja (31%), men (33%), urban dwellers (26%), those in high-transmission areas (34%), and those in the top two wealth quintiles (29%–32%). Perceived self-efficacy regarding respondents' ability to seek care was high overall (93%), with lower rates reported in Pemba (91%), in rural areas (91%), and in low-transmission areas (92%).

Just over half of respondents (52%) reported that most people in their communities seek prompt care within 48 hours of developing a fever (descriptive community norm). The overall perception of supportive community norms included believing that most people in the community seek prompt care for fever and most people with fever go to a health facility for malaria testing and disagreeing with the statement that most people take their children with fever first to someone other than a facility-based health provider. Eight out of ten respondents reported equitable gender norms related to care-seeking for male and female children, with minimal variation by background variables.

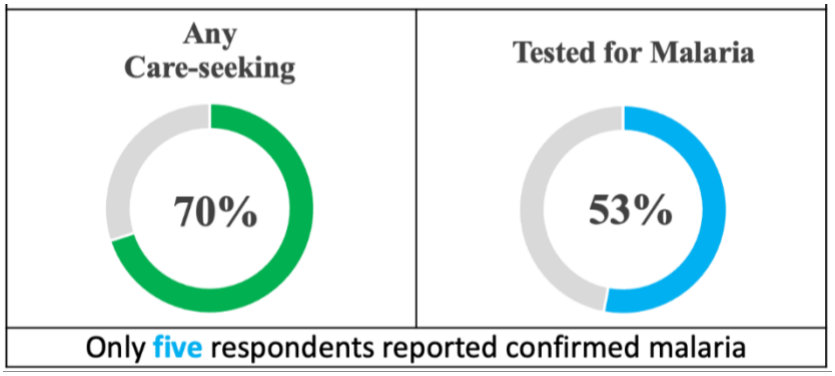
About 65% of respondents had favorable perceptions of health facilities regarding malaria case management. Statistically significant differences were reported by sex (men: 64%; women 68%), transmission area (high: 72%; low 61%), and education (differences not linear, i.e., the rates did not consistently increase or decrease by educational attainment). Respondents had favorable perceptions of community-based health providers (75%). Respondents reported highly favorable perceptions of malaria testing and treatment by facility-based health workers (88%). Most respondents (81%) were involved in

decision-making related to malaria care-seeking and treatment for themselves, though less so among women than men (74% versus 88%, respectively), among respondents aged 15–24 (69%), and in low-transmission areas (78%).

Relevant Behaviors and Outcomes

Respondents were asked about malaria case management behaviors and outcomes. Only 9% (164 respondents) reported that they had a fever in the two weeks preceding the survey (Figure 9). Of the 70% who sought care, women did so at a greater rate (79%) than men (61%). No other differences were observed by background characteristics.

Figure 9.
Malaria Care-seeking Among Respondents with Fever (n=164)



Three-quarters of those who sought care did so promptly (within the recommended period).[1] The only significant difference was by residence (urban: 88%; rural: 69%). Of those who sought care, ninety-two percent did so appropriately (turned to a health facility or community-based health provider first), with no differences by subgroups. Of those who sought care, 71% did so promptly and appropriately, with urban respondents statistically significantly more likely to do so than their rural counterparts. Just over half (53%) of those who sought care reported being tested for malaria. See Annex Table A.3.11a for details.

Finally, with respect to care-seeking and treatment, respondents with at least one child under five years of age were asked questions about their intention to seek treatment for a child with fever in the future. About 92% said they would seek prompt treatment. Unguja residence, living in a rural area, low transmission risk, more education, and higher wealth quintiles were positively associated with that intention. Almost everyone (99.6%) said they would seek care at a health facility or from a community-based health provider. These findings suggest that respondents are more likely to seek care for their children than for themselves. Given the very high rates of intention to seek treatment, logistical regressions were not conducted.

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. Knowledge of Malaria Care-Seeking and Treatment
- Table A.3.3. Attitudes Towards Malaria Care-Seeking and Treatment
- Table A.3.4. Perceived Response Efficacy of Malaria Testing
- Table A.3.5. Perceived Response Efficacy of Malaria Treatment
- Table A.3.6. Perceived Self-Efficacy for Malaria Testing and Treatment
- Table A.3.7. Gender Norms Related to Malaria Treatment
- Table A.3.8. Perceived Community Norms Regarding Malaria Care-seeking and Treatment

[1] This represents 53% of those with fever; data not shown.

- Table A.3.9a. Perceptions of Health Facilities Regarding Malaria Care-Seeking and Treatment
- Table A.3.9b. Perceptions of Facility Health Workers Regarding Malaria Care-Seeking and Treatment
- Table A.3.9c. Perceptions of Community Health Workers Regarding Malaria Care-Seeking and Treatment
- Table A.3.10. Decision-Making For Malaria Care and Treatment
- Table A.3.11a. Care-Seeking and Testing for Self for Fever in the Past Two Weeks
- Table A.3.11b. Intention to Seek Care and Treatment for Malaria for Child Under Five Years with a Fever

Insecticide-Treated Net Use and Care

This section describes the ideational factors related to mosquito net use and care. The MBS assessed knowledge, attitudes toward use and care, perceived response-efficacy and self-efficacy, perceived supportive community norms, and perceived equitable gender norms regarding net use. Outcomes explored included household-level net ownership, population-level net access and use, characteristics and use of existing nets, net care, and consistent net use.

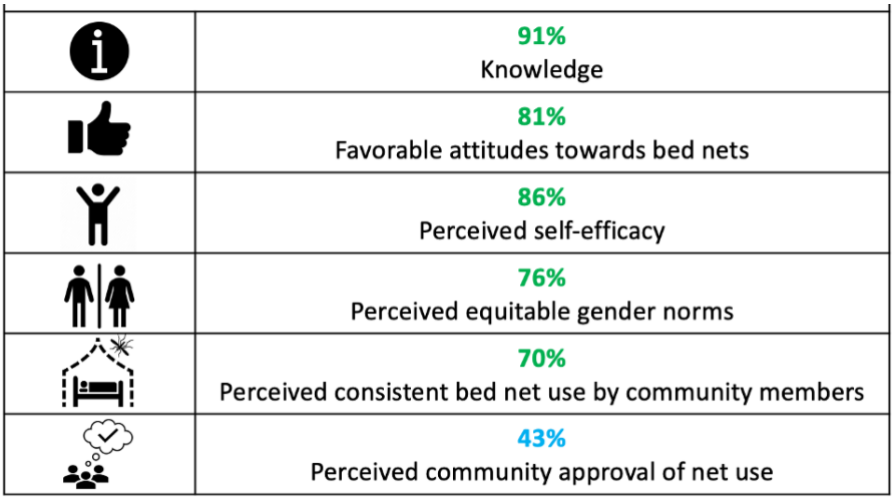
One way that people are exposed to malaria in low-transmission areas is by working outside in the evenings or at night. Thus, respondents were asked if they sleep outside for work-related reasons. Too few respondents answered in the affirmative to conduct a meaningful analysis.

Ideational Variables Linked with Mosquito Net Use

Nine of ten respondents (91%) knew that bed net use helps prevent malaria. Respondents in Pemba, those living in high-transmission areas, and those with higher levels of education were significantly more likely to know this fact, compared with their counterparts. Most respondents reported favorable attitudes towards mosquito nets (81%), with higher rates among Pemba residents, women, older respondents, rural residents, and those in the lower wealth quintiles. Some 86% reported favorable attitudes toward bed net care, with higher rates among Pemba residents, rural dwellers, women, those in high-transmission areas, and those in lower wealth quintiles.

Figure 10.

Net Use Ideational Factors at a Glance



Nearly 76% of respondents reported equitable gender attitudes related to bed net use. Differences varied slightly by age and educational attainment but were not linear. About 70% of study participants perceived that at least half of their community members regularly used bed nets (descriptive norm), but only 43% thought their community would approve of their use of bed nets (injunctive norm). Agreement

with the descriptive norm was higher among people in Pemba, older respondents, rural residents, those with lower levels of education, and those in lower wealth quintiles. Agreement with the injunctive norm was higher in Unguja, among men and older respondents, in urban areas, and among those with primary-level education.

Less than half of participants (43%) reported perceived response efficacy of bed nets. Higher rates of perceived response efficacy were found among respondents in Pemba (58%), rural areas (55%), low-transmission areas (45%), and the lowest wealth quintiles (53%). Self-efficacy to use nets was high at 86%, with highest levels reported in Pemba, by women, in high-transmission risk areas, and in lower wealth quintiles. Results of the analyses of the ideational variables linked to net use are summarized in Figure 10 and Annex Table A.4.1., including gender norms related to intrahousehold net allocation.

Household ITN Access and Individual Use

Nearly 69% of households had one or more mosquito nets, and about 65% had at least one ITN but only 32% of households had at least one net per two people. The relatively low rate of access to nets was likely due to the MBS being conducted prior to the planned July-August 2021 ITN distribution campaign. Only 51% of households in the highest wealth quintile had ITNs, presumably following their perceived risk of contracting malaria. See Annex Table A.4.7 for details.

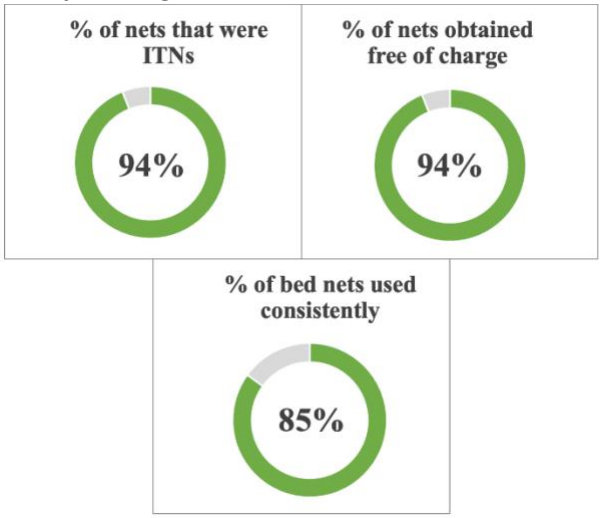
Slightly more than one-third (37%) of respondents noted they used a net consistently (i.e., every night of the week preceding the survey). Consistent net use was highest in rural areas (46%), Pemba (46%), and the two lowest wealth quintiles (46% and 43%, respectively). See Annex Table A.4.14 for details.

Characteristics and Use of Available Bed Nets

Most nets (94%) identified in the net roster were ITNs, and 94% were obtained free of charge (Figure 11). Over half (55%) were reportedly obtained from the *shehia*, 29% during antenatal consultations, and only 4% from mass distribution campaigns according to respondents. It is possible that respondents were unable to distinguish between “the shehia” and “mass distribution campaigns” as the source of ITNs. White nets were most common (77%), and only 26% had been obtained three or more years prior to the survey. Most of the existing nets (85%) were reportedly used every night of the previous week.

Figure 11.

Use of Existing Household Nets



About 85% of the household's existing nets were used the night prior to the survey as well as every night of the week prior to survey, and did not vary significantly by zone, residence, or wealth quintile. See Annex Table A.4.11 for details. Again, this suggests that the primary barrier to use is lack of access rather than behavioral factors.

Net Care and Repurposing

Respondents also noted specific net care and repurposing actions. Most (81%) reported washing their nets, primarily with powder or liquid soap (90%). Three-quarters reported engaging in net care such as rolling or tying up nets when not in use (31%), handling nets with care (26%), and keeping away from children when not in use (21%). Compared to 42% of Pemba respondents who stated they had repurposed an old net, only 14% in Unguja reported repurposing. Among those who repurposed nets, most used them as protection for seedlings and crops (74%) or for fishing (14%) or drying fish (11%). Again, given the different economic opportunities in the two zones, respondents in Pemba were significantly more likely to mention taking these actions.

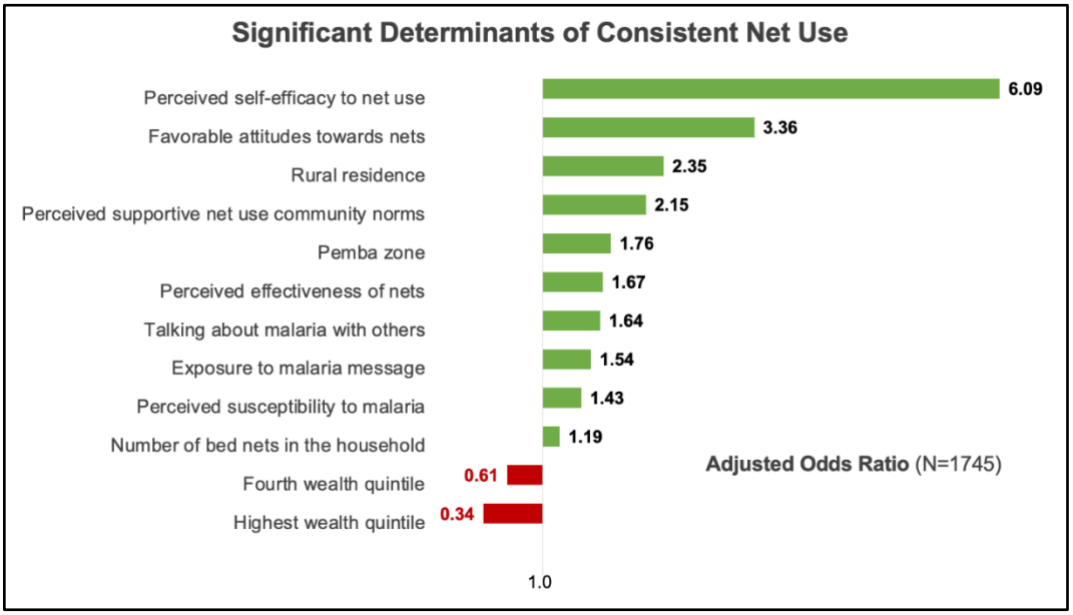
Advanced Analysis

Adjusted logistic regressions were applied to explore ideational, structural, and access factors related to consistent net use (see Figure 12 and Table 3 at the end of this section). Variables that were statistically significant ($p<0.05$) were included in the logistic regression. Importantly, several of the strongest associations with consistent net use were ideational. Significantly higher adjusted odds ratios of consistent net use were observed for the following ideational factors: perceived self-efficacy (6.09), favorable attitudes toward net use (3.36), supportive descriptive community norms (2.15), favorable attitudes (1.67), and perceived susceptibility (1.43). Communication about malaria with family or friends (1.64) and recall of malaria messages (1.54) were also associated with significantly higher adjusted odds ratios for consistent net use. Where respondents lived was associated with consistent net use, with higher odds ratios among residents of Pemba (1.76) versus Unguja and among rural (2.35) versus urban dwellers. The number of nets in the household, one measure of access, was positively associated with a higher odds ratio (1.19). Interestingly, wealth quintiles were associated with a negative odds ratio (0.34).

Figure 12.

Significant Determinants of Consistent Net Use

(All of the results shown in this figure were significant at p<0.05)



Supplemental Information

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

- Table A.4.2a. Knowledge of Malaria Prevention Using Treated or Untreated Mosquito Nets
- Table A.4.2b. Knowledge of Malaria Prevention Using Insecticide-treated Nets
- Table A.4.3a. Favorable Attitudes Towards Mosquito Nets
- Table A.4.3b. Favorable Attitudes Towards Net Care
- Table A.4.4. Perceived Response Efficacy of Nets
- Table A.4.5. Perceived Self-Efficacy for Net Use
- Table A.4.6a. Perceived Community Norms Regarding Nets
- Table A.4.6b. Perceived Gender Norms Regarding Nets
- Table A.4.7. Household Possession of Treated or Untreated Mosquito Nets
- Table A.4.8. Access to a Treated or Untreated Mosquito Net
- Table A.4.9. Use of Mosquito Nets by Persons in The Household
- Table A.4.10. Insecticide-treated Net Use Access Ratio
- Table A.4.11. Use of Existing Insecticide-treated Net
- Table A.4.12. Insecticide-Treated Net Characteristics
- Table A.4.13a. Insecticide-Treated Net Care
- Table A.4.13b. Net Care and Repurposing
- Table A.4.14. Use of an Insecticide-treated Net Every Night of the Week Preceding the Survey

Table 3.

Logistic Regression Exploring Factors Associated with Consistent Net Use

	Percentage	Adjusted Odds Ratio	95% Confidence Interval
Age in years			
15-24 (reference)	35.3	1.00	n/a
25-34	35.5	1.01	0.76 - 1.34
35-44	36.0	1.03	0.77 - 1.38
≥45	41.7	1.31‡	0.97 - 1.77
Sex			
Male (reference)	36.4	1.00	n/a
Female	37.5	1.05	0.86 - 1.27
Education			
None (reference)	39.4	1.00	n/a
Primary completed	41.1	1.07	0.78 - 1.47
≥ Secondary	34.1	0.80	0.60 - 1.08
Household wealth quintile			
Lowest (reference)	45.8	1.00	n/a
Second	43.1	0.90	0.66 - 1.21
Middle	39.3	0.76‡	0.56 - 1.03
Fourth	34.1	0.61**	0.45 - 0.83
Highest	22.4	0.34***	0.24 - 0.47
Zone			
Unguja (reference)	32.5	1.00	n/a
Pemba	45.9	1.76***	1.43 - 2.16
Residence			
Urban (reference)	26.8	1.00	n/a
Rural	46.3	2.35***	1.93 - 2.88
Transmission risk			
Low (reference)	36.4	1.00	n/a
High	37.8	1.06	0.87 - 1.30
Attitudes favorable to the use of mosquito nets			
No (reference)	17.5	1.00	n/a
Yes	41.5	3.36***	2.48 - 4.54
Perceived severity			
No (reference)	37.9	1.00	n/a
Yes	34.6	0.87	0.70 - 1.08
Perceived susceptibility			
No (reference)	32.7	1.00	n/a
Yes	41.1	1.43***	1.18 - 1.74
Talked about malaria with spouse, family or friends			
No (reference)	35.4	1.00	n/a
Yes	47.2	1.64***	1.24 - 2.16
Perceived mosquito net effectiveness			
No (reference)	31.8	1.00	n/a
Yes	43.9	1.67***	1.37 - 2.04

	Percentage	Adjusted Odds Ratio	95% Confidence Interval
Perceived self-efficacy for mosquito net use			
No (reference)	10.3	1.00	n/a
Yes	41.2	6.09***	3.98 - 9.34
Use of mosquito nets perceived as the norm in the community			
No (reference)	25.1	1.00	n/a
Yes	41.9	2.15***	1.71 - 2.70
Mentioned at least one incorrect method of transmitting malaria			
No (reference)	36.5	1.00	n/a
Yes	43.1	1.31	0.89 - 1.95
Saw/heard a message about malaria in past six months			
No (reference)	32.9	1.00	n/a
Yes	43.1	1.54***	1.26 - 1.87
Number of bed nets	n/a	1.19***	1.08 - 1.32
Number of observations	1745		

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

Indoor Residual Spraying

In addition to the autonomous region of Zanzibar, only three of 41 countries in Africa have achieved the pre-elimination phase. As noted in the introduction, indoor residual spraying (IRS) is thought to be a key reason for the marked decline in malaria cases between 1995 and 2010 in Zanzibar. WHO recommends the use of IRS as a primary vector control tool. 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 washing or painting after the application of insecticide can reduce its efficacy. If no post-IRS modifications are made, the insecticide typically remains effective for six or more months.

Ideational Variables Linked with Acceptance of IRS

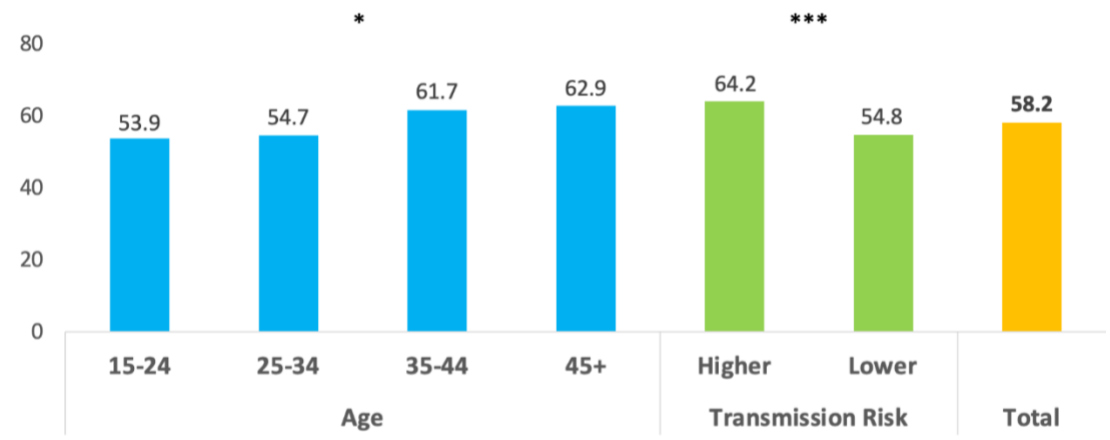
The MBS collected data on the following ideational variables: awareness of IRS, favorable attitudes towards IRS, perceived response-efficacy of IRS, and perceived self-efficacy to take actions related to IRS. These data may help prepare for future targeted use of IRS in Zanzibar.

IRS Awareness

All respondents were asked about IRS and over half (58%) reported awareness of an IRS program in their community (Figure 13). As shown in the table below, being older than 35 years and living in high-transmission areas were positively and statistically significantly associated with awareness; no other statistically significant differences were observed between sub-groups. See Annex Table A.5.1 for a summary of the ideational variables related to IRS use and awareness.

Figure 13.

Percentage of Respondents with Awareness of IRS Program *N=1,745*



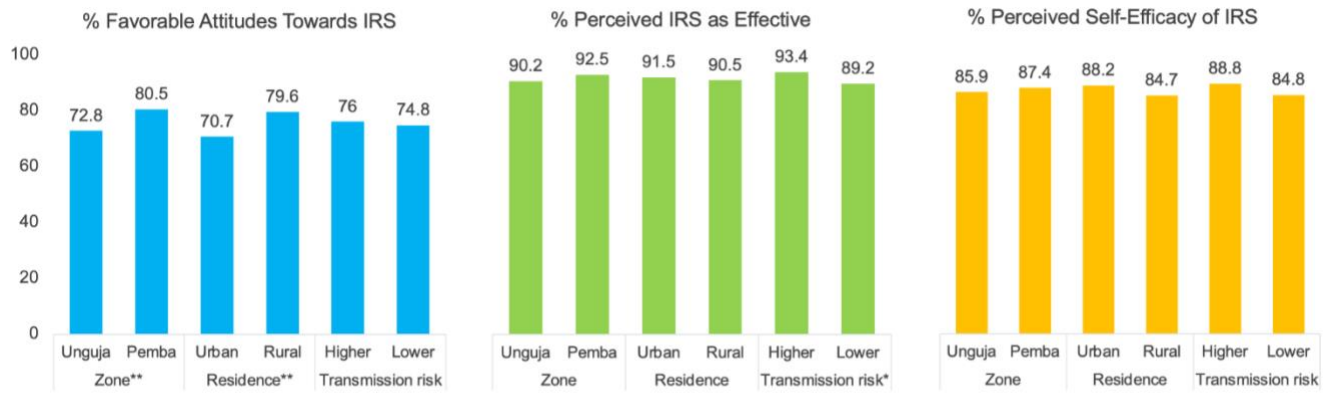
Significance level: *p<0.05; **p<0.01; ***p<0.001
Note: Background characteristics including zone, sex, residence, education level, and wealth quintile were not significant

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

As shown in Figure 14 and Annex Table A.5.1, three-quarters of respondents who were aware of IRS (n=1016) indicated positive IRS attitudes. Statistically higher rates were found among Pemba and rural residents. At 91%, response efficacy was very positive. The only statistical difference by background characteristics was reflected in higher levels of response-efficacy reported by those living in high- versus low-transmission areas (93% and 89%, respectively). Perceived self-efficacy was 85%; no other differences by sociodemographic characteristics were observed. Notably, for these three variables, the only differences were due to respondent location. See Annex Tables A.5.2–A.5.4 for additional details.

Figure 14.

IRS Favorable Attitudes, Response Efficacy, and Perceived Self-efficacy *N=1,016*



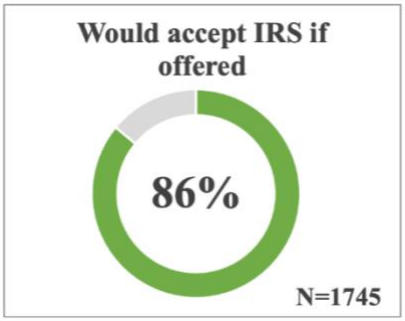
Significance level: *p<0.05; **p<0.01; ***p<0.001
Notes: ^Only those respondents who were aware of the IRS program were asked these set of questions (n=1016)

Acceptance of IRS

Willingness to accept IRS is considered a measure of intention to use IRS if available. All participants were asked whether they would be willing to accept IRS in their household. Those who were previously not aware of an IRS program were first provided a brief description of IRS (i.e., a program that sprays the inside walls of a house with insecticide to help protect against malaria). Most (86%) stated they would accept IRS if offered (Figure 15). The only statistically significant difference was by transmission zone (high: 89%; low 84%), which is a small difference in terms of application. Annex Table A.5.6 summarizes the results.

Figure 15.

Willingness to Accept Indoor Residual Spraying

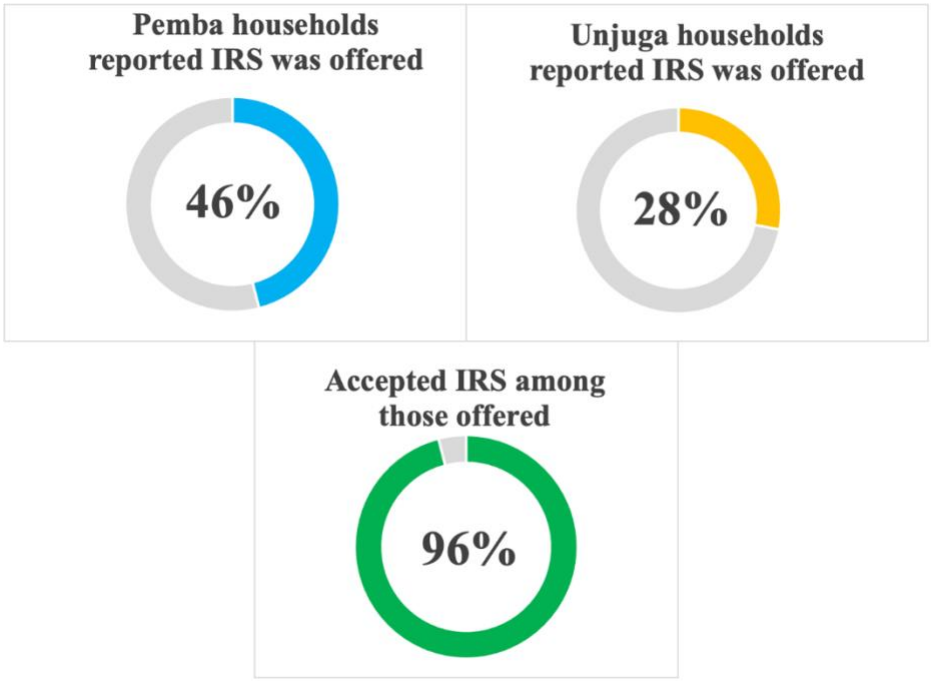


Reported IRS Acceptance

Finally, 46% of Pemba residents and 28% of Unjuga residents reported that in the past 12 months, they had been asked if they would permit their dwellings to be sprayed (Figure 16). Among those, reported acceptance was nearly 96% for both Pemba and Unguja residents. The only overall difference was by wealth quintile, but it was non-linear with both the lowest and highest wealth quintiles reporting 100%. No differences regarding acceptance by location or wealth in Unguja were observed. While 99% of rural residents in Pemba were likely to accept IRS, only 83% of their urban residents were so inclined (this difference is significant; data not shown); again, no significant differences by wealth were registered. See Annex Table A.5.7 for details.

Figure 16.

Reported Offer and Acceptance of IRS, by Zone



Supplemental Information

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

- Table A.5.2. Awareness of Indoor Residual Spraying
- Table A.5.3. Attitudes Towards Indoor Residual Spraying
- Table A.5.4. Perceived Response Efficacy of Indoor Residual Spraying
- Table A.5.5. Perceived Self-efficacy Regarding Indoor Residual Spraying
- Table A.5.6. Willingness to Accept Indoor Residual Spraying
- Table A.5.7. Indoor Residual Spraying coverage

Larval Source Management: Larviciding

Larval source management is the management of water bodies that may be potential mosquito habitats by preventing the completion of immature stages of mosquito development in those water bodies. Larval source management includes habitat modification, habitat manipulation, biological control, and larviciding. WHO's (2012, p. 3) interim statement recommends that "larviciding should be considered for malaria control (with or without other interventions) only in areas where the breeding sites are few, fixed and findable."

As previously discussed, IRS is widely used in Zanzibar and continues to be applied. In some urban areas, such as Stonetown, however, IRS is not feasible due to population density and housing structures or very low levels of malaria transmission. Thus, ZAMEP plans to conduct larviciding in selected areas.

Ideational Variables Linked with Larviciding

Awareness of Larviciding

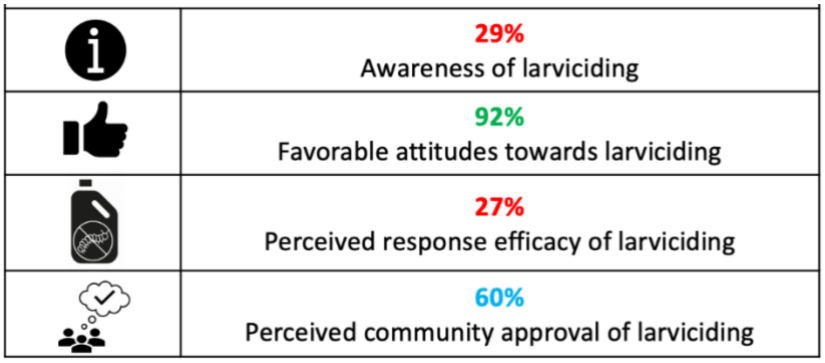
Respondents were asked, "Are you aware of programs that treat water and a community's environment to target and kill mosquitoes before they become adults?" Only 29% responded in the affirmative, which is expected given the newness and limited use of larviciding in Zanzibar (Figure 17 and Annex Table A.6.1). Unguja residents, urban dwellers, individuals with a secondary degree or higher, and those in the higher wealth quintiles were statistically significantly heard of larviciding at greater rates.

Larviciding-related Attitudes, Response-Efficacy, and Community Norms

Interviewers described larviciding to respondents who were not aware of it prior to the survey. All respondents were then asked questions to assess larviciding-related ideational factors.

Figure 17.

Larviciding Ideational Factors at a Glance



Nearly 92% of the respondents had favorable attitudes regarding larviciding; significantly higher approval rates were found among residents of urban areas and in high-transmission settings. Perceived effectiveness was only 27%, which is expected given that less than one-third had heard of larviciding prior to the survey. Perceived effectiveness was positively associated with Pemba residence and rural dwellers (rural: 34%; urban 19%). Fully 60% thought that community members would support larviciding. The only significant difference was by wealth quintile, and was highest in the two lowest wealth quintiles, but the relationship was not linear across quintiles.

Recollection of Larviciding Program

About 6% of respondents reported the presence of a larviciding program in their communities in the past 12 months. The only difference by background characteristics was associated with wealth quintiles, but the relationship was not linear.

Supplemental Information

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

- Table A.6.2. Knowledge of Larviciding
- Table A.6.3. Attitudes towards Larviciding
- Table A.6.4. Perceived Response Efficacy of Larviciding
- Table A.6.5. Perceived Community Norms Regarding Larviciding
- Table A.6.6. Larviciding Coverage

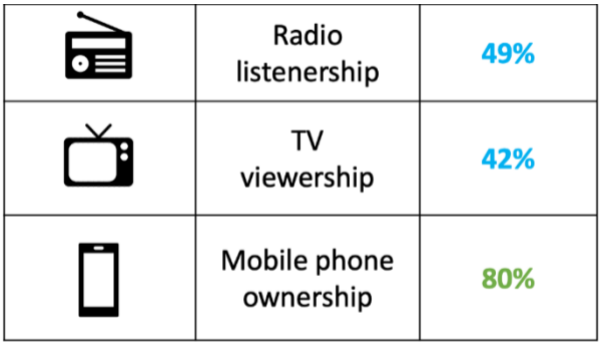
Media Consumption and Message Exposure

Media Consumption

Almost half (49%) of all participants listened to the radio at least once a week (Figure 18), with listenership significantly reported more by men (56%) than women (43%), Unguja residents (58%) than Pemba residents (31%), urban (57%) than rural (42%) dwellers, those with higher educational attainment (none: 24%; secondary and above: 57%), and those in higher wealth brackets (lowest: 30%; highest 65%). TV viewing was slightly less common, with 42% of study participants reporting watching TV at least once a week. TV viewership was statistically and positively associated with male respondents (46%) than women (38%), urban residence (57%) than rural (28%), Unguja residence (52%) than Pemba (23%), residing in high-transmission areas (49%) than low transmission areas (38%), secondary education (52%) than none (20%) or primary only (33%), and increasing wealth (range: 14%–72%). Table 4 at the end of this section and Table A.7.1 summarize the variables related to media consumption and malaria messaging.

Figure 18.

Media Access and Consumption at a Glance



Most respondents (80%) owned a mobile phone or tablet.[2] Men, older respondents, urban dwellers, those residing in high-transmission areas, and those with at least a secondary education were statistically more likely to report such ownership. Such ownership was generally positively and strongly associated with wealth, with the exception of respondents in the highest wealth quintile in Pemba (lowest: 61%; middle: 83%; highest: 57%).

Message Recall

Forty percent of respondents stated they had seen or heard a malaria message in the six months prior to the survey (Figure 19). Among those who recalled malaria messages, the most common sources were the health clinic 51%, radio 37%, TV 32%, community- or facility-based providers 18%, and brochures or flyers 17% (data not shown).

Figure 19.

Exposure to Malaria Messaging in Six Months Prior to Survey

Malaria message exposure was higher among respondents living in Unguja (44%), urban settings (45%), and high-transmission areas (44%). Recall was also positively and significantly associated with educational attainment (no education: 37%; secondary and above: 44%) and with wealth (lowest: 33%; highest: 45%). Interestingly, 59% of respondents correctly completed the campaign slogan "Zanzibar without malaria, every night for the whole family." Correct responses were statistically more common among men, those living in Unguja and in urban areas, and among more highly educated and wealthier respondents. Yet, only 24% correctly identified the program logo; the rate was highest among participants in Unguja, urban areas, and high-transmission areas, as well as among those with higher levels of educational attainment and greater wealth.

Supplemental Information

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

- Table A.7.2. Radio Listenership at Least Once a Week
- Table A.7.3. Preferred Time to Listen to the 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
- Table A.7.6. Mobile Phone or Tablet Ownership
- Table A.7.7. Exposure to Malaria Messages

[2] Respondent ownership of these devices is slightly lower than reported household ownership of mobile phones (84% and 80%, respectively), as expected as only two members were interviewed in each household.

Table 4.

Variables Related to Media Consumption *N=1,745*

	Listens to radio at least once a week (%)	Watches TV at least once a week (%)	Mobile phone owner-ship (%)	Completed campaign slogan (%)	Has seen or heard message about malaria in past six months (%)	Identified campaign logo (%)
Zone		***		***	***	**
Unguja	58.0	51.7	84.9	66.1	43.9	26.5
Pemba	31.1	22.5	70.6	45.5	31.1	20.1
Sex	***	***	***	*		
Female	42.6	37.8	74.2	56.3	39.7	25.0
Male	55.5	46.1	86.2	62.3	39.6	23.7
Age			***	*		
15–24	45.5	44.9	71.4	52.5	37.0	20.1
25–34	49.5	43.5	82.8	62.0	38.4	23.0
35–44	49.2	38.8	80.3	61.2	40.0	25.7
≥45	51.3	41.0	84.0	59.0	43.3	28.3
Residence	***	***	***	***	***	**
Urban	57.3	57.4	87.1	68.7	45.0	27.7
Rural	41.6	27.8	73.8	50.7	34.8	21.3
Transmission risk		***	**		*	*
High	46.3	49.2	84.4	60.4	43.5	27.6
Low	50.7	37.7	77.7	58.6	37.4	22.5
Education	***	***	***	***	***	***
None	24.1	19.5	66.5	29.7	26.7	14.0
Primary	43.7	33.0	76.7	54.7	37.8	16.0
Secondary or higher	57.4	51.5	85.0	68.4	43.5	30.8
Wealth quintile	***	***	***	***	*	***
Lowest	30.4	13.7	64.2	45.8	32.9	19.5
Second	42.9	26.0	75.7	51.7	37.1	18.9
Middle	48.1	40.1	83.9	59.9	41.3	23.5
Fourth	59.0	58.7	97.7	66.5	41.8	26.4
Highest	64.9	71.3	89.4	72.4	45.1	33.6
Total	49.0	41.9	80.2	59.3	39.7	24.4

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

Reactive Case Detection

Reactive case detection (RCD) for malaria is a strategy to complement passive surveillance by identifying additional malaria infections in areas of low transmission. Table 5 at the end of this section summarizes data regarding the ideational factors associated with RCD, by respondent characteristics. RCD ideational factors included awareness, willingness to participate in RCD programs, favorable attitudes, perceived response-efficacy, and perceived community support. Attitude favorability and perceived response-efficacy were calculated based on participants' agreement or disagreement with several related statements. Perceived community norms were assessed based on participants' responses to a series of questions asking about the proportion of members in their community who would get tested and

treated for malaria when approached by a health worker or provider in their home, as well as their approval of neighbors getting tested and treated at home for malaria when someone in their household or a close neighbor tests positive for malaria.

Ideational Variables Linked with RCD

Awareness of RCD

Respondents were asked, "Are you aware of programs that involve a health worker/provider visiting houses in a community to test for malaria in case of an abnormal increase in malaria cases?" About 24% responded in the affirmative, which is in the expected range given the limited use of RCD in Zanzibar. Awareness was positively associated with Pemba residents, high-transmission areas, and older age.

RCD-related Attitudes, Willingness to Participate, Response-efficacy, and Community Norms

All respondents were asked questions assessing RCD ideational factors. Nearly 82% had favorable attitudes regarding RCD; significantly higher approval rates were found among Pemba residents, men, older respondents, and those in high-transmission settings. Nearly 80% expressed a willingness to be tested if a health worker approached them in their homes; urban residency and living in high-transmission areas were positively associated with higher rates of willingness to participate. Fully 83% were willing to be treated as part of RCD, even if not sick. Perceived effectiveness was high at 82%; again, the only differences by background characteristics were that those in urban and high-transmission areas were more likely to perceive the program to be protective or curative. Finally, perceived community support for RCD was prevalent at 78%, with individuals in Pemba, rural areas, and in lower wealth quintiles more likely to express this perception (Figure 20). See Annex Table A.8.1 for a summary of results for the RCD ideational variables.

Figure 20.

Reactive Case Detection Ideational Factors at a Glance

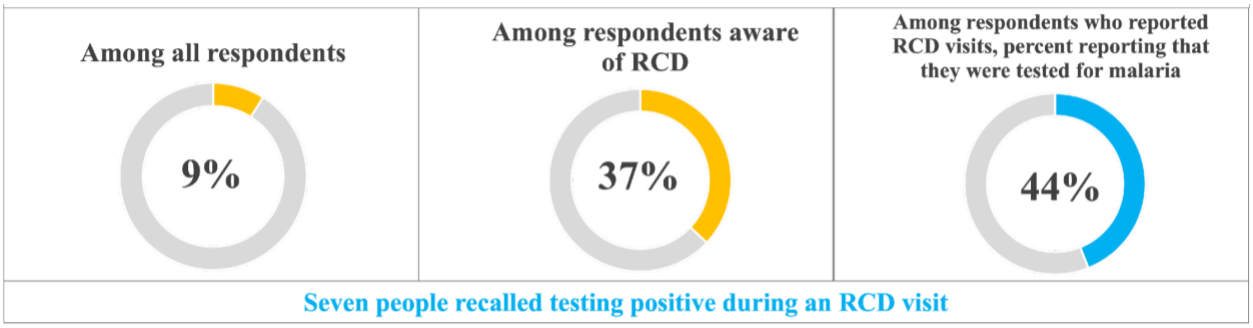
	24% Awareness of reactive case detection
	82% Favorable attitudes towards RCD
	80% Willing to be tested as part of RCD
	83% Willing to be treated as part of RCD even when not sick
	82% Perceived response efficacy of RCD
	78% Perceived community approval of RCD

Experiences with RCD Visits

Respondents who were aware of RCD were asked if a health worker or health provider visited their house for RCD within the past 12 months, among whom 37% answered in the affirmative, or 9% of the full sample. Of those who were visited for RCD, 44% reported they were tested for malaria (Figure 21).

Figure 21.

Reported Health Worker or Provider Visits for Reactive Case Detection



Supplemental Information

See the following tables in Annex A.8 for additional information on these indicators.

- Table A.8.2. Awareness of Reactive Case Detection Programs
- Table A.8.3. Willingness to Participate in Reactive Case Detection Even When Not Feeling Sick
- Table A.8.4. Attitudes Towards Reactive Case Detection
- Table A.8.5. Perceived Response Efficacy of Reactive Case Detection
- Table A.8.6. Perceived Self-efficacy for Reactive Case Detection
- Table A.8.7. Perceived Community Norms Regarding Reactive Case Detection
- Table A.8.8. Reactive Case Detection Coverage

Table 5.

Summary of Ideational Variables Related to Reactive Case Detection (RCD) (N=1745)

	Aware of RCD	Willing to Participate in Community or Household RCD (Testing & Treatment) Despite Not Feeling Sick	Favorable Attitude Towards RCD	Perceived RCD as Effective	Perceived Supportive Community Norms Regarding RCD
Zone	*		**		***
Unguja	22.4	79.6	79.8	82.4	74.7
Pemba	27.8	76.1	85.9	82.6	85.2
Sex			**		
Female	25.0	77.5	79.2	81.9	78.5
Male	23.5	79.4	84.4	83.1	77.9
Age	*		*		
15-24	22.7	78.7	76.7	79.6	74.0
25-34	20.7	79.0	81.5	82.3	77.9
35-44	26.1	77.3	84.8	84.1	80.5
45+	28.3	78.9	83.2	83.2	79.6
Residence		**		***	***
Urban	24.0	81.5	81.3	87.3	74.5
Rural	24.4	75.7	82.3	78.1	81.6
Transmission risk	***	***	***	***	
Higher	33.5	85.5	86.3	90.0	79.3
Lower	18.9	74.3	79.2	78.1	77.6
Level of education					
None	21.2	78.4	78.0	81.8	80.1
Primary	22.7	75.9	80.0	80.6	78.5
Secondary or higher	25.7	79.7	83.6	83.5	77.6
Wealth quintile					***
Lowest	24.4	77.4	80.2	79.7	83.8
Second	23.1	76.3	83.4	82.0	83.1
Middle	22.3	77.1	80.2	80.8	77.1
Fourth	24.4	80.8	81.9	85.4	74.8
Highest	27.0	80.7	83.3	84.5	72.1
Total (%)	24.4	78.4	81.8	82.5	78.2

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

Mass Drug Administration

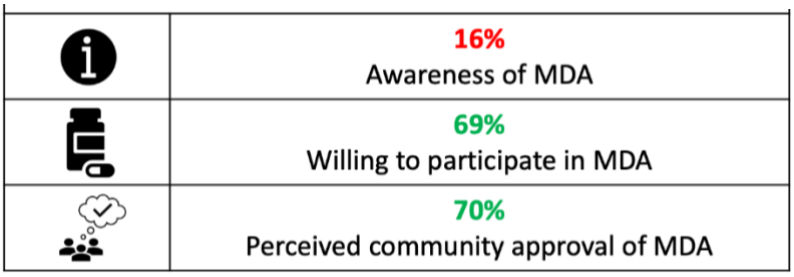
Mass drug administration (MDA) is the provision of a therapeutic dose of an effective anti-malarial drug to the entire target population of a given region or identified geographic area, irrespective of infection status or symptoms, and is a strategy to combat the reservoir of malaria infection. MDA is currently recommended by WHO as a strategy to eliminate *Plasmodium falciparum* malaria in areas approaching malaria elimination.

Ideational factors associated with MDA

All respondents were asked, "Are you aware of programs that involve administering drugs to everyone living in a community to treat malaria?" All respondents were also asked if they would accept such a program if offered and what proportion of members or leaders in their community would accept antimalarials if offered via an MDA program. The data are presented according to respondent sociodemographic characteristics in each zone.

Figure 22.

Mass Drug Administration Ideational Factors at a Glance



About 16% of the respondents were aware of the MDA program (Figure 22). Men (18%), respondents aged 45 or older (23%), and those with at least a secondary education (18%) more likely reported awareness of MDA program. A low level of awareness was expected given that intervention was implemented on a trial basis in only a few areas. More than two-thirds (69%) of the respondents noted they would be willing to accept MDA if offered, with higher willingness among urban (75%) as compared to rural residents (64%); no background characteristic other than urban or rural residence was significantly associated with willingness. Perceived community support for MDA was equally high (70%), with higher rates among those in Pemba (75%) and those in lower wealth quintiles (lowest: 72%; highest: 63%).

Experiences with MDA

Among those who were aware of MDA, 34% (5.6% of all respondents) reported a health worker or provider had visited their workplace to distribute antimalarials in the past year (Figure 23). The only statistically significant difference by background characteristics was by zone (Unguja: 42%; Pemba: 21%).

Figure 23.

Percentage who Recalled Receiving Antimalarials Through Mass Drug Administration Program

Supplemental Information

See the following tables in Annex A.9 for additional information on these indicators.

- Table A.9.1. Summary of Ideational Variables Related to Mass Drug Administration
- Table A.9.2. Awareness of Mass Drug Administration Program

- Table A.9.3. Perceived Community Norms Regarding Mass Drug Administration

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 the malaria transmission trends, ongoing and proposed interventions, the Zanzibar low-transmission MBS is an essential resource to inform programmatic and policy decisions. This section discusses relevant and actionable implications of these survey results.

The following key findings, conclusions, and recommendations from the Zanzibar MBS have been aligned to inform the ZAMEP Strategic Plan IV to achieve malaria elimination. The key findings discussed in the previous chapters are summarized here by strategy for convenience, with recommendations included at the end of each strategy section.

Strategy 1. Malaria Diagnosis and Treatment: Ensure High-quality Diagnosis and Appropriate Case Management in All Health Facilities and at the Community Level

Malaria Care-seeking and Treatment: Facilitators	
	**88%** Had favorable perceptions of facility-based health providers
	**75%** Had favorable perceptions of community-based health providers

Most respondents agreed that health care providers are the best persons to talk to about malaria (96%), that facility- (86%) and community-based (75%) providers treat their patients with respect, and that health facilities always have malaria test kits (70%) and medications (68%) in stock.

- **Gap:** Unguja residents were less sure about whether facility- and community-based health providers knew how to treat malaria (54-70%) and thought providers might ask for payment for malaria tests and treatment (66%–69%).
- **Gap:** For community-based health providers specifically, respondents were least sure about whether they knew how to treat malaria (56%) and would always have test kits (47%) and medications (46%) to treat malaria.

80%

Perceived equitable gender norms regarding who should be treated for malaria

Respondents displayed high levels of gender equitable norms regarding malaria, suggesting most people would treat male and female children equally with respect to prevention and treatment.

The lowest equitable perception reported (56%) was around pregnant women feeling comfortable enough to ask their spouse/partner to go to the health facility for a prenatal consultation.

88%

Involved in decision to seek care for fever

Most respondents (88%) said they either make malaria-related health care decisions themselves or jointly with their partner/spouse.

93%

Perceived self-efficacy to seek malaria testing

Respondents reported high self-efficacy to seek malaria testing (93%), with most respondents reporting they could afford to seek care (92%), as well as testing and treatment (91%). Most reported confidence they could go to the health facility/provider the same day or next after developing fever (90%), request a blood test (92%), and finish the full dose of malaria treatment (94%).

94%

Near to a public or private health facility

About 94% of households reported close proximity to a public health facility, with significant differences between Unguja (96%) and Pemba (87%). About two-thirds of households reported being close to a private health facility. Compared to Unguja households (70%), fewer Pemba households (61%) reported being close to a private health facility. Overall, 80% of households reported being close to a pharmacy, with no differences between Unguja (80%) and Pemba (79%). The difference in access to health resources between Unguja and Pemba may be due to Pemba being 92% rural and Unguja 68% urban.

Malaria Care-seeking and Treatment: Limiting Factors

69%

Recognized fever as the main symptom of malaria

About 69% of respondents reported fever as the main symptom of malaria. If prompt care-seeking for fever is universally recommended, the gap in recognizing fever as a sign of malaria might keep people from seeking care. Younger respondents (<35 years), urban residents, and those in the two highest wealth quintiles were least likely to recognize fever as a malaria symptom.

51%

Perceived susceptibility to malaria

Only about half of the respondents perceived that they and their families were susceptible to malaria. In a low-transmission setting where malaria is increasingly rare, such observations may be expected. Residents of high-transmission areas were significantly more likely than those in low-transmission areas to report perceived susceptibility, which is interesting and reflects a level of knowledge about the risks they face.

28%

Perceived severity of malaria

Overall, only about a quarter of respondents—again with higher percentages in high-transmission areas—indicated severe consequences of acquiring malaria. Good access to health care in Zanzibar and high confidence in the health care system may contribute to this perception.

47%

Perceived response efficacy of malaria testing

Although 70% of respondents agreed a blood test is the best way to diagnose malaria, less than half thought malaria testing was efficacious.

Gap: About 50% of respondents agreed that a person should take malaria medication despite testing negative for it.

	**15%** Identified ACT as the medicine to treat malaria
	**37%** Perceived response efficacy of malaria treatment

Only 15% of respondents identified ACT as the medicine used to effectively treat malaria, and 37% considered malaria treatment to be effective.

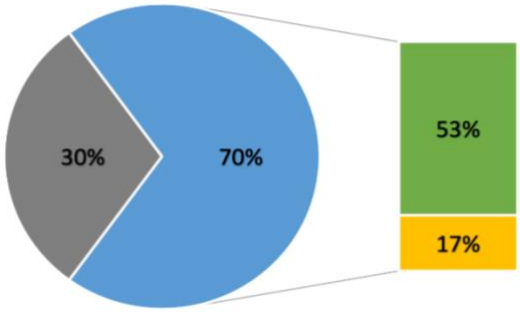
- In low-transmission settings, it may not be necessary for community members to be able to correctly identify ACT by name, especially if levels of care-seeking behaviors are acceptable.
- **Gap:** Most respondents (82%) thought an injection to treat malaria is more effective than malaria medicine taken by mouth.
- Unguja residents, urban residents, men, and those in higher wealth quintiles were least likely to consider malaria treatment effective.

	**52%** Perceived that most people seek prompt care

Only about half the respondents thought people in their community sought prompt care at a health facility for a fever. Residents of Unguja, urban areas, and high-transmission areas, and those in the two highest wealth quintiles were less likely to think their community members seek prompt care. Health communication programs should address this issue.

Care-seeking for Fever

Among those who reported a fever in the two weeks before the survey:



Sought care for a fever

Sought care the same day or next after the onset of fever

Sought care some 48 hours or more after fever onset

Did not seek care for fever

Among the 164 respondents who had a fever in the two weeks prior to the survey, 70% sought care for the fever, of which only 75% did so within the recommended time frame (the same day or next day after onset of fever).

- Care-seeking behavior was significantly lower among rural respondents, which could reflect more difficulty accessing a clinic.
- Close to 60% of respondents reported that most people in their communities seek prompt care upon developing a fever (descriptive community norm). These percentages could be improved with appropriate interventions across social ecological levels and could also contribute to increasing prompt care-seeking rates.

Malaria Care-seeking and Treatment
Mass Drug Administration (MDA): Facilitators

70%
Perceived supportive community norms regarding MDA

Pemba residents and those in the lower wealth quintiles were more likely to perceive supportive community norms around MDA programs. About 66%–67% of respondents thought most community members and most community leaders would accept antimalarials if offered via mass community distribution.

69%
Willing to accept antimalarials from MDA program even when not feeling sick

Among all respondents, almost 70% stated they would accept antimalarials as part of MDA despite not feeling unwell (those unaware of MDA were read a description of what it entails). The willingness to participate was higher among urban respondents and those living in high-transmission areas, compared to their group counterparts.

Malaria Care-seeking and Treatment
Mass Drug Administration (MDA): Limiting Factors

16%
Aware of malaria MDA programs

Only 16% of respondents reported being aware of MDA programs for malaria. Pemba residents, men, older respondents (35+ years), and those with primary or higher education were more likely to be aware of MDA programs than their group counterparts.

Note: The lack of awareness is not surprising, as MDA is not currently used, but it will be important to create awareness with appropriate SBC interventions, including communication, before implementing MDA or other new interventions.

Strategy 1 Recommendations:

Respondents indicated they sometimes take malaria medication following a negative test for malaria, suggesting a need for

- An exploration of whether malaria-negative patients obtain malaria medications from the same health care provider administering the test or if they primarily obtain it from a different source
- If health care providers are prescribing ACT to patients who tested negative, additional training or orienting of health care providers is recommended, as well as monitoring and enforcement of malaria drug prescription so that only cases confirmed with a positive malaria test are treated with an ACT
- Regardless of the source of ACTs, SBC activities should intensify messaging about the expectation and reasons why people should not take malaria medication when they are found negative for malaria
- Assessment of the level of false negatives from rapid diagnostic tests in Zanzibar given that conventional rapid diagnostic tests have been found to have low sensitivity in some low transmission settings

Only about half of respondents who sought care for fever in the two weeks prior to the survey reported that they were tested for malaria, suggesting a need for

- A better understanding of how providers decide to test for malaria to identify gaps in testing in this low malaria prevalence setting
- Supportive supervision and monitoring to ensure that malaria tests are administered when a patient presents with fever and other symptoms of suspected malaria

Counseling from health care providers to patients should include

- Advising patients about the necessity to complete the full course of medication even when feeling better
- Building confidence in the efficacy of malaria medications by explaining (using images, if possible) that the full course of treatment is required for the malaria medication to have its full effect and eliminate all the parasites from the body
- Informing patients on proper use of medication, given that half of respondents thought it is advisable to take medication even with a negative test for malaria

If mass drug administration is considered, it would be well-received by Zanzibaris given the high levels of willingness to participate in MDA if offered.

Strategy 2. Integrated Malaria Vector Control: Increase Appropriate Vector Control Measures to Populations at Risk of Malaria

Malaria Vector Control
Mosquito Nets: Facilitators

91%
Knew about using bed nets (treated/untreated) to prevent malaria

Most respondents identified mosquito nets or insecticide-treated nets as a major malaria prevention method. Slight but significant differences were observed in respondents' knowledge between urban (93%) and rural (90%) residents and by level of educational attainment (89%–92% linear trend with increase in education).

81%
Had favorable attitudes towards bed nets

Most respondents reported favorable attitudes towards bed nets, but those in the highest wealth quintile (71%), urban areas (75%), and aged 15–24 years (76%) were less likely to have favorable attitudes. The following findings influenced lower attitude scores:

- Only about half or less of the respondents thought it was easy to unfold a net and cover a sleeping area every night (50%), use a net while traveling or working away from home (49%), bring a net while sleeping away from home (35%), and use a net while sleeping outside (43%).
- Half reported disliking sleeping under a net in warm weather.
- About 52% reported feeling uncomfortable sleeping under a net due to the smell of insecticide.
- More than 70% thought more expensive bed nets were more effective than cheaper or free bed nets.
- More than half the respondents thought sleeping under a net caused low sex drive in men (57%) and that treated nets attracted bed bugs and other insects (59%).

86%
Perceived self-efficacy to use bed nets

Overall self-efficacy to use bed nets was high among respondents. The lowest self-efficacy was reported in the following instances:

- Sleeping under a net most nights when they are *sleeping* away from home (71%)
- Sleeping under a net most nights when they are *working* away from home (60%)
- Using a mosquito net most of the time when they are *sleeping outdoors* (55%)

76%

Perceived equitable gender norms toward net allocation

Those with a primary level of education (70%) and those aged 15–24 years (69%) were least likely to report equitable gender norms for net allocation.

70%

Perceived consistent bed net use by community members

The perception that most community members use a bed net every night was common among respondents. Respondents from Unguja (62%), from urban areas (64%), with secondary or higher education (65%), and in the middle to highest wealth quintiles (62-69%) were significantly less likely to have this perception, compared to their counterparts.

Malaria Vector Control

Mosquito Nets: Limiting Factors

65%

Households owned at least one ITN

Results showed that 65% of households reported owning at least one bed net, 94% of which were reported to be ITNs. Ownership of at least one ITN was significantly lower for households in urban areas, Unguja, and the two highest wealth quintiles, compared to their counterparts.

37%

Respondents reported using an ITN every night

About 85% of existing nets found in the surveyed households were reported to have been used every night the week before the survey. However, due to a lack of access to one net for every two people within households, only 37% of respondents reported that they consistently used a net (every night of the week preceding the survey). Consistent mosquito net use in Zanzibar was significantly higher in rural areas, Pemba, and the two lowest wealth quintiles.

Ideational factors, particularly perceived self-efficacy to use nets, favorable attitudes toward net use, and supportive descriptive community norms, were important enablers of consistent use.

	**43%** 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 (86%) and that using a mosquito net while sleeping outside would reduce the chances of getting malaria (89%). Only 33% disagreed with the statement "My chances of getting malaria are the same whether or not I sleep under a mosquito net." Respondents from urban areas, high-transmission areas, and the highest two wealth quintiles were least likely to think mosquito nets are effective in preventing malaria.

	**43%** Perceived coworker approval of bed net use when working away from home

Of those who reported working away from home, 62% thought their coworkers used a bed net every night when working away from home, but only 43% thought their coworkers would approve of their own consistent bed net use when working away from home.

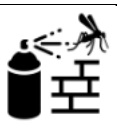
Malaria Vector Control

Indoor Residual Spraying: Facilitators

	**75%** Had favorable attitude towards IRS

Of those who reported being aware of IRS, 75% reported favorable attitudes towards it. Rural respondents (80%) were more likely than their urban counterparts (71%) to have these favorable attitudes.

- **Gap**: Only 41% of respondents disagreed with the statement that many people develop skin problems after having their walls sprayed.
- About 48% still believe that people have problems with bed bugs and other insects after their walls are sprayed.
- Half the respondents also expressed discomfort in leaving their possessions outside their house while the walls are being sprayed.



91%

Perceived IRS as effective

Nearly all respondents considered IRS as an effective method to prevent malaria. Only a slight but statistically significant difference existed between high-transmission area (93%) and low-transmission area respondents (89%).

Gap: A common misconception among 63% of respondents was that it is not necessary to sleep under a net after a house is sprayed.

86%

Perceived self-efficacy regarding IRS

Most respondents reported self-efficacy regarding IRS. In Pemba, more residents in high-transmission areas (94%) reported self-efficacy towards IRS than those in low-transmission areas (82%).

85%

Willing to accept IRS

Among all respondents, 85% stated they would accept IRS if offered (those unaware of IRS were read a description of what it entails). This finding reflects broad trust among Zanzibaris in governmental structures. Respondents from high-transmission areas (89%) were significantly more likely to accept IRS than their low-transmission counterparts (84%).

Malaria Vector Control

Indoor Residual Spraying: Limiting Factors

58%

Aware of IRS programs

Overall, 58% of respondents reported awareness of an IRS program in their community. Younger respondents (15–34 years) and residents in low-transmission areas were less aware of IRS programs than their counterparts.

33%

Households reporting an IRS-related visit to their dwelling

Only 33% of households reported a visit from anyone asking to spray their dwelling in the 12 months before the survey. More households in Pemba (46%) reported such a visit than households in Unguja (28%).

Of those households who were approached for IRS, 96% accepted it for their household in the 12-month period. No significant differences in household IRS acceptance were noted by residence area, transmission area, or wealth quintile, indicating reach and coverage of IRS programs being the main factor limiting the proportion of households that are sprayed in Zanzibar.

Malaria Vector Control

Larviciding: Facilitators

92%

Favorable attitudes towards larviciding

Most (92%) respondents reported favorable attitudes towards larviciding, with some slight but significant differences between urban (94%) and rural (90%) residents and between high- (95%) and low- (90%) transmission areas.

60%

Perceived supportive community norms regarding larviciding

Though 58% of respondents thought their neighbors would approve of their community treating the water near their homes with mosquito larvicide, only 31% thought that most villages around their community actually treat the water near their homes.

- Unguja residents and urban dwellers were more likely to think villages around their community treat the water with larvicide.
- Pemba residents were most likely to think their neighbors would approve of treating water with larvicide.

Malaria Vector Control

Larviciding: Limiting Factors

29%

Aware of larviciding programs

Overall, 29% of respondents reported being aware of larviciding programs.

- More Unguja residents (40%) than Pemba residents (7%) were aware of larviciding.
- Urban residents (42%) were more likely to be aware of larviciding than rural respondents (17%).
- Those with at least a primary level of education (18%) and those in the lowest wealth quintile (14%) were significantly less likely to be aware of larviciding than their group counterparts.

27%

Perceiving larviciding as effective

About 82% of respondents agreed that treating water bodies with larvicide once a week throughout the year is a good method to prevent malaria in their communities. Only 27% disagreed with the statement that their chances of getting malaria are the same regardless of water bodies in the area being treated with larvicide. Urban respondents, Unguja residents, and those with no education attainment were less likely to see larviciding as effective.

6%

Respondents reporting a larviciding program visiting their community

Only 6% of respondents reported a larviciding program visiting their community in the 12 months before the survey. Of the households that reported such a visit, 86% reported accepting larviciding. Although the number of households that reported a larviciding program visit are very small, there was an important geographic difference, with 95% of those in Unguja and 63% of those in Pemba reporting acceptance.

Strategy 2 Recommendations:

ITN ownership was lower than anticipated (about 35% of households had no nets at all). However, as this survey was conducted immediately prior to a mass net distribution campaign in July and August 2021, it would be worthwhile to check subsequent Malaria Indicator Survey data or post-campaign survey data to assess any changes in indicators of access and use.

Given that 85% of nets are reported to be used but only 37% of respondents reported consistently sleeping under a net, the main constraint in consistent ITN use seems to be access. Once ITNs are distributed, SBC on consistent use and care of nets should be intensified, promoting the ideational factors that are most associated with consistent ITN use: perceived self-efficacy, favorable attitudes toward net use, supportive descriptive community norms, favorable attitudes towards net use, communication about malaria with family or friends, and perceived susceptibility to malaria.

For community-based vector control programs, such as IRS or larviciding, it will be important to announce scheduled program visits and the purpose of visits to the community before-hand to help build trust and increase knowledge and awareness.

The high levels of acceptance and willingness to participate in IRS and larviciding programs is a solid foundation for achieving higher coverage and scale-up of these programs, should ZAMEP decide to do so.

Strategy 3. Surveillance, Monitoring and Evaluation: Actively Investigate and Classify 100% of all Confirmed Cases of Malaria and Initiate Entomological Surveillance in 100% of Malaria Foci

Surveillance, Monitoring, & Evaluation
Reactive Case Detection: Facilitators

82%
Had favorable attitudes towards RCD

Among all respondents, 82% reported favorable attitudes towards RCD. Those in high-transmission areas (86%) and male respondents (84%) were more likely than their low-transmission (79%) and female counterparts (79%) to have these favorable attitudes.

- **Gap**: Less than half of the respondents thought those who feel healthy should still get tested for malaria (44%) or accept treatment (47%) following a positive test when those services are provided by a health provider visiting their home or community.
- **Gap**: Only 26% of respondents stated that they would trust the people who conduct unsolicited visits to test for malaria.

84%
Perceived RCD as effective

Nearly 84% of respondents thought testing households and communities after a malaria case has been identified is an effective way to identify new cases and such programs would have the appropriate treatment available when new malaria cases are identified. Overall, more Pemba residents (90%) than Unguja (82%) residents thought RCD is effective. Those from high-transmission areas (90%) were more likely to believe in RCD's efficacy than those in low-transmission areas (81%).

83%
Perceived self-efficacy towards RCD

About 83% of respondents reported they could get tested without getting anyone else's permission and they could ensure their spouse/partner would accept to get tested by a health worker visiting their home. Urban respondents (87%) and those from high-transmission areas (90%) were more likely to report self-efficacy towards these actions than rural (78%) and low-transmission area (78%) residents.

78%
Willing to participate in community/household RCD (testing and treatment) despite not feeling sick

Among all respondents, 78% stated they would get tested (80%) and treated (83%) for malaria as part of RCD even when not feeling unwell (those unaware of RCD were read a description of what it entails). Willingness to participate was higher among urban respondents and those living in high-transmission areas, compared to their group counterparts.

Surveillance, Monitoring & Evaluation

Reactive Case Detection: Limiting Factors

24%

Aware of RCD programs

Only 24% of respondents reported being aware of RCD programs. Those in high-transmission areas (34%) were more likely to be aware of RCD than those in low-transmission areas (19%).

45%

Reporting being tested as part of an RCD visit to their home

Of the 37% of respondents who reported a health worker visiting their house to test them or someone in their household for malaria, 45% reported getting tested for malaria during that visit.

- More Pemba respondents reported being visited for RCD (46%) and getting tested during the visit (55%) than their Unguja counterparts (visited 31%; tested 35%).
- Those living in high-transmission areas (48%) were more likely to report having an RCD home visit than those from low-transmission areas (25%).
- In Unguja, a slight but significant trend occurred with lower wealth quintiles being less likely to report an RCD visit than those in the higher wealth quintiles.

Strategy 3 Recommendations

Given clear gaps in reactive case detection (RCD), several steps should be taken:

- In households that were reportedly visited for RCD, not everyone reported being tested, indicating the need for increased monitoring to understand if and why people are being missed.
- Respondents indicated strong support for RCD but, as with other programs, announcements about the timing and purpose of such visits should be widely disseminated.

Supporting Strategy. Social and Behavior Change Communication: Advocacy, Behavior, and Mobilization Reaches 90% of the General Population

ZAMEP's 2018–2023 Strategic Plan IV includes three supporting strategies, including one focused on SBC communication. Several SBC-related recommendations have already been made throughout the three objectives listed above. In addition to the above recommendations, cross-cutting communication programs within this supporting strategy should be designed and implemented to address the following gaps:

- Attitudes about nets: Half or more of respondents reported that nets caused discomfort, and more than 70% thought free nets were inferior to more expensive versions.
- Attitudes about malaria: Only half of respondents perceived they were susceptible to malaria, and just over a quarter thought the consequences of contracting malaria would be severe.
- Prompt care-seeking: Only about half reported seeking care for fever within the recommended period. A similar proportion of all respondents thought prompt care-seeking was a social norm.
- Audiences: Respondents aged 15–24 are an important audience as they were the least likely to know about, be aware of, or feel at risk for malaria.
- SMS text messaging is an unexplored channel that should be tested for its efficacy in addressing ideational factors. Other efforts to reach those without phones also should continue.
- Community and facility-based interventions will continue to be important to reach people who do not have access to radio, TV, or a mobile phone.
- As ZAMEP plans to implement newer or less frequent programs, such as IRS, larviciding, MDA, and RCD, it will be important to convey information at the community level.

Implications for Future Research

The Zanzibar context continues to provide a favorable environment for achieving malaria elimination. The MBS results indicate that most Zanzibaris have positive attitudes toward and trust in health facilities, health providers, and government-led health programs, with high acceptance of malaria prevention and vector control measures. Most (85%) of existing nets in households were reported to have been used consistently, though only 37% of survey respondents reported consistent net use, likely due to insufficient nets to fully cover household members despite use of most existing nets. About 90% of respondents had access to health facilities. Across the multiple malaria prevention areas explored in the MBS, respondents in rural areas, with low levels of educational attainment, and in low wealth quintiles were more knowledgeable, more supportive of both ongoing and proposed interventions, and more likely to take preventive action than their more privileged counterparts. These findings contrast with those from the broader literature on health behaviors, which consistently demonstrates a positive association between privilege and recommended health behaviors. A qualitative study could seek to better understand these unexpected findings.

Some notable gaps in the results were observed. For example, respondents expressed uncertainty regarding whether health providers (facility- and community-based) know how to treat malaria, whether malaria testing and malaria treatment are effective, and what constitutes "suspected malaria." The MBS finding of low malaria testing rates reported by those who presented with fever at a facility in the two weeks before the survey might influence respondents' uncertainty around health provider capacity. One way to expand these findings and explore these gaps would be to assess both public and private health

facilities in Zanzibar that counsel, test, and treat for malaria. This facility assessment would provide a look into patient–provider interactions around malaria, how decisions are made, and what gaps can be closed within the health facility setting.

Should ZAMEP or donors plan to field the low-transmission MBS again in Zanzibar in the future (or in any other setting), the questionnaires should be revised and updated based on the findings reported herein. Additionally, the research team should carefully examine data not reported due to the low number of responses.

Conclusions

In view of malaria transmission trends, risks, and ongoing and proposed interventions in Zanzibar, the MBS is a critical resource to inform programmatic and policy decisions. For the first time, Breakthrough ACTION fielded a low-transmission MBS to glean insight for other low-transmission settings and for Zanzibar in general.

There is much to celebrate in the Zanzibar MBS findings. The health care system is strong and respected by Zanzibaris, as reflected by highly positive perceptions of facility-based and community-based health care providers. More than 90% of respondents reported going to a health clinic for fever. Respect for and trust in the larger health system, including ZAMEP, were also evident in the willingness to accept IRS, RCD, and MDA if offered, even though most were unaware of these programs before interviewers described them. The data seem to point to a sense of community and willingness to take actions or accept programs that may not benefit them individually but are advantageous for their communities. This community spirit can and should be leveraged for malaria elimination.

More work is needed, however. For example, the larger health system, as well as individuals and communities, should ensure all households have sufficient ITNs for all household members and that ITNs are consistently and correctly used. Improvements in prompt care-seeking require involvement across social ecological levels. Thus, ongoing and proposed programs to achieve ZAMEP's strategic goals should be supported and expanded. The MBS data indicate that elimination of malaria in Zanzibar is within reach. There is confidence that all segments of Zanzibar's society will do their part if given the required information, supplies, and support.

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Annex: Data Tables

This annex provides all data tables for the 2021 Zanzibar MBS, including ones that do not appear in the main body of the report. A brief description of the purpose of each table is provided. Unless otherwise stated, data presented in these tables are disaggregated by study zone and by respondent or household sociodemographic characteristics.

A.1 Sample Characteristics

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

Table A.1.1.

Household Characteristics

	Unguja (%) (n=702)	Pemba (%) (n=305)	Total (%) (N=1007)
Average number of people in household	5.3	5.6	5.3
Average number of sleeping rooms	2.8	2.9	2.9
% of households with electricity*	74.1	41.6	64.2
% of households near^ any health facility*	96.9	86.9	93.8
% of households near^ a public health facility*	96.3	84.6	92.7
% of households near^ a private health facility*	70.2	61.0	67.4
% of households near^ a pharmacy	80.1	78.7	79.6
% of households with finished floors*	88.9	60.7	80.3
% of households with finished roofs*	97.0	73.4	89.9
% of households with finished walls*	93.4	60.7	83.5

Note: ^Within 5 kilometers (30 minutes on foot or 10 minutes by car)
*Significance of differences between Unguja and Pemba ($p<0.05$)

Table A.1.2.

Household Assets and Wealth Quintiles

	Unguja (%) (n=702)	Pemba (%) (n=305)	Total (%) (N=1007)
Radio*	69.9	25.2	56.4
Television*	57.8	18.7	46.0
Simple mobile phone	87.3	78.0	84.5
Smartphone*	53.1	15.4	41.7
Bicycle	41.4	35.1	39.5
Land*	16.4	48.8	26.2
Livestock*	21.6	54.1	31.5
Wealth Quintile*			
Lowest	9.4	44.6	20.1
Second	17.1	26.6	20.0
Third	20.7	18.7	20.1
Fourth	24.5	9.5	20.0
Highest	28.3	0.7	20.0

Note. *Significance of differences between Unguja and Pemba ($p<0.05$)

Table A.1.3.

Characteristics of Household Members

	Unguja (%) (n=3693)	Pemba (%) (n=1702)	Total (%) (N=5395)
Sex			
Female	51.1	52.3	51.5
Male	48.9	47.7	48.5
Residence			
Urban	67.5	7.8	48.7
Rural	32.5	92.2	51.3
Age Distribution			
0–4	11.9	16.2	13.3
5–17	29.1	35.2	31.0
18 and older	59.0	48.6	55.7

Note. Data do not necessarily reflect the only characteristics of individuals interviewed.

Table A.1.4.

Characteristics of Respondents

	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
Sex			
Female	49.4	50.9	49.9
Male	50.6	49.1	50.1
Age			
15-19 years	5.9	6.9	6.2
20-29 years	32.5	26.8	30.6
30-39 years	29.5	28.5	29.2
≥40 years	32.1	37.8	34.0
Residence*			
Urban	67.7	7.9	47.7
Rural	32.3	92.1	52.3
Transmission risk			
Higher (>5/1000 or >0.5%)	35.7	39.0	36.8
Lower (≤5/1000 or ≤0.5%)	64.3	61.0	63.2
Education*			
None	8.6	23.4	13.5
Primary	22.8	39.3	28.3
≥ Secondary	68.6	37.3	58.2
Religion			
Islam	98.4	98.6	98.4
Christianity	1.6	1.4	1.6
Married	71.6	85.2	76.2
Wealth Quintile*			
Lowest	8.7	42.6	20.0
Second	17.7	24.7	20.1
Third	19.6	20.8	20.0
Fourth	24.7	10.6	20.0
Highest	29.3	1.2	19.9

Note. ***p<0.0001 for differences between Unguja and Pemba

A.2 Cross-Cutting Ideational Determinants

This subsection summarizes data from the 2021 Zanzibar 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. Where appropriate, results are disaggregated by zone. Tables may be also included or referenced in the main body of the report.

Table A.2.1

Malaria Knowledge

	Fever is Main Symptom of Malaria			Know Malaria is Caused by Mosquito Bite			Know at Least One Malaria Major Prevention Measure		
	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
Sex	*							*	
Female	66.1	77.0	69.8	84.0	88.2	85.4	91.6	92.9	92.1
Male	60.2	81.8	67.2	83.0	92.0	85.9	91.0	97.2	93.0
Age	*		*	*		**			
15-24	58.5	80.4	65.3	77.1	86.0	79.9	87.3	93.5	89.2
25-34	60.4	74.4	64.7	84.7	89.9	86.3	91.8	96.4	93.2
35-44	69.3	79.9	72.8	85.3	92.2	87.6	92.6	96.1	93.8
45+	63.8	83.7	71.6	85.5	90.8	87.6	92.8	93.5	93.0
Residence			***				**		
Urban	63.1	78.3	64.0	84.6	95.6	85.2	92.9	97.8	93.2
Rural	63.0	79.5	72.7	81.1	89.5	86.1	88.0	94.8	92.0
Transmission risk		**				*	**	*	***
High (>5/1000 or >0.5%)	63.1	85.5	71.0	80.2	89.4	83.5	94.5	97.4	95.5
Low (≤5/1000 or ≤0.5%)	63.1	75.5	67.1	85.3	90.4	86.9	89.6	93.5	90.8
Level of education		**				*	**	***	**
None	57.0	72.8	66.1	87.0	87.5	87.3	89.0	88.2	88.6
Primary	62.3	77.3	69.2	85.7	93.0	89.1	86.0	95.6	90.5
≥Secondary	64.2	85.7	68.8	82.3	88.5	83.6	93.4	98.6	94.5
Wealth quintile			***						
Lowest	72.3	81.8	79.1	84.2	91.1	89.1	88.1	94.3	92.5
Second	61.2	79.2	68.6	83.5	90.3	86.3	89.8	94.4	91.7
Middle	65.3	74.4	68.5	86.8	88.4	87.4	90.3	95.9	92.3
Fourth	62.7	80.6	65.9	82.2	87.1	83.1	90.2	96.8	91.4
Highest	60.4	71.4	60.6	82.1	100.0	82.5	94.7	100.0	94.8
Total	63.1	79.4	68.5	83.5	90.0	85.7	91.3	95.0	92.5

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

Table A.2.2.

Perceived Susceptibility to Malaria

	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
DISAGREE: People in community only catch malaria during the rainy season.	46.8	47.8	47.1
AGREE: Nearly every year, a person in this community catches severe malaria.	43.8	30.6	39.4
AGREE: When your child has a fever, you're almost always afraid it's malaria.	33.9	29.5	32.4
AGREE: During the rainy season, you are afraid almost every day that a member of your family will suffer from malaria.	50.4	56.2	52.3
AGREE: When traveling away from home or traveling for work, you worry that you will get malaria	35.0	44.7	38.2
AGREE: Someone is more likely to get malaria when they are outdoors at night than if they are indoors	62.5	56.7	60.6
Total who perceived susceptibility to malaria	**48.0**	**56.0**	**50.7**
Sex			
Female	48.2	55.7	50.7
Male	47.8	56.3	50.6
Age		**	
15-24	47.0	39.2	44.6
25-34	49.3	56.5	51.5
35-44	47.9	60.4	52.0
≥45	46.8	62.7	53.1
Residence			
Urban	46.2	60.9	48.9
Rural	47.6	55.6	52.3
Transmission risk	**	*	***
High (>5/1000 or >0.5%)	54.2	62.6	57.2
Low (≤5/1000 or ≤0.5%)	44.5	51.8	46.9
Education			
None	47.0	51.5	49.6
Primary	49.4	55.5	52.2
≥ Secondary	47.6	59.4	50.1
Wealth quintile	*		
Lowest	54.5	53.2	53.6
Second	42.7	59.0	49.4
Middle	42.5	58.7	48.1
Fourth	48.8	53.2	49.6
Highest	52.2	71.4	52.6

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

Table A.2.3.

Perceived Severity of Malaria

	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
DISAGREE: You do not worry about malaria because it can be treated easily.	35.9	44.8	38.8
DISAGREE: Only weak children can die of malaria.	58.7	40.5	52.7
AGREE: Each case of malaria can potentially lead to death.	28.0	24.4	26.8
DISAGREE: When someone you know has malaria, you usually expect them to recover completely within a few days.	31.9	19.6	27.8
Total who perceived severity of malaria	**22.7**	**29.2**	**27.5**
Sex			
Female	26.1	28.7	27.3
Male	27.2	29.7	27.7
Age			
15-24	27.1	20.6	25.1
25-34	26.4	32.7	28.3
35-44	27.5	28.6	27.8
≥45	25.5	32.0	28.1
Residence			
Urban	25.4	34.8	25.9
Rural	29.3	28.7	28.9
Transmission risk	*	*	**
High (>5/1000 or >0.5%)	22.6	25.1	23.5
Low (≤5/1000 or ≤0.5%)	28.9	31.8	29.8
Education	*		
None	17.0	33.1	26.3
Primary	26.8	27.9	27.3
≥ Secondary	27.8	28.1	27.9
Wealth Quintile			
Lowest	24.7	27.8	26.9
Second	27.7	32.6	29.7
Middle	29.8	31.4	30.4
Fourth	22.6	21.0	22.3
Highest	27.9	42.9	28.2

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

Table A.2.4.

Interpersonal Communication about Malaria in Six Months Prior to Survey

	Discussed Malaria with Spouse/Partner			Discussed Malaria with Friend/Family		
	Unguja (%) (n=1109)	Pemba (%) (n=560)	Total (%) (n=1669)	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
Sex						
Female	12.5	11.5	12.2	8.2	9.8	8.7
Male	8.9	13.1	10.3	7.3	12.6	9.0
Age	***		**		**	
15-24	3.4	10.5	5.6	5.9	13.1	8.2
25-34	10.7	10.6	10.7	7.9	8.3	8.0
35-44	15.1	9.3	13.2	8.3	6.5	7.7
45+	12.1	18.7	14.8	8.5	17.6	12.1
Residence						
Urban	10.4	17.4	10.8	7.1	19.6	7.8
Rural	11.1	11.9	11.6	9.0	10.4	9.9
Transmission risk						
High (>5/1000 or >0.5%)	10.3	11.0	10.6	7.9	9.2	8.4
Low (≤5/1000 or ≤0.5%)	10.8	13.2	11.6	7.6	12.4	9.2
Education		*			***	*
None	16.3	5.4	9.9	6.0	2.9	4.2
Primary	9.6	11.9	10.7	9.1	8.3	8.7
≥Secondary	10.3	17.0	11.7	7.5	19.3	10.0
Wealth quintile		*			**	
Lowest	18.7	9.2	11.8	12.9	7.7	9.2
Second	9.2	12.3	10.5	7.3	11.1	8.9
Middle	11.0	11.9	11.3	5.7	10.7	7.4
Fourth	10.1	22.0	12.2	6.6	22.6	9.5
Highest	9.5	42.9	10.2	8.8	42.9	9.5
Total	10.6	12.3	11.2	7.7	11.2	8.9

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

Table A.2.5.

Perceptions of Facility-based Health Workers

	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
Positive perceptions (score >0) of health providers doing case management	86.5	90.4	87.8
All positive perceptions towards health providers providing case management (all statements)	38.8	48.8	42.1
Favorable perceptions (score >0) of facility-based health providers	88.4	92.1	89.6
All favorable perceptions of facility-based health providers (all statements)	36.1	47.4	39.9
Sex	**		*
Female	91.1	91.9	91.4
Male	85.7	92.3	87.9
Residence			**
Urban	87.3	89.1	87.4
Rural	90.7	92.3	91.7
Transmission risk		**	**
High (>5/1000 or >0.5%)	90.4	96.5	92.5
Low (≤5/1000 or ≤0.5%)	87.3	89.3	87.9
Age			
15-24	85.6	90.6	87.2
25-34	88.1	89.9	88.7
35-44	88.8	96.7	91.4
≥45	91.1	90.8	91.0
Education			
None	88.0	89.7	89.0
Primary	85.7	92.6	88.9
≥ Secondary	89.3	93.1	90.1
Wealth quintile	*		*
Lowest	93.1	93.5	93.4
Second	85.4	91.7	88.0
Middle	91.7	90.1	91.1
Fourth	89.9	90.3	90.0
Highest	85.3	100.0	85.6

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

Table A.2.6.

Perceptions of Community-based Health Providers

	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
Positive general perception towards community health providers	72.2	81.8	75.4
All positive perceptions towards health providers providing case management (all statements)	21.9	27.7	23.8
Positive perceptions (score >0) towards community health providers doing case management	71.9	73.9	72.5
Favorable perceptions of community-based health providers (all statements)	20.7	27.3	22.9
Favorable perceptions (score >0) of community-based health providers	74.7	75.9	75.1
Sex	**		*
Female	78.8	74.7	77.4
Male	70.7	77.3	72.9
Residence			
Urban	74.5	78.3	74.7
Rural	75.3	75.7	75.5
Transmission risk	**	***	***
High (>5/1000 or >0.5%)	80.5	85.0	82.1
Low (≤5/1000 or ≤0.5%)	71.5	70.1	71.1
Age			*
15-24	70.8	69.2	70.3
25-34	73.6	72.0	73.1
35-44	77.0	81.8	78.6
≥45	77.4	79.1	78.1
Education			
None	75.0	74.3	74.6
Primary	77.7	75.5	76.7
≥ Secondary	73.7	77.4	74.5
Wealth quintile			
Lowest	76.2	77.4	77.1
Second	73.8	77.1	75.1
Middle	76.3	70.2	74.2
Fourth	75.3	75.8	75.4
Highest	73.3	100.0	73.8

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

Table A.2.7.

Gender Norms Related to Malaria

Reported gender norms are based on agreement or disagreement with several statements.

	Unguja (n=1163)	Pemba (n=582)	Total (N=1745)
DISAGREE: When there are not enough nets, it is more important that female children sleep under the available nets rather than male children.	75.0	78.2	76.0
DISAGREE: When there are not enough nets, it is more important that male children sleep under the available nets rather than female children.	81.7	86.9	83.4
AGREE: A pregnant woman should feel comfortable asking her husband/spouse to go to the health facility for a prenatal consultation.	52.2	63.9	56.1
DISAGREE: When there is not enough money, it is more important that male children with fever get medicine rather than female children.	83.9	87.8	85.2
DISAGREE: When there is not enough money, it is more important that female children with fever get medicine rather than male children.	80.8	82.3	81.3
Total with equitable gender attitudes related to malaria (all statements)	35.2	46.0	38.8
Total with overall positive gender norms related to malaria (score >0)	**84.9**	**89.5**	**86.5**
Sex	**		
Female	87.8	88.5	88.1
Male	82.1	90.6	84.9
Age			
15-24	82.2	90.6	84.8
25-34	87.9	89.9	88.5
35-44	85.6	89.6	86.9
≥45	82.1	88.2	84.5
Residence			
Urban	85.6	89.1	85.8
Rural	83.5	89.5	87.1
Transmission risk			
High (>5/1000 or >0.5%)	87.2	90.7	88.5
Low (≤5/1000 or ≤0.5%)	83.7	88.7	85.3
Education			*
None	84.0	91.9	88.6
Primary	80.7	85.6	83.0
≥ Secondary	86.5	92.2	87.7
Wealth quintile			
Lowest	88.1	88.3	88.2
Second	83.5	89.6	86.0
Middle	84.6	90.1	86.5
Fourth	86.4	91.9	87.4
Highest	83.9	100.0	84.2

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

A.3 Malaria Case Management

This subsection summarizes results for the 2021 Zanzibar 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 also included 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 and treatment (%)	Favorable attitudes towards care-seeking and treatment (%)	Perceived response-efficacy of malaria testing (%)	Perceived response-efficacy of malaria treatment (%)	Perceived self-efficacy for malaria testing and treatment (%)	Perceived supportive descriptive community norms regarding malaria care-seeking and treatment (%)	Perceive equitable gender norms related to malaria treatment (%)	Favorable perceptions of health facilities regarding care-seeking and treatment (%)	Favorable perceptions of community based health providers regarding care-seeking and treatment (%)	Favorable perceptions of facility based health providers regarding care-seeking and treatment (%)	Involved in decision to go to the health facility when respondent is sick with fever (%)	Involved in decision to purchase medicine when respondent is sick with malaria (%)
Zone	**	***	***	***	**	***				***		
Unguja	10.5	76.3	38.9	30.7	94.7	52.4	79.4	66.4	74.7	85.3	79.6	78.7
Pemba	6.5	88.8	62.0	48.8	90.7	72.7	81.6	63.4	75.9	92.6	82.3	81.8
Sex				**				*	*		***	***
Female	9.0	81.5	48.2	40.2	93.2	60.7	81.6	68.1	77.4	89.2	73.9	71.7
Male	9.4	79.5	45.0	33.3	93.5	57.7	78.6	62.7	72.9	86.3	88.1	89.0
Age	**								*		***	***
15-24	4.7	78.7	45.2	38.2	92.1	56.0	76.4	65.3	70.3	86.0	69.2	64.5
25-34	8.6	81.2	46.8	36.0	93.0	56.9	82.3	63.1	73.1	88.3	77.9	78.3
35-44	10.7	82.4	48.2	36.6	93.6	63.8	81.2	67.2	78.6	87.8	81.5	80.6
≥45	12.1	78.9	45.6	36.6	94.6	59.8	79.1	66.5	78.1	88.4	86.2	85.6
Residence		***	***	***	***	***				*		
Urban	10.6	74.9	33.5	25.6	95.8	52.7	80.2	64.8	74.7	86.1	81.8	81.5
Rural	7.9	85.6	58.5	46.9	91.1	65.1	80.0	65.9	75.5	89.2	79.6	78.7
Transmission				*	**	*	*	***	***	**	**	*

	Knowledge of malaria care-seeking and treatment (%)	Favorable attitudes towards care-seeking and treatment (%)	Perceived response-efficacy of malaria testing (%)	Perceived response-efficacy of malaria treatment (%)	Perceived self-efficacy for malaria testing and treatment (%)	Perceived supportive descriptive community norms regarding malaria care-seeking and treatment (%)	Perceive equitable gender norms related to malaria treatment (%)	Favorable perceptions of health facilities regarding care-seeking and treatment (%)	Favorable perceptions of community based health providers regarding care-seeking and treatment (%)	Favorable perceptions of facility based health providers regarding care-seeking and treatment (%)	Involved in decision to go to the health facility when respondent is sick with fever (%)	Involved in decision to purchase medicine when respondent is sick with malaria (%)
risk												
High (>5/1000 or >0.5%)	10.3	81.1	46.3	33.5	95.6	55.9	83.0	72.3	82.1	91.0	84.6	82.8
Low (≤5/1000 or ≤0.5%)	8.5	80.1	46.8	38.6	92.0	61.1	78.4	61.4	71.1	85.9	78.3	78.3
Education	**				*	**	*	**		*		
None	5.5	80.1	47.0	39.0	92.8	67.4	82.2	64.8	74.6	82.2	77.6	79.0
Primary	6.7	80.8	49.4	35.8	90.7	61.9	75.7	59.5	76.7	88.9	79.0	79.3
≥ Secondary	11.2	80.5	45.1	36.6	94.8	56.0	81.8	68.4	74.5	88.5	82.3	80.5
Wealth quintile	**	***	***	***		***				*		
Lowest	5.2	85.4	51.0	45.3	91.1	67.3	81.9	63.6	77.1	91.4	80.0	80.0
Second	8.3	80.0	51.1	40.6	91.7	66.0	78.9	65.1	75.1	84.3	77.0	77.0
Middle	8.6	85.7	50.7	37.2	93.7	63.0	80.2	67.0	74.2	90.5	78.7	77.3
Fourth	9.2	75.6	43.8	28.6	94.6	51.0	80.8	66.8	75.4	86.8	85.5	83.5
Highest	14.7	75.9	36.2	31.9	95.7	48.6	78.7	64.4	73.8	85.6	82.3	82.3
Total	9.2	80.5	46.6	36.7	93.3	59.2	80.1	65.4	75.1	87.7	80.6	79.9

Notes: N=1745 overall respondents, n=1329 with spouses/partners for questions regarding decision making; *p<0.05; **p<0.01; ***p<0.001

Table A.3.2.

Knowledge of Malaria Care-seeking and Treatment

	Unguja (%) (N=1163)	Pemba (%) (N=582)	Total (%) (N=1745)
Identified artemisinin-based combination therapy as medicine that can be used to effectively treat malaria.**	17.1	11.2	15.1
Identified SAME DAY OR NEXT DAY as a time period where one should seek advice or treatment after developing a fever.***	80.6	71.8	77.6
Identified BLOOD TEST as the best way to know if someone has malaria.***	74.3	62.0	70.2
Identified HEALTH FACILITY[1] as the best place to go in the community if one has malaria.	99.5	99.1	99.4
Total with comprehensive knowledge of malaria care-seeking and treatment**	**10.5**	**6.5**	**9.2**
Sex			
Female	11.6	3.7	9.0
Male	9.3	9.4	9.4
Age	*	*	**
15-24	5.9	1.9	4.7
25-34	9.8	5.9	8.6
35-44	13.4	5.2	10.7
≥45	12.3	11.8	12.1
Residence			
Urban	10.7	8.7	10.6
Rural	10.1	6.3	7.9
Transmission risk	**	*	
High (>5/1000 or >0.5%)	13.7	4.0	10.3
Low (≤5/1000 or ≤0.5%)	8.7	8.2	8.5
Education		***	**
None	11.0	1.5	5.5
Primary	8.7	4.4	6.7
≥ Secondary	11.0	12.0	11.2
Wealth quintile		*	**
Lowest	9.9	3.2	5.2
Second	8.2	8.3	8.3
Middle	9.2	7.4	8.6
Fourth	8.7	11.3	9.2
Highest	14.4	28.6	14.7

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

[1] Includes public and private medical sectors and community health providers. Excludes advice or treatment from a traditional practitioner, shop, market, or itinerant drug seller. *

Table A.3.3.

Attitudes Towards Malaria Care-seeking and Treatment

	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
AGREE: The health provider is always the best person to talk to when you think you may have malaria.	95.9	95.2	95.6
DISAGREE: One does not need to continue taking all the medicine doses against malaria if he/she is feeling better.***	32.0	53.8	39.3
DISAGREE: I prefer to receive the medicine to treat malaria by injection rather than by mouth in pill form.***	24.8	35.4	28.4
AGREE: The health providers in this community believe that people like me should seek a malaria diagnostic test if they have a fever.	85.7	83.3	84.9
AGREE: A person should only take malaria medicine if a health provider says that his/her fever really is caused by malaria.	85.1	86.8	85.7
DISAGREE: If a health provider says a person does not have malaria, the patient should ask for a malaria medication just in case s/he needs it.***	49.5	72.2	57.1
DISAGREE: When I have a fever, it is better to start by taking any malaria medicine I have at home.***	48.2	66.7	54.4
AGREE: It is important to take all the anti-malaria pills prescribed to ensure a complete recovery.	84.9	86.4	85.4
DISAGREE: When my child has a fever, I do not go directly to the health facility, I first go elsewhere to buy him/her medicine.***	53.8	76.6	61.4
DISAGREE: When I have a fever, I do not go directly to the health facility, I first go elsewhere to buy medicine***	65.5	79.5	70.2
DISAGREE: When I have a fever, I do not go directly to the health facility, I first use an herbal product/home remedy***	70.5	78.9	73.3
Total with favorable attitude towards malaria care and treatment* **	**76.3**	**88.8**	**80.5**
Sex			
Female	77.9	88.5	81.5
Male	74.8	89.2	79.5
Age			
15-24	74.1	88.8	78.7
25-34	76.2	92.3	81.2
35-44	80.2	87.0	82.4
≥45	73.6	86.9	78.9
Residence	**		***
Urban	73.8	93.5	74.9
Rural	81.6	88.4	85.6
Transmission risk		*	
High (>5/1000 or >0.5%)	74.9	92.5	81.1
Low (≤5/1000 or ≤0.5%)	77.1	86.5	80.1
Education			
None	68.0	89.0	80.1
Primary	75.1	87.3	80.8
≥ Secondary	77.8	90.3	80.5
Wealth quintile	*		***
Lowest	84.2	85.9	85.4
Second	72.8	90.3	80.0
Middle	82.9	90.9	85.7
Fourth	72.1	91.9	75.6

	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
Highest	75.4	100.0	75.9

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

Table A.3.4.

Perceived Response Efficacy of Malaria Testing

	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
AGREE: A blood test for malaria is the only way to know if someone really has malaria or not.*	89.2	83.3	87.2
DISAGREE: A person should still take malaria medicine even if the malaria test result says that the fever is not due to malaria.***	38.9	63.1	46.9
Total with high perceived response-efficacy of malaria testing (%)* **	**38.9**	**62.0**	**46.6**
Sex			
Female	41.0	62.2	48.2
Male	36.7	61.9	45.0
Age			
15-24	39.0	58.9	45.2
25-34	39.6	63.1	46.8
35-44	40.3	64.3	48.2
≥45	35.7	60.8	45.6
Residence	***		***
Urban	31.8	63.0	33.5
Rural	53.7	61.9	58.5
Transmission risk			
High (>5/1000 or >0.5%)	35.9	65.2	46.3
Low (≤5/1000 or ≤0.5%)	40.5	60.0	46.8
Education			
None	30.0	59.6	47.0
Primary	40.7	59.4	49.4
≥ Secondary	39.3	66.4	45.1
Wealth quintile		*	***
Lowest	40.6	55.2	51.0
Second	40.3	66.7	51.1
Middle	43.0	65.3	50.7
Fourth	37.6	72.6	43.8
Highest	35.8	57.1	36.2

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

Table A.3.5.

Perceived Response Efficacy of Malaria Treatment

	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
DISAGREE: An injection to treat malaria is more effective than the malaria medicine taken by mouth.*	19.8	15.1	18.2
AGREE: The malaria drugs obtained from the health facility are effective in treating malaria.	78.9	78.9	78.9
DISAGREE: The malaria medicines that you buy in the market are as good as the ones distributed at the health facility.*	19.3	15.6	18.0
DISAGREE: Herbal products are as good as the malaria medicines distributed at the health facility.*	55.7	58.6	56.7
Total with high perceived response-efficacy* **	**30.7**	**48.8**	**36.7**
Sex	*	*	**
Female	33.4	53.4	40.2
Male	28.1	44.1	33.3
Age			
15-24	33.0	49.5	38.2
25-34	30.6	48.2	36.0
35-44	31.6	46.7	36.6
≥45	27.2	51.0	36.6
Residence	***		***
Urban	23.9	54.3	25.6
Rural	44.9	48.3	46.9
Transmission risk	***		*
High (>5/1000 or >0.5%)	23.6	51.5	33.5
Low (≤5/1000 or ≤0.5%)	34.6	47.0	38.6
Education	*		
None	19.0	53.7	39.0
Primary	29.1	43.7	35.8
≥ Secondary	32.7	51.1	36.6
Wealth quintile			***
Lowest	36.6	48.8	45.3
Second	31.5	53.5	40.6
Middle	31.1	48.8	37.2
Fourth	26.5	38.7	28.6
Highest	31.7	42.9	31.9

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

Table A.3.6.

Perceived Self-efficacy for Malaria Testing and Treatment

	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
AGREE: Can find the money to take a member of your household to the health facility at the first sign of malaria***	94.0	86.9	91.6
AGREE: Would go to health facility/health provider when you have a fever without asking anyone else for permission to do so***	91.4	84.4	89.0
AGREE: Would go to health facility the same day or next day you develop a fever**	92.3	86.8	90.4
AGREE: Would request blood test at the health facility when you think you might have malaria**	93.5	90.2	92.4
AGREE: Would make sure household member takes full dose of medicine prescribed for malaria**	94.6	91.9	93.7
AGREE: Can find the money to pay for the malaria medication the health provider recommends	90.7	90.4	90.6
Total with perceived self-efficacy**	**94.7**	**90.7**	**93.3**
Sex			
Female	94.4	90.9	93.2
Male	94.9	90.6	93.5
Age			
15-24	94.1	87.8	92.1
25-34	94.5	89.9	93.0
35-44	94.6	91.6	93.6
≥45	95.7	92.8	94.6
Residence		*	***
Urban	95.5	100.0	95.8
Rural	92.8	89.9	91.1
Transmission risk	**		**
High (>5/1000 or >0.5%)	97.1	92.9	95.6
Low (≤5/1000 or ≤0.5%)	93.3	89.3	92.0
Education			*
None	95.0	91.2	92.8
Primary	93.2	87.8	90.7
≥ Secondary	95.1	93.5	94.8
Wealth quintile			
Lowest	96.0	89.1	91.1
Second	92.2	91.0	91.7
Middle	94.3	92.6	93.7
Fourth	95.1	91.9	94.6
Highest	95.6	100.0	95.7

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

Table A.3.7.

Gender Norms Related to Malaria Treatment

	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
DISAGREE: When there is not enough money, it is more important that male children with fever get medicine rather than female children.*	83.9	87.8	85.2
DISAGREE: When there is not enough money, it is more important that female children with fever get medicine rather than male children.*	80.8	82.3	81.3
Total who perceived equitable gender norms related to malaria treatment	**79.4**	**81.6**	**80.1**
Sex	*		
Female	82.4	80.1	81.6
Male	76.4	83.2	78.6
Age			
15-24	74.1	81.3	76.4
25-34	82.1	82.7	82.3
35-44	80.8	81.8	81.2
≥45	78.3	80.4	79.1
Residence			
Urban	79.9	84.8	80.2
Rural	78.2	81.3	80.0
Transmission risk		*	*
High (>5/1000 or >0.5%)	81.4	85.9	83.0
Low (≤5/1000 or ≤0.5%)	78.2	78.9	78.4
Education		**	*
None	78.0	85.3	82.2
Primary	76.2	75.1	75.7
≥ Secondary	80.6	86.2	81.8
Wealth quintile			
Lowest	87.1	79.8	81.9
Second	75.7	83.3	78.9
Middle	78.1	84.3	80.2
Fourth	81.2	79.0	80.8
Highest	78.6	85.7	78.7

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

Table A.3.8.

Perceived Community Norms Regarding Malaria Care-seeking and Treatment

	Most people in community go to health provider on same day or day after fever (%)	Most people in community with fever go to health facility to get tested for malaria (%)	Most people in community take their children to someone other than health provider for fever before taking them to a health facility (%)
Zone	***	***	**
Unguja	47.7	49.2	36.8
Pemba	59.8	68.9	29.4
Sex			
Female	52.9	56.6	35.0
Male	50.6	54.9	33.6
Age		*	
15-24	50.1	51.9	35.3
25-34	49.5	53.2	32.9
35-44	54.6	61.2	36.2
≥45	52.8	56.2	33.2
Residence	**	***	
Urban	48.5	49.6	37.6
Rural	54.7	61.4	31.4
Transmission risk	*	*	***
High (>5/1000 or >0.5%)	48.6	52.6	28.2
Low (≤5/1000 or ≤0.5%)	53.6	57.6	37.9
Education	**	**	
None	58.9	63.1	33.5
Primary	54.2	59.1	37.4
≥ Secondary	48.9	52.4	33.0
Wealth quintile	**	***	
Lowest	55.3	63.3	32.1
Second	57.1	63.1	38.9
Middle	55.0	60.2	32.7
Fourth	47.6	47.8	33.8
Highest	43.7	44.2	34.2
Total	51.7	55.8	34.3

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

Table A.3.9a

Perceptions of Health Facilities Regarding Malaria Care-seeking and Treatment

	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
AGREE: Health facilities always have the medication to treat malaria.**	70.2	62.5	67.7
AGREE: Health facilities in this community always have the blood test kit to tell if a person has malaria.***	73.2	62.4	69.6
Total with favorable perceptions of health facilities regarding malaria care-seeking and treatment	**66.4**	**63.4**	**65.4**
Sex	**		*
Female	70.1	64.2	68.1
Male	62.8	62.6	62.7
Age			
15-24	65.2	65.4	65.3
25-34	64.9	58.9	63.1
35-44	66.4	68.8	67.2
≥45	69.8	61.4	66.5
Residence			
Urban	64.9	63.0	64.8
Rural	69.4	63.4	65.9
Transmission risk	*	***	***
High (>5/1000 or >0.5%)	70.4	75.8	72.3
Low (≤5/1000 or ≤0.5%)	64.2	55.5	61.4
Education	**		**
None	65.0	64.7	64.8
Primary	58.1	61.1	59.5
≥ Secondary	69.3	65.0	68.4
Wealth quintile			
Lowest	67.3	62.1	63.6
Second	64.6	66.0	65.1
Middle	68.9	63.6	67.0
Fourth	68.3	59.7	66.8
Highest	63.9	85.7	64.4

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

Table A.3.9b.

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

	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
AGREE: Health providers in health facilities in this community treat their patients with respect.***	83.4	90.2	85.7
AGREE: Health providers at the health facilities in this community know how to treat malaria in children.***	69.5	80.1	73.0
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.***	67.4	85.6	73.5
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.***	68.5	86.2	74.4
Total with favorable perceptions of health facility workers regarding care-seeking/ treatment* **	**85.3**	**92.6**	**87.7**
Sex	*		
Female	87.5	92.6	89.2
Male	83.2	92.7	86.3
Age			
15-24	84.3	89.7	86.0
25-34	86.8	91.7	88.3
35-44	84.3	94.8	87.8
≥45	85.1	93.5	88.4
Residence			*
Urban	85.9	89.1	86.1
Rural	84.0	92.9	89.2
Transmission risk	*	*	**
High (>5/1000 or >0.5%)	88.4	95.6	91.0
Low (≤5/1000 or ≤0.5%)	83.6	90.7	85.9
Education	**		*
None	73.0	89.0	82.2
Primary	84.1	94.3	88.9
≥ Secondary	87.2	93.1	88.5
Wealth quintile	*		*
Lowest	83.2	94.8	91.4
Second	79.1	91.7	84.3
Middle	90.3	90.9	90.5
Fourth	86.4	88.7	86.8
Highest	85.3	100.0	85.6

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

Table A.3.9c.

Perceptions of Community Health Workers Regarding Malaria Care-seeking and Treatment

	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
AGREE: Health providers who come to your community, including community health volunteers and malaria surveillance officers treat their patients with respect.***	72.2	81.8	75.4
AGREE: Health providers who come to your community always have the medication to treat malaria.*	47.9	41.6	45.8
AGREE: Health providers who come to your community always have the blood test kit to tell if a person has malaria.**	50.0	41.2	47.1
AGREE: Health providers who come to your community know how to treat malaria in children.*	53.5	60.3	55.8
DISAGREE: Health providers who come to your community make parents pay for the medication to treat malaria in children less than five years old.***	65.8	79.4	70.3
DISAGREE: Health providers who come to your community make parents of children less than five years old pay for the blood test to see if the child has malaria.***	66.4	83.2	72.0
Total with favorable perceptions of community health providers	**74.7**	**75.9**	**75.1**
Sex	**		*
Female	78.8	74.7	77.4
Male	70.7	77.3	72.9
Age			
15-24	74.5	78.3	74.7
25-34	75.3	75.7	75.5
35-44	**	***	***
≥45	80.5	85.0	82.1
Residence	71.5	70.1	71.1
Urban			*
Rural	70.8	69.2	70.3
Transmission risk	73.6	72.0	73.1
High (>5/1000 or >0.5%)	77.0	81.8	78.6
Low (≤5/1000 or ≤0.5%)	77.4	79.1	78.1
Education			
None	75.0	74.3	74.6
Primary	77.7	75.5	76.7
≥ Secondary	73.7	77.4	74.5
Wealth quintile			
Lowest	76.2	77.4	77.1
Second	73.8	77.1	75.1

	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
Middle	76.3	70.2	74.2
Fourth	75.3	75.8	75.4
Highest	73.3	100.0	73.8

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

Table A.3.10.

Decision-making for malaria care and treatment

	Will Go to Health Facility for Malaria Treatment			Will Purchase Malaria Medicine if Sick with Fever		
	Unguja (%) (n=833)	Pemba (%) (n=496)	Total (%) (N=1329)	Unguja (%) (n=833)	Pemba (%) (n=496)	Total (%) (N=1329)
Sex	***	**	***	***	***	***
Female	72.1	76.9	73.9	69.7	75.3	71.7
Male	88.1	88.0	88.1	89.2	88.8	89.0
Age	*	*	***	*	**	***
15-24	69.6	68.6	69.2	64.3	64.7	64.5
25-34	76.6	80.1	77.9	77.0	80.8	78.3
35-44	80.8	82.8	81.5	80.1	81.5	80.6
≥45	84.4	88.8	86.2	82.9	89.5	85.6
Residence				*		
Urban	81.5	86.1	81.8	81.3	83.3	81.5
Rural	75.9	82.0	79.6	73.8	81.7	78.7
Transmission risk	*		**			*
High (>5/1000 or >0.5%)	83.8	85.9	84.6	82.1	83.8	82.8
Low (≤5/1000 or ≤0.5%)	77.3	80.0	78.3	76.9	80.7	78.3
Education						
None	73.2	80.5	77.6	73.2	82.9	79.0
Primary	76.2	81.9	79.0	77.7	80.9	79.3
≥Secondary	81.8	84.0	82.3	80.0	82.2	80.5
Wealth quintile	*					
Lowest	78.1	80.7	80.0	72.6	82.5	80.0
Second	72.7	82.3	77.0	74.0	80.6	77.0
Middle	75.9	83.5	78.7	75.9	79.6	77.3
Fourth	84.8	88.2	85.5	82.3	88.2	83.5
Highest	82.8	66.7	82.3	82.8	66.7	82.3

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

Results are presented by sociodemographic characteristic and study zone and are disaggregated by the type of decision being made. Total (n=1329) for this table only includes respondents who are married or living as if married.

Table A.3.11a

Care-seeking and Testing for Self for Fever in the Past Two Weeks

	Percentage with fever in 2 weeks preceding the survey (%) (N=1745)	Percentage for whom advice or treatment was sought^ (%) (n=164)	Percentage for whom advice or treatment was sought the same or next day^ (n=115) (%)	Percentage for whom advice or treatment was sought from a health facility or community health provider first^ (%) (n=115)	Percentage who sought prompt (same day or next) and appropriate (health facility or community health provider) care^ (%) (n=115)	Percentage who had received a malaria test (%) (n=115)
Zone	***					
Unguja	7.6	68.5	80.3	95.1	78.7	52.5
Pemba	12.9	72.0	68.5	88.9	63.0	53.7
Sex		*				
Female	9.6	78.6	74.2	89.4	69.7	53.0
Male	9.1	61.2	75.5	95.9	73.5	38.8
Age	*					
15-24	10.8	81.1	73.3	96.7	70.0	46.7
25-34	6.8	73.0	77.8	88.9	74.1	63.0
35-44	9.4	56.8	72.0	88.0	68.0	48.0
≥45	11.9	71.7	75.8	93.9	72.7	54.5
Residence	***		*		*	
Urban	6.2	65.4	88.2	94.1	85.3	50.0
Rural	12.3	72.3	69.1	91.4	65.4	54.3
Transmission risk						
High (>5/1000 or >0.5%)	8.6	63.6	77.1	91.4	73.3	65.7
Low (≤5/1000 or ≤0.5%)	9.9	73.4	73.7	92.5	70.6	47.5
Education	**					
None	11.4	81.5	72.7	81.8	63.6	59.1
Primary	12.6	64.5	75.0	95.0	75.0	52.5
Secondary or higher	7.4	70.7	75.5	94.3	71.7	50.9
Wealth quintile	**				*	*
Lowest	12.6	70.4	71.0	87.1	64.5	41.9
Second	13.4	70.2	78.8	97.0	78.8	69.7
Middle	7.4	73.1	57.9	89.5	52.6	31.6
Fourth	7.7	70.4	73.7	89.5	68.4	52.6

Highest	5.7	65.0	100.0	100.0	100.0	69.2
Total	9.4	70.1	74.8	92.2	71.3	53.0

Notes. ^Includes advice or treatment from the following sources: public medical sector, private medical sector, community health worker. Excludes advice or treatment from a traditional practitioner, shop, market, and itinerant drug seller.

Table A.3.11b

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

	Percentage intending to seek prompt care and treatment for child under five with fever (%)	Percentage intending to seek advice or treatment first from a health facility or community health provider^ (%)
Zone	***	
Unguja	96.9	99.8
Pemba	84.8	99.3
Sex		
Female	92.7	99.8
Male	91.9	99.4
Age		
15-24	89.7	100.0
25-34	92.6	99.4
35-44	93.7	99.6
≥45	91.1	100.0
Residence	***	
Urban	97.2	100.0
Rural	88.7	99.4
Transmission risk	**	
High (>5/1000 or >0.5%)	89.1	100.0
Low (≤5/1000 or ≤0.5%)	94.2	99.4
Education	***	
None	82.7	100.0
Primary	92.4	99.2
Secondary or higher	94.6	99.8
Wealth quintile	***	
Lowest	82.1	99.0
Second	93.8	100.0
Middle	95.2	99.4
Fourth	96.2	100.0
Highest	97.8	100.0
Total	92.4	99.6

Notes: n=826 caregivers of children under five. ^Includes advice or treatment from the following sources: public medical sector, private medical sector, community health worker. Excludes advice or treatment from a traditional practitioner, shop, market, or independent drug seller.

A.4 Insecticide-Treated Net Use

This subsection provides all data tables related to mosquito net/ITN use, including data related to respondent knowledge; attitudes toward ITNs and ITN care; perceived response efficacy and perceived self-efficacy; perceived community norms and gender norms; household possession, access, and use of ITNs; ITN characteristics; ITN care and repurposing behavior; and consistent ITN use. Where appropriate, results are disaggregated by zone. Tables may be also included or referenced in the main body of the report.

Table A.4.1.

Summary of Ideational Variables Related to ITN Use (N=1745 unless otherwise noted)

	Knowledge of using treated or untreated mosquito net (%)	Favorable attitudes towards mosquito nets (%)	Favorable attitudes towards net care (%)	Perceived response-efficacy of nets (%)	Perceived self-efficacy to use nets (%)	Perceived supportive descriptive community norms (%)	Perceived supportive injunctive community norms ^ (%)	Perceived equitable gender attitudes (%)
Zone	***	***	***	***	***	***	*	
Unguja	89.0	76.4	82.4	35.1	83.9	62.2	44.4	74.1
Pemba	94.8	90.0	93.8	57.6	90.5	86.6	38.8	78.5
Sex		*	***		*		*	
Female	90.7	83.1	89.4	43.4	88.1	70.5	39.9	76.9
Male	91.2	78.8	82.9	41.8	84.2	70.2	45.1	74.3
Age		*				*	**	**
15-24	87.5	75.8	83.4	41.7	85.1	65.6	36.1	68.5
25-34	91.6	81.5	85.7	44.1	85.9	67.8	40.0	78.4
35-44	92.5	82.0	87.4	40.0	86.7	73.4	45.6	78.2
≥45	91.2	83.5	87.9	44.3	86.6	74.5	47.9	74.7
Residence		***	**	***		***	***	
Urban	90.2	75.0	83.9	29.4	85.8	64.0	46.9	74.8
Rural	91.7	86.4	88.3	54.6	86.4	76.2	38.5	76.3
Transmission risk	*		**	**	*			**
High (>5/1000 or >0.5%)	93.1	81.0	89.1	38.3	88.8	73.0	40.6	76.8
Low (≤5/1000 or ≤0.5%)	89.7	81.0	84.5	45.1	84.6	68.8	43.6	74.9
Education	*			*		***	*	**
None	88.6	85.6	89.4	43.6	90.7	78.0	39.0	78.8
Primary	89.1	81.8	86.6	47.0	86.0	76.9	47.2	70.0
≥ Secondary	92.4	79.5	85.2	40.2	85.1	65.4	41.1	77.5
Wealth quintile		***	*	***	***	***		
Lowest	92.5	89.1	90.8	52.7	88.2	79.9	39.8	79.4
Second	91.7	81.1	87.1	42.6	84.9	77.1	46.9	74.3
Middle	91.4	81.7	85.7	44.7	88.2	68.5	40.7	75.9
Fourth	87.1	81.9	85.4	35.0	90.3	64.5	43.0	74.8
Highest	91.9	71.0	81.9	37.9	79.0	61.8	42.2	73.6
Total	90.9	81.0	86.2	42.6	86.1	70.4	42.5	75.6

Notes: *p<0.05; **p<0.01; ***p<0.001^n=1250; those who reported they do not work away from home (n=495) not included in this sample

Table A.4.2a.

Knowledge of Malaria Prevention Using Treated or Untreated Mosquito Nets

	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
Sex		*	
Female	89.7	92.6	90.7
Male	88.3	97.2	91.2
Age			
15-24	84.7	93.5	87.5
25-34	89.4	96.4	91.6
35-44	91.0	95.4	92.5
≥45	89.8	93.5	91.2
Residence			
Urban	89.8	95.6	90.2
Rural	87.2	94.8	91.7
Transmission risk		*	*
High (>5/1000 or >0.5%)	90.8	97.4	93.1
Low (≤5/1000 or ≤0.5%)	88.0	93.2	89.7
Education	**	***	*
None	89.0	88.2	88.6
Primary	83.4	95.6	89.1
≥ Secondary	90.8	98.2	92.4
Wealth quintile			
Lowest	88.1	94.3	92.5
Second	89.8	94.4	91.7
Middle	89.5	95.0	91.4
Fourth	85.0	96.8	87.1
Highest	91.8	100.0	91.9
Total	89.0	94.8	90.9

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

Table A.4.2b.

Knowledge of Malaria Prevention Using Insecticide-treated Nets

	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
Sex			
Female	40.3	23.6	34.7
Male	39.6	29.7	36.4
Age	**		**
15-24	42.4	33.6	39.6
25-34	38.8	26.2	34.9
35-44	46.6	22.1	38.5
≥45	30.6	26.8	29.1
Residence			***
Urban	40.5	26.1	39.7
Rural	38.8	26.7	31.7
Transmission risk		**	
High (>5/1000 or >0.5%)	43.4	20.3	35.2
Low (≤5/1000 or ≤0.5%)	38.1	30.7	35.7
Education		**	***
None	32.0	16.9	23.3
Primary	39.6	25.3	33.0
≥ Secondary	41.1	34.1	39.6
Wealth quintile	**		***
Lowest	35.6	25.4	28.4
Second	42.2	29.2	36.9
Middle	36.4	22.3	31.5
Fourth	33.1	32.3	32.9
Highest	48.1	42.9	48.0
Total	40.0	26.6	35.5

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

Table A.4.3a.

Favorable Attitudes Towards Mosquito Nets

	Unguja (%) (N=1163)	Pemba (%) (N=582)	Total (%) (N=1745)
AGREE: It is easier to get a good night's sleep when I sleep under a mosquito net.***	81.1	92.6	84.9
DISAGREE: It is not easy to sleep under a net because every night you have to unfold it and cover the sleeping space.***	46.3	57.6	50.0
DISAGREE: It is not easy to bring a net when I spend the night away from home.	36.8	32.1	35.2
DISAGREE: I do not like sleeping under a mosquito net when the weather is too warm.***	45.2	60.6	50.4
DISAGREE: Sleeping under a net is an inconvenience for a couple that wants to make children.*	65.1	71.3	67.2
DISAGREE: The smell of the insecticide makes it uncomfortable for me to sleep under a mosquito net.***	47.7	60.5	52.0
AGREE: Mosquito nets are generally easy to use for sleeping.***	68.7	85.0	74.1
AGREE: Insecticide-treated nets do not pose a risk to one's health.***	70.8	82.3	74.6
AGREE: Mosquito nets are very useful.***	85.2	95.2	88.5
DISAGREE: More expensive mosquito nets are more effective than cheaper or free mosquito nets.***	30.1	47.6	35.9
DISAGREE: Sleeping under a treated net causes low sex drive in men.***	40.8	47.1	42.9
DISAGREE: Treated mosquito nets attract bed bugs and other insects.***	37.1	49.7	41.3
AGREE: I would use a net to sleep under regardless of its color.***	80.5	91.4	84.1
AGREE: It is easy for me to use a net when I am traveling or working away from home.***	55.3	35.6	48.7
AGREE: It is easy for me to use a net when I am sleeping outside.***	48.9	30.1	42.6
Total with favorable attitudes towards mosquito nets* **	**76.4**	**90.0**	**81.0**
Sex	*		*
Female	79.3	90.5	83.1
Male	73.6	89.5	78.8
Age	*		*
15-24	69.1	90.6	75.8
25-34	78.4	88.7	81.5
35-44	76.4	93.5	82.0
≥45	80.8	87.6	83.5

	Unguja (%) (N=1163)	Pemba (%) (N=582)	Total (%) (N=1745)
Residence	**		***
Urban	74.1	91.3	75.0
Rural	81.4	89.9	86.4
Transmission risk			
High (>5/1000 or >0.5%)	76.4	89.4	81.0
Low (≤5/1000 or ≤0.5%)	76.5	90.4	81.0
Education			
None	80.0	89.7	85.6
Primary	76.6	87.8	81.8
≥ Secondary	75.9	92.6	79.5
Wealth quintile	*		***
Lowest	80.2	92.7	89.1
Second	77.7	86.1	81.1
Middle	76.7	90.9	81.7
Fourth	80.8	87.1	81.9
Highest	70.7	85.7	71.0

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

Table A.4.3b.

Favorable Attitudes Towards Net Care

	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
AGREE: There are actions I can take to help my mosquito net last long.***	72.7	81.3	75.6
AGREE: I can protect my family against malaria by taking care of my mosquito net.***	77.5	91.2	82.1
AGREE: Other people in this community take care of their mosquito nets.***	74.9	77.7	75.8
AGREE: I am confident I can fold or tie up the nets in my home every day after using them.***	78.9	90.2	82.7
AGREE: It is worth taking time to care for my mosquito net.***	68.2	83.2	73.2
AGREE: I am confident that I can prevent children from playing with the net.***	75.3	91.1	80.6
AGREE: An old net can still protect against malaria if it is well cared for.**	74.5	69.6	72.9
Total with favorable attitudes towards net care (characteristic)* **	**82.4**	**93.8**	**86.2**
Sex	***		***
Female	86.8	94.6	89.4
Male	78.1	93.0	82.9
Age			
15-24	80.1	90.6	83.4
25-34	82.8	92.3	85.7
35-44	83.4	95.4	87.4
≥45	82.5	96.1	87.9
Residence			**
Urban	83.2	95.6	83.9
Rural	80.6	93.7	88.3
Transmission risk	*		**
High (>5/1000 or >0.5%)	85.5	95.6	89.1
Low (≤5/1000 or ≤0.5%)	80.6	92.7	84.5
Education		*	
None	89.0	89.7	89.4
Primary	80.7	93.4	86.6
≥ Secondary	82.1	96.8	85.2
Wealth quintile			*
Lowest	86.1	92.7	90.8
Second	82.0	94.4	87.1
Middle	81.1	94.2	85.7
Fourth	82.6	98.4	85.4
Highest	82.1	71.4	81.9

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

Table A.4.4.

Perceived Response Efficacy of Nets

	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
DISAGREE: Mosquito nets prevent mosquito bites only when used on a bed.***	28.5	34.0	30.4
DISAGREE: My chances of getting malaria are the same whether or not I sleep under a mosquito net.***	28.9	40.9	32.9
AGREE: Sleeping under a mosquito net every night is the best way to avoid getting malaria.***	83.7	90.7	86.1
AGREE: Using a mosquito net while sleeping outside would reduce the chances of getting malaria.*	87.8	91.8	89.1
Total with perceived response efficacy of nets* **	**35.1**	**57.6**	**42.6**
Sex			
Female	36.3	57.1	43.4
Male	33.8	58.0	41.8
Age			
15-24	36.4	53.3	41.7
25-34	38.8	55.9	44.1
35-44	30.7	59.1	40.0
≥45	33.6	60.8	44.3
Residence	***		***
Urban	27.9	54.3	29.4
Rural	50.0	57.8	54.6
Transmission risk	**		**
High (>5/1000 or >0.5%)	30.1	53.3	38.3
Low (≤5/1000 or ≤0.5%)	37.8	60.3	45.1
Education	*		*
None	24.0	58.1	43.6
Primary	35.1	60.7	47.0
≥ Secondary	36.5	53.9	40.2
Wealth quintile			***
Lowest	39.6	58.1	52.7
Second	31.5	58.3	42.6
Middle	36.8	59.5	44.7
Fourth	31.0	53.2	35.0
Highest	38.1	28.6	37.9

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

Table A.4.5.

Perceived Self-efficacy for Net Use

	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
Can sleep under a mosquito net for the entire night when there are lots of mosquitoes.***	87.0	97.4	90.5
Can sleep under a mosquito net for the entire night when there are few mosquitoes.***	84.2	95.4	87.9
Can leep under a mosquito net every night of the year.***	80.2	89.7	83.4
Can get all of their children to sleep under a mosquito net every night of the year.**	85.5	89.5	86.8
Can sleep under a mosquito net most nights that they are sleeping away from home.***	76.7	60.5	71.3
Can sleep under a mosquito net most nights that they are working away from home.***	68.5	43.0	60.0
Can use a mosquito net most of the time when they are sleeping outdoors.***	65.1	35.2	55.1
Total with perceived self-efficacy to use nets	**83.9**	**90.5**	**86.1**
Sex	**		*
Female	87.0	90.2	88.1
Male	80.9	90.9	84.2
Age			
15-24	82.2	91.6	85.1
25-34	83.6	91.1	85.9
35-44	85.6	89.0	86.7
≥45	83.8	90.8	86.6
Residence	*		
Urban	85.5	90.5	85.8
Rural	80.6	91.3	86.4
Transmission risk			*
High (>5/1000 or >0.5%)	86.7	92.5	88.8
Low (≤5/1000 or ≤0.5%)	82.3	89.3	84.6
Education			
None	88.0	92.6	90.7
Primary	84.5	87.8	86.0
≥ Secondary	83.2	92.2	85.1
Wealth quintile	**		***
Lowest	88.1	88.3	88.2
Second	80.1	91.7	84.9
Middle	86.4	91.7	88.2
Fourth	89.2	95.2	90.3
Highest	78.9	85.7	79.0

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

Table A.4.6a.

Perceived Community Norms Regarding Nets

	At Least Half of Community Members Who Have Nets Sleep Under Them Every Night			At Least Half of Coworkers With Nets Sleep Under a Net Every Night They Work Away From Home^			At Least Half of Coworkers Would Approve Respondent's Use of Nets Every Night They Work Away From Home^		
	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)	Unguja (%) (n=936)^	Pemba (%) (n=314)^	Total (%) (n=1250)^	Unguja (%) (n=936)^	Pemba (%) (n=314)^	Total (%) (n=1250)^
Sex							**		*
Female	61.7	87.5	70.5	55.3	79.1	61.4	40.5	38.8	39.9
Male	62.8	85.7	70.2	57.4	75.2	61.7	48.1	38.8	45.1
Age	*		*				**		**
15-24	55.9	86.9	65.6	50.3	80.4	57.1	36.0	36.4	36.1
25-34	60.7	83.9	67.8	55.4	69.9	58.8	42.7	33.9	40.0
35-44	67.1	86.4	73.4	58.9	80.7	64.2	47.9	40.9	45.6
45 and above	64.7	89.5	74.5	60.0	79.3	66.0	50.6	43.8	47.9
Residence			***			**	***		***
Urban	62.6	87.0	64.0	56.9	75.0	57.4	48.0	28.3	46.9
Rural	61.4	86.6	76.2	55.2	77.2	66.7	36.7	39.7	38.5
Transmission risk								*	
High (>5/1000 or >0.5%)	64.1	89.4	73.0	52.5	83.7	59.4	44.6	33.5	40.6
Low (≤5/1000 or ≤0.5%)	61.2	84.8	68.8	58.7	74.1	62.8	44.2	42.2	43.6
Education	**		***			**	*		*
None	71.0	83.1	78.0	60.5	73.8	66.2	48.0	32.3	39.0
Primary	67.9	87.3	76.9	62.7	77.2	68.3	50.9	42.8	47.2
≥ Secondary	59.3	88.0	65.4	53.8	78.6	57.6	41.7	38.7	41.1
Wealth quintile		*	***	*	**	***			
Lowest	69.3	84.3	79.9	62.7	71.7	68.5	43.6	38.3	39.8
Second	67.5	91.0	77.1	64.8	89.2	72.4	50.0	42.4	46.9
Middle	61.0	82.6	68.5	56.8	65.6	58.9	46.0	30.6	40.7
Fourth	57.8	95.2	64.5	50.2	91.9	55.7	41.5	50.0	43.0
Highest	61.6	71.4	61.8	54.9	75.0	55.2	42.5	28.6	42.2
Total	62.2	86.6	70.4	56.4	77.1	61.6	44.4	38.8	42.5

Notes: *p<0.05; **p<0.01; ***p<0.001; ^Those who reported they do not work away from home (n=495) were not included in this sample.

Table A.4.6b.

Perceived Gender Norms Regarding Nets

	I disagree that when there are not enough nets…					
	… it is more important that female children sleep under available nets rather than male children.			… it is more important that male children sleep under available nets rather than female children.		
	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
Sex						
Female	77.4	77.4	77.4	84.0	86.5	84.8
Male	72.6	79.0	74.7	79.4	87.4	82.0
Age	**		**			
15-24	66.9	76.6	70.0	78.4	86.0	80.8
25-34	78.4	80.9	79.2	82.3	88.1	84.1
35-44	77.6	77.3	77.5	84.3	84.4	84.4
≥45	74.0	77.1	75.3	80.4	88.9	83.8
Residence						
Urban	75.3	76.1	75.4	81.6	87.0	81.9
Rural	74.2	78.4	76.6	81.9	86.9	84.9
Transmission risk		*	**			
High (>5/1000 or >0.5%)	76.4	81.1	78.0	81.7	87.7	83.8
Low (≤5/1000 or ≤0.5%)	74.2	76.3	74.9	81.7	86.5	83.2
Education		*	*		**	**
None	71.0	83.1	78.0	80.0	93.4	87.7
Primary	70.2	70.7	70.4	76.2	80.8	78.3
≥ Secondary	77.1	82.9	78.3	83.7	89.4	84.9
Wealth quintile				*		
Lowest	80.2	79.4	79.7	87.1	85.1	85.7
Second	72.3	75.7	73.7	80.6	86.8	83.1
Middle	75.0	82.6	77.6	80.3	90.9	83.9
Fourth	77.3	71.0	76.2	81.9	85.5	82.5
Highest	73.0	71.4	73.0	81.5	100.0	81.9
Total	75.0	78.2	76.0	81.7	86.9	83.4

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

Table A.4.7.

Household Possession of Treated or Untreated 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	62.8	59.6	26.1
Rural	73.8	70.0	37.7
Zone	***	***	**
Unguja	64.8	61.5	29.6
Pemba	78.0	73.8	38.7
Wealth quintile	***	**	**
Lowest	77.7	75.2	31.2
Second	76.6	72.1	40.8
Middle	72.8	66.3	34.6
Fourth	64.7	61.7	33.8
Highest	52.2	50.7	21.4
Total	68.8	65.2	32.4

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

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

Table A.4.8.

*Access to a Treated or Untreated Mosquito Net^*

	Unguja (%) (n=3693)	Pemba (%) (n=1702)	Total (%) (N=5395)
Residence	***		***
Urban	21.3	33.1	21.9
Rural	31.1	32.0	31.6
Wealth quintile	***	***	***
Lowest	24.4	23.7	23.9
Second	33.0	36.5	34.4
Middle	27.4	43.1	31.9
Fourth	26.0	34.4	27.3
Highest	16.0	100.0 (12)	17.0
Total	24.5	32.1	26.9

Note. ^Percentage of the de facto household population who could sleep under a net if each net in the household were used by up to two people. This percentage is interpreted as an indicator of access.

Table A.4.9.

Table not available

Table A.4.10.

Table not available

Table A.4.11.

Insecticide-treated Nets Used the Previous Night

	Net Used the Previous Night			Nets Used Every Night of the Previous Week		
	Unguja (%) (n=643)	Pemba (%) (n=646)	Total (%) (n=1289)	Unguja (%) (n=643)	Pemba (%) (n=646)	Total (%) (n=1289)
Residence						
Urban	87.7	86.3	87.2	88.6	90.2	89.1
Rural	84.5	84.9	84.7	84.7	83.5	84.0
Wealth quintile						
Lowest	81.0	79.6	80.1	84.2	77.2	79.8
Second	86.4	87.0	86.7	85.6	84.9	85.2
Middle	86.5	86.2	86.4	87.1	88.3	87.5
Fourth	84.0	88.1	86.8	88.0	89.8	89.2
Highest	87.0	85.7	86.7	85.4	82.9	84.7
Total	85.5	85.1	85.3	86.0	84.5	85.3

Table A.4.12.

Insecticide-treated Net^ Characteristics

	Unguja (%) (n=643)	Pemba (%) (n=646)	Total (%) (n=1289)
% of nets that are insecticide-treated	95.5	93.2	94.3
% of insecticide-treated nets obtained for free	94.2	94.4	94.3
Source of net			
Mass distribution campaign	4.8	4.0	4.4
Antenatal consultation (ANC)	29.7	28.8	29.2
Immunization	1.7	1.5	1.6
Shehia	54.4	56.0	55.2
Other	9.3	9.6	9.5
Age of net			
<12 months	49.9	47.7	48.8
12-24 months	18.8	15.0	16.9
25-36 months	1.6	0.1	0.8
>36 months	23.8	29.1	26.4
Don't Know	5.9	8.1	7.0
Color of net			
White	76.7	76.5	76.6
Blue	12.7	14.2	13.5
Green	1.6	0.5	1.0
Other color	9.0	8.8	8.9

Note. ^An insecticide-treated net is a factory-treated net that does not require any further treatment.

Table A.4.13a.

Net Care and Washing

	Unguja (%) (n=643)	Pemba (%) (n=646)	Total (%) (n=1289)
% of nets found hanging over the bed, folded/tied	68	70	69
% of nets ever washed	83.0	78.3	80.7
	(n=534)	(n=506)	(n=1040)
Soap	7.7	7.5	7.6
Powder soap/liquid soap	90.3	89.9	90.1
Both bar soap and detergent	1.7	1.6	1.6
Nothing	0.4	1.0	0.7
Where net was dried			
Out in the Shade	27.0	23.7	25.4
Out in the sun	70.2	72.1	71.1
Inside	2.4	3.2	2.8
Other	0.4	1.0	0.7

Table A.4.13b.

Net Care and Repurposing Reported by Respondents

	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
% of respondents engaging in any net care***	70.8	84.2	75.3
Roll up or tie when not in use	29.8	33.8	31.2
Handle nets with care***	17.5	41.7	25.6
Keep away from children***	11.2	40.7	21.0
% of respondents who repurpose nets that were no longer useful for sleeping under***	13.8	41.9	23.1
Most common repurpose of nets	(n=160)	(n=244)	(n=404)
Protection for seedlings/crops***	54.4	86.5	73.8
Fishing**	6.9	18.4	13.9
Drying Fish***	3.1	16.4	11.1
Fencing	12.5	8.2	9.9
Rope/tying things	11.2	8.6	9.6

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

Table A.4.14.

Use of an Insecticide-treated Net Every Night of the Week Preceding the Survey by Respondents

	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
Sex			
Female	35.0	42.6	37.5
Male	30.1	49.3	36.4
Age			
15-24	30.5	45.8	35.3
25-34	32.2	42.9	35.5
35-44	30.3	47.4	36.0
≥45	37.9	47.7	41.7
Residence	***		***
Urban	26.0	39.1	26.8
Rural	46.0	46.5	46.3
Transmission risk		**	
High	28.9	54.2	37.8
Low	34.5	40.6	36.4
Education	**	*	*
None	41.0	38.2	39.4
Primary	38.1	44.5	41.1
≥ Secondary	29.6	52.1	34.4
Wealth quintile	***		***
Lowest	53.5	42.7	45.8
Second	41.7	45.1	43.1
Middle	34.6	47.9	39.3
Fourth	29.3	56.4	34.1
Highest	22.0	42.9	22.4
Total	32.5	45.9	37.0

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

A.5 Indoor Residual Spraying

This subsection of the Annex provides all data tables related to indoor residual spraying. The section includes 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. Tables may be also included or referenced in the main body of the report.

Table A.5.1.

Summary of Ideational Variables Related to Indoor Residual Spraying (IRS)

	Aware of IRS program (%) (N=1745)	Favorable attitude towards IRS^ (%) (n=1016)	Perceived IRS as effective^ (%) (n=1016)	Perceived self-efficacy of IRS^ (%) (n=1016)
Zone		**		
Unguja	58.7	72.8	90.2	85.9
Pemba	57.2	80.5	92.5	87.4
Sex				
Female	58.0	76.2	90.5	84.9
Male	58.5	74.4	91.4	87.9
Age	*			
15-24	53.9	70.8	88.6	88.6
25-34	54.7	75.6	92.3	85.3
35-44	61.7	76.0	90.6	84.4
45 and above	62.9	77.5	91.4	88.5
Residence		**		
Urban	59.1	70.7	91.5	88.2
Rural	57.5	79.6	90.5	84.7
Transmission risk	***		*	
High	64.2	76.0	93.4	88.8
Low	54.8	74.8	89.2	84.8
Level of education				
None	54.7	78.3	87.6	93.0
Primary	58.1	76.0	89.9	84.3
Secondary or higher	59.1	74.3	92.2	86.0
Wealth quintile				
Lowest	59.3	72.9	92.7	85.0
Second	55.7	79.5	87.7	86.1
Middle	55.9	72.8	89.2	89.2
Fourth	59.3	77.8	92.7	89.9
Highest	60.9	73.6	92.0	82.1
Total	58.2	75.3	90.9	86.4

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

^Only those respondents who were aware of the IRS program were asked these questions (n=1016)

Table A.5.2.

Awareness of Indoor Residual Spraying

	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
Total who knew of indoor residual spraying program	58.7	57.2	58.2
Sex			
Female	58.1	57.8	58.0
Male	59.3	56.6	58.5
Age	*	*	*
15-24	51.7	58.9	53.9
25-34	57.5	48.2	54.7
35-44	62.9	59.1	61.7
45 and above	62.1	64.0	62.9
Residence			
Urban	59.8	45.6	59.1
Rural	56.4	58.2	57.5
Transmission risk	**	*	***
High	65.1	62.6	64.2
Low	55.2	53.8	54.8
Level of education		*	
None	65.0	47.1	54.7
Primary	58.5	57.6	58.1
Secondary or higher	58.0	63.1	59.1
Wealth quintile			
Lowest	65.3	56.8	59.3
Second	54.8	56.9	55.7
Middle	58.3	51.2	55.9
Fourth	56.4	72.6	59.3
Highest	61.3	42.9	60.9

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

Table A.5.3.

Attitudes Towards Indoor Residual Spraying

	Unguja (%) (n=683)^	Pemba (%) (n=333)^	Total (%) (n=1016)^
DISAGREE: Many people develop skin problems (rashes, itching) after the walls inside their houses are sprayed with insecticide.***	35.1	51.6	40.5
AGREE: After spraying interior walls of a household with insecticide, a person can touch the walls safely once the spray has dried.**	67.8	76.6	70.7
DISAGREE: People have problems with bugs/bed bugs after walls are sprayed.***	48.2	59.2	51.8
AGREE: The benefits of having my house sprayed is worth the effort needed to move my belongings out so it can be sprayed.	89.9	90.4	90.1
DISAGREE: It bothers me to leave my possessions outside of my house while my walls are being sprayed.***	59.1	50.4	56.3
AGREE: Spraying the inside walls of a house to kill mosquitoes does not cause any health problems for the people living in the house.	80.5	84.1	81.7
DISAGREE: There is no need to sleep under a mosquito net once your house has been sprayed.***	29.6	53.4	37.4
Total with favorable attitudes towards IRS**	**72.8**	**80.5**	**75.3**
Sex			
Female	74.2	80.1	76.2
Male	71.3	80.9	74.4
Age			
15-24	68.0	76.2	70.8
25-34	72.5	83.9	75.6
35-44	73.6	81.3	76.0
45 and above	76.0	79.6	77.5
Residence	*		**
Urban	70.3	80.9	70.7
Rural	78.3	80.4	79.6
Transmission risk			
High	72.2	83.1	76.0
Low	73.1	78.5	74.8
Level of education			
None	78.5	78.1	78.3
Primary	71.6	81.1	76.0
Secondary or higher	72.3	81.0	74.3
Wealth quintile			
Lowest	65.1	76.6	72.9
Second	77.0	82.9	79.5
Middle	70.7	77.4	72.8
Fourth	74.1	91.1	77.8
Highest	73.2	100.0	73.6
Total	72.8	80.5	75.3

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

^Only those respondents who were aware of the IRS program were asked these questions (n=1016).

Table A.5.4.

Perceived Response Efficacy of Indoor Residual Spraying

	Unguja (%) (n=683)^	Pemba (%) (n=333)^	Total (%) (n=1016)^
AGREE: Spraying the inside walls of a house is an effective way to prevent malaria.	92.8	96.1	93.9
AGREE: People who live in houses that have been sprayed are less likely to get malaria.	92.2	91.0	91.8
Total who perceived indoor residual spraying efficacy	**90.2**	**92.5**	**90.9**
Sex		*	
Female	91.0	89.5	90.5
Male	89.4	95.7	91.4
Age			
15-24	89.3	87.3	88.6
25-34	91.7	93.8	92.3
35-44	88.3	95.6	90.6
45 and above	91.1	91.8	91.4
Residence			
Urban	91.1	100.0	91.5
Rural	88.2	92.0	90.5
Transmission risk	*		*
High	93.3	93.7	93.4
Low	88.1	91.6	89.2
Level of education			
None	89.2	85.9	87.6
Primary	86.4	93.9	89.9
Secondary or higher	91.6	94.2	92.2
Wealth quintile			
Lowest	90.9	93.6	92.7
Second	86.7	89.0	87.7
Middle	88.0	91.9	89.2
Fourth	92.0	95.6	92.7
Highest	91.9	100.0	92.0
Total	90.2	92.5	90.9

Note. ^Only those respondents who were aware of the IRS program were asked these questions (n=1016).

Table A.5.5.

Perceived Self-efficacy Regarding Indoor Residual Spraying

	Unguja (%) (n=683)^	Pemba (%) (n=333)^	Total (%) (n=1016)^
AGREE: I can move all my furniture out of my house to prepare the house for spraying.	88.4	86.8	87.9
AGREE: I can sleep in my house on the night it is sprayed***	89.6	98.8	92.6
Total who perceived indoor residual spraying self-efficacy	**85.9**	**87.4**	**86.4**
Sex			
Female	84.7	85.4	84.9
Male	87.1	89.5	87.9
Age			
15-24	87.7	90.5	88.6
25-34	84.4	87.6	85.3
35-44	84.3	84.6	84.4
45 and above	89.0	87.8	88.5
Residence	*		
Urban	87.9	95.2	88.2
Rural	81.6	86.9	84.7
Transmission risk		**	
High	85.9	94.4	88.8
Low	86.0	82.2	84.8
Level of education			
None	93.8	92.2	93.0
Primary	81.9	87.1	84.3
Secondary or higher	86.2	85.4	86.0
Wealth quintile			
Lowest	84.8	85.1	85.0
Second	83.2	90.2	86.1
Middle	88.0	91.9	89.2
Fourth	91.4	84.4	89.9
Highest	82.3	66.7	82.1
Total	85.9	87.4	86.4

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

^Only respondents who were aware of the indoor residual spraying program were asked these questions (n=1016).

Table A.5.6.

Willingness to Accept Indoor Residual Spraying

	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
Prior knowledge of indoor residual spraying program			
Yes	58.7	57.2	58.2
No	41.3	42.8	41.8
Sex			
Female	85.2	88.8	86.4
Male	84.5	84.6	84.5
Age			
15-24	84.3	85.0	84.5
25-34	84.2	83.9	84.1
35-44	85.3	89.6	86.7
45 and above	86.0	88.2	86.9
Residence			
Urban	86.1	91.3	86.4
Rural	82.2	86.4	84.6
Transmission risk		*	**
High	87.2	91.2	88.6
Low	83.6	83.9	83.7
Level of education			
None	82.0	80.9	81.4
Primary	84.5	87.3	85.8
Secondary or higher	85.3	89.9	86.3
Wealth quintile			
Lowest	85.1	86.7	86.2
Second	82.5	86.1	84.0
Middle	84.2	85.9	84.8
Fourth	86.1	88.7	86.5
Highest	85.6	100.0	85.9
Total	84.9	86.8	85.5

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

Table A.5.7.

Indoor Residual Spraying Coverage

	Unguja (%) (n=702)	Pemba (%) (n=305)	Total (%) (N=1007)
Households reporting anyone asking to spray their dwelling in the past 12 months***	27.5	45.9	33.1
Of those who reported anyone asking to spray their dwelling in the past 12 months…	**n=193**	**n=140**	**n=333**
Households that accepted indoor residual spraying in past 12 months*	94.3	98.6	96.1
Residence		**	
Urban	94.8	83.3	94.2
Rural	93.6	99.2	97.2
Transmission risk			
High	93.1	100.0	96.9
Low	95.0	95.9	95.3
Wealth quintile			*
Lowest	100.0	100.0	100.0
Second	94.9	97.0	95.8
Third	85.3	95.6	89.5
Fourth	100.0	100.0	100.0
Highest	94.2	100.0	94.3

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

A.6 Larviciding

Where appropriate, results are disaggregated by zone. Tables may be duplicated or referenced in the main body of the report.

Table A.6.1.

Ideational Variables Linked with Acceptance of Larviciding

	Aware of Larviciding Program (%)	Favorable Attitude Toward Larviciding (%)	Perceived Larviciding as Effective (%)	Perceived Supportive Community Norms Regarding Larviciding (%)
Zone	***		***	
Unguja	39.8	92.3	22.5	58.7
Pemba	7.0	90.4	35.2	63.4
Sex				
Female	28.4	92.0	28.8	60.4
Male	29.4	91.3	24.7	60.2
Age				
15-24	27.4	91.2	25.7	56.3
25-34	28.3	90.3	30.3	59.8
35-44	28.0	91.6	24.0	61.5
45 and above	32.0	93.8	26.0	63.1
Residence	***	**	***	
Urban	42.0	93.6	19.3	59.8
Rural	16.9	89.8	33.5	60.7
Transmission risk		***		
High	29.1	95.2	26.9	62.9
Low	28.7	89.6	26.6	58.7
Education	***			
None	21.2	89.4	24.6	62.3
Primary	17.8	90.1	28.3	62.1
Secondary or higher	36.1	92.9	26.5	58.9
Wealth quintile	***		*	*
Lowest	14.0	90.3	31.8	61.3
Second	24.6	90.3	29.1	67.4
Middle	29.8	90.8	24.4	57.3
Fourth	38.7	94.3	22.3	55.6
Highest	37.4	92.5	26.1	59.8
Total	28.9	91.6	26.8	60.3

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

Table A.6.2.

Knowledge of Larviciding

	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
Know about larviciding program***	39.8	7.0	28.9
Sex			
Female	39.8	6.1	28.4
Male	39.8	8.0	29.4
Age			
15-24	37.3	5.6	27.4
25-34	38.3	5.9	28.3
35-44	38.3	7.1	28.0
45 and above	46.8	9.1	32.0
Residence	***		***
Urban	44.0	8.7	42.0
Rural	31.1	6.9	16.9
Transmission risk			
High	40.5	8.4	29.1
Low	39.4	6.2	28.7
Level of education	***		***
None	40.0	7.3	21.2
Primary	28.8	5.7	17.8
Secondary or higher	43.6	8.3	36.1
Wealth quintile			***
Lowest	29.7	7.7	14.0
Second	37.4	6.2	24.6
Middle	42.1	6.6	29.8
Fourth	45.3	8.1	38.7
Highest	38.1	0.0	37.4

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

Table A.6.3.

Attitudes Towards Larviciding

	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
AGREE: Reducing the mosquito population in our environment can help reduce malaria.***	90.1	84.2	88.1
AGREE: Reducing the abundance of mosquito larvae in our environment can help reduce malaria.***	89.5	80.9	86.6
AGREE: I would give permission to a program to apply larvicide in bodies of water near my home.***	90.7	84.5	88.6
AGREE: Treating an area to reduce the mosquito population is safe for people in the community.***	88.8	80.8	86.1
AGREE: Treating an area to reduce the mosquito population is safe for animals (except for mosquitos) in the community.***	86.5	74.6	82.5
AGREE: Neighbors in my community would support a program that aims to reduce the mosquito population in bodies of water near their home.***	86.0	80.2	84.1
AGREE: Leaders in my community would support a program that aims to reduce the mosquito population in bodies of water near their home.***	87.6	82.5	85.9
AGREE: I would be willing to pay for a program that aims to reduce the mosquito population in my community.***	74.5	82.3	77.1
Total with favorable attitudes towards larviciding	**92.3**	**90.4**	**91.6**
Sex			
Female	92.5	90.9	92.0
Male	92.0	89.9	91.3
Age			
15-24	94.5	84.1	91.2
25-34	89.7	91.7	90.3
35-44	91.7	91.6	91.6
45 and above	94.9	92.2	93.8
Residence	*		**
Urban	93.5	95.6	93.6
Rural	89.6	89.9	89.8
Transmission risk	**	*	***
High	95.9	93.8	95.2
Low	90.2	88.2	89.6
Level of education			
None	92.0	87.5	89.4
Primary	90.2	90.0	90.1
Secondary or higher	93.0	92.6	92.9
Wealth quintile			
Lowest	92.1	89.5	90.3
Second	89.3	91.7	90.3
Middle	90.3	91.7	90.8
Fourth	95.5	88.7	94.3
Highest	92.7	85.7	92.5
Total	92.3	90.4	91.6

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

Table A.6.4.

Perceived Response Efficacy of Larviciding

	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
DISAGREE: The chances of getting malaria are the same whether or not water bodies in the area are treated with larvicide.***	26.0	27.8	26.6
AGREE: Treating water bodies with larvicide as frequently as once per week throughout the year is a good way to avoid getting malaria.***	84.2	77.5	81.9
Total who perceived larviciding efficacy* **	**22.5**	**35.2**	**26.8**
Sex		*	
Female	23.0	40.2	28.8
Male	22.1	30.1	24.7
Age			
15-24	23.7	29.9	25.7
25-34	24.8	42.9	30.3
35-44	19.8	32.5	24.0
45 and above	21.3	33.3	26.0
Residence	***		***
Urban	18.7	30.4	19.3
Rural	30.6	35.6	33.5
Transmission risk			
High	20.5	38.8	26.9
Low	23.7	33.0	26.6
Level of education			
None	17.0	30.1	24.6
Primary	20.0	38.0	28.3
Secondary or higher	24.1	35.5	26.5
Wealth quintile	*		*
Lowest	30.7	32.3	31.8
Second	22.3	38.9	29.1
Middle	18.9	34.7	24.4
Fourth	18.5	40.3	22.3
Highest	26.1	28.6	26.1
Total	22.5	35.2	26.8

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

Table A.6.5.

Perceived Community Norms Regarding Larviciding (N=1745)

	Most villages around their community treat water near their homes with larvicide for mosquitoes (%)	Most neighbors would approve of community treating water near homes with larvicide (%)
Zone	***	**
Unguja	35.2	54.9
Pemba	21.3	62.7
Sex		
Female	30.2	57.5
Male	31.0	57.4
Age	**	
15-24	24.8	53.6
25-34	28.5	56.9
35-44	34.5	58.5
≥45	34.0	60.6
Residence	***	
Urban	36.5	57.0
Rural	25.2	57.9
Transmission risk		
High	30.2	60.1
Low	30.8	55.9
Education		
None	31.8	60.2
Primary	28.5	59.3
≥ Secondary	31.3	56.0
Wealth quintile	***	
Lowest	22.9	60.2
Second	38.3	62.6
Middle	30.1	55.0
Fourth	27.5	53.6
Highest	34.2	56.0
Total	30.6	57.5

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

Table A.6.6.

Larviciding Coverage

	Unguja (%) (n=702)	Pemba (%) (n=305)	Total (%) (N=1007)
Reported a larviciding program in their community in past 12 month	5.7	5.2	5.6
Residence			
Urban	6.4	0.0	6.1
Rural	4.6	5.6	5.1
Transmission risk			
Higher	6.2	8.6	7.0
Lower	5.4	3.2	4.8
Wealth quintile	*		**
Lowest	1.5	6.6	4.9
Second	6.7	6.2	6.5
Third	1.4	1.7	1.5
Fourth	5.2	3.4	5.0
Highest	10.0	0.0	9.9
Of those who reported a larviciding program in their community in past 12 months…	**n=40**	**n=16**	**n=56**
Total households that accepted larviciding in past 12 months**	95.0	62.5	85.7
Residence			
Urban	96.4	n/a	96.4
Rural	91.7	62.5	75.0
Transmission risk			
High	93.3	60.0	80.0
Low	96.0	66.7	90.3
Wealth quintile			
Lowest	100.0	66.7	70.0
Second	100.0	40.0	76.9
Third	100.0	100.0	100.0
Fourth	88.9	100.0	90.0
Highest	95.0	n/a	95.0

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

A.7 Media Consumption and Message Exposure

This subsection of the Annex provides all data tables related to media consumption and exposure to malaria messages. Where appropriate, results are disaggregated by zone. Tables may be also included or referenced in the main body of the report.

Table A.7.1.

Variables Related to Media Consumption (N=1745)

	Listens to radio at least once a week (%)	Watches TV at least once a week (%)	Owns mobile phone[1] (%)	Completed a campaign slogan (%)	Seen or heard message about malaria in past six months (%)	Identified campaign logo (%)
Zone		***		***	***	**
Unguja	58.0	51.7	84.9	66.1	43.9	26.5
Pemba	31.1	22.5	70.6	45.5	31.1	20.1
Sex	***	***	***	*		
Female	42.6	37.8	74.2	56.3	39.7	25.0
Male	55.5	46.1	86.2	62.3	39.6	23.7
Age			***	*		
15–24	45.5	44.9	71.4	52.5	37.0	20.1
25–34	49.5	43.5	82.8	62.0	38.4	23.0
35–44	49.2	38.8	80.3	61.2	40.0	25.7
≥45	51.3	41.0	84.0	59.0	43.3	28.3
Residence	***	***	***	***	***	**
Urban	57.3	57.4	87.1	68.7	45.0	27.7
Rural	41.6	27.8	73.8	50.7	34.8	21.3
Transmission risk		***	**		*	*
High	46.3	49.2	84.4	60.4	43.5	27.6
Low	50.7	37.7	77.7	58.6	37.4	22.5
Education	***	***	***	***	***	***
None	24.1	19.5	66.5	29.7	26.7	14.0
Primary	43.7	33.0	76.7	54.7	37.8	16.0
Secondary or higher	57.4	51.5	85.0	68.4	43.5	30.8
Wealth quintile	***	***	***	***	*	***
Lowest	30.4	13.7	64.2	45.8	32.9	19.5
Second	42.9	26.0	75.7	51.7	37.1	18.9
Middle	48.1	40.1	83.9	59.9	41.3	23.5
Fourth	59.0	58.7	97.7	66.5	41.8	26.4
Highest	64.9	71.3	89.4	72.4	45.1	33.6
Total	49.0	41.9	80.2	59.3	39.7	24.4

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

[1]These are individual reports, so percentages differ from data presented under household ownership.

Table A.7.2.

Radio Listenership at Least Once a Week

	All respondents			Respondents with a radio in the household		
	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)	Unguja (%) (n=810)	Pemba (%) (n=152)	Total (%) (n=962)
Sex	***	***	***	*	*	**
Female	52.2	24.0	42.6	59.3	44.0	56.9
Male	63.8	38.5	55.5	67.1	62.3	66.4
Age						
15-24	54.2	26.2	45.5	60.1	42.3	57.7
25-34	57.5	31.5	49.5	61.4	46.3	59.4
35-44	59.7	27.9	49.2	65.0	52.8	63.2
45 and above	60.4	37.2	51.3	67.7	65.3	67.1
Residence		**	***			
Urban	57.7	50.0	57.3	61.9	57.6	61.6
Rural	58.8	29.5	41.6	66.8	52.1	61.9
Transmission risk						
High	57.1	26.4	46.3	62.9	63.6	63.0
Low	58.6	34.1	50.7	63.6	49.1	61.0
Level of education	***	***	***	*		**
None	35.0	16.2	24.1	47.5	40.9	45.7
Primary	57.7	27.5	43.7	65.0	54.9	62.6
Secondary or higher	61.0	44.2	57.4	64.5	55.7	63.4
Wealth quintile	**	***	***			
Lowest	53.5	21.0	30.4	59.5	42.9	54.0
Second	51.0	31.2	42.9	63.8	47.1	59.4
Middle	53.9	37.2	48.1	61.1	50.0	58.0
Fourth	59.6	56.4	59.0	62.6	71.9	63.8
Highest	65.1	57.1	64.9	65.3	57.1	65.1
Total***	58.0	31.1	49.0	63.3	53.3	61.7

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

Table A.7.3.

Preferred Time to Listen to the Radio

	Early Morning (%)	End of Morning (%)	Afternoon (%)	Early Evening (%)	End of Evening (%)	Night (%)
Zone***						
Unguja	31.9	33.5	12.7	6.0	12.5	3.3
Pemba	61.2	7.5	3.0	15.9	12.4	0.0
Sex***						
Female	39.2	33.0	11.9	5.7	8.2	2.1
Male	38.0	23.7	9.6	10.2	15.7	2.9
Age*						
15-24	25.1	29.9	14.4	10.8	16.2	3.6
25-34	38.6	24.6	10.9	9.8	13.0	3.2
35-44	40.4	28.5	11.1	7.2	10.6	2.1
45 and above	46.7	29.2	6.6	5.2	10.8	1.4
Residence***						
Urban	32.8	32.6	13.0	7.7	11.7	2.2
Rural	45.4	21.7	7.6	8.9	13.3	3.0
Transmission risk*						
High	43.8	28.7	9.8	7.6	7.3	2.8
Low	35.6	27.1	11.0	8.6	15.3	2.4
Education						
No education	56.2	14.1	6.2	9.4	12.5	1.6
Primary	33.6	28.8	13.3	9.3	13.3	1.8
Secondary or higher	38.4	28.7	10.0	7.7	12.1	3.0
Wealth quintile**						
Lowest	42.0	13.4	14.3	13.4	15.2	1.8
Second	45.0	25.6	8.7	8.7	11.9	0.0
Middle	41.1	24.4	8.9	7.8	12.2	5.6
Fourth	37.4	32.7	9.0	8.1	10.9	1.9
Highest	31.4	33.9	12.7	5.9	13.1	3.0
Total	38.5	27.7	10.6	8.2	12.5	2.6

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

^n=899 and includes only those who reported listening to the radio at least once a week and not those who reported “Don’t Know” (n=1).

Table A.7.4.

Television Viewership at Least Once a Week

	All Respondents			Respondents with Television in the Household		
	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)	Unguja (%) (n=673)	Pemba (%) (n=116)	Total (%) (n=789)
Sex	*	**	***			
Female	48.2	17.6	37.8	65.8	67.2	66.0
Male	55.1	27.6	46.1	68.5	63.8	67.8
Age						
15-24	54.7	23.4	44.9	68.6	52.9	66.9
25-34	54.1	19.6	43.5	68.9	57.7	67.7
35-44	47.3	21.4	38.8	63.7	78.6	65.6
45 and above	50.6	26.1	41.0	67.8	66.7	67.5
Residence	***	***	***			
Urban	57.8	50.0	57.4	68.1	66.7	68.0
Rural	38.8	20.1	27.8	63.5	65.2	64.2
Transmission risk	***		***		*	*
High	63.6	22.9	49.2	70.0	79.5	71.0
Low	45.0	22.2	37.7	64.4	58.4	63.4
Level of education	***	***	***			
None	31.0	11.0	19.5	54.5	55.6	54.9
Primary	45.3	18.8	33.0	65.6	59.0	64.0
Secondary or higher	56.4	33.6	51.5	68.3	72.9	68.8
Wealth quintile	***	***	***	*	*	*
Lowest	30.7	6.8	13.7	n/a	n/a	n/a
Second	30.6	19.4	26.0	81.8	75.0	78.9
Middle	45.2	30.6	40.1	62.0	51.0	58.2
Fourth	56.1	71.0	58.7	61.9	76.9	64.7
Highest	71.3	71.4	71.3	71.7	71.4	71.7
Total	51.7***	22.5***	41.9	67.2	65.5	66.9

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

Table A.7.5.

*Preferred Time to Watch Television Among Those Who Watch at Least Once a Week, (n=765)^*

	Early morning (%)	End of morning (%)	Afternoon (%)	Early evening (%)	End of evening (%)	Night (%)
Zone***						
Unguja	2.7	8.5	7.2	11.3	61.3	8.9
Pemba	8.3	2.1	2.1	31.2	56.2	0.0
Sex						
Female	4.1	7.8	6.4	17.7	56.8	7.2
Male	3.6	6.9	6.2	12.9	63.3	7.1
Age						
15-24	1.2	3.7	8.0	12.3	65.6	9.2
25-34	5.3	8.5	5.3	13.8	57.3	9.8
35-44	4.3	9.0	6.4	17.0	58.0	5.3
45 and above	3.6	7.1	5.9	17.3	62.5	3.6
Residence**						
Urban	2.6	7.1	6.9	12.0	62.7	8.5
Rural	5.8	7.7	5.1	20.4	56.2	4.7
Transmission risk*						
High	3.3	5.8	4.0	13.1	66.2	7.6
Low	4.1	8.5	8.0	16.5	56.1	6.9
Education						
No education	4.0	0.0	4.0	18.0	72.0	2.0
Primary	6.9	10.3	5.1	15.4	55.4	6.9
Secondary or higher	2.8	7.0	6.8	14.6	60.9	7.8
Wealth quintile*						
Lowest	9.1	10.9	5.4	16.4	50.9	7.3
Second	7.4	11.6	3.2	22.1	51.6	4.2
Middle	3.3	7.3	9.9	13.9	59.6	6.0
Fourth	1.4	5.2	6.6	15.6	64.4	6.6
Highest	3.6	6.7	5.1	12.2	62.8	9.5
Total	3.8	7.3	6.3	15.0	60.4	7.2

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

^n=765: includes only those who reported watching television at least once a week and excludes those who reported Don't Know (n=4).

Table A.7.6.

Mobile Phone or Tablet Ownership

	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
Sex	**	***	***
Female	81.4	60.1	74.2
Male	88.4	81.5	86.2
Age	*	***	***
15-24	80.5	51.4	71.4
25-34	88.6	69.6	82.8
35-44	83.7	73.4	80.3
45 and above	85.1	82.3	84.0
Residence	***		***
Urban	87.8	76.1	87.1
Rural	79.0	70.1	73.8
Transmission risk	***		**
High	90.8	72.7	84.4
Low	81.7	69.3	77.7
Level of education	***	**	***
None	70.0	64.0	66.5
Primary	84.9	67.2	76.7
Secondary or higher	86.8	78.3	85.0
Wealth quintile	***	***	***
Lowest	73.3	60.5	64.2
Second	78.2	72.2	75.7
Middle	84.6	82.6	83.9
Fourth	88.1	85.5	87.7
Highest	90.0	57.1	89.4
Total***	84.9	70.6	80.2

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

Table A.7.7.

Exposure to Malaria Messages

	Correctly States Malaria Message "Zanzibar bila Malaria every night for the whole family"			Correctly Identifies Malaria Campaign Logo		
	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
Sex		**	*			
Female	65.2	38.8	56.3	28.3	18.6	25.0
Male	67.0	52.4	62.3	24.7	21.7	23.7
Age	*		*		*	
15-24	58.5	39.2	52.5	20.8	18.7	20.1
25-34	68.6	47.0	62.0	27.2	13.7	23.0
35-44	69.0	45.4	61.2	27.8	21.4	25.7
45 and above	66.0	48.4	59.0	29.4	26.8	28.3
Residence	**	*	***			**
Urban	69.1	60.9	68.7	27.9	23.9	27.7
Rural	59.8	44.2	50.7	23.4	19.8	21.3
Transmission risk	**	*		***		*
High	72.0	39.2	60.4	33.2	17.2	27.6
Low	62.8	49.6	58.6	22.7	22.0	22.5
Education	***	***	***	***	***	***
No education	47.0	16.9	29.7	22.0	8.1	14.0
Primary	60.4	48.0	54.7	11.7	21.0	16.0
Secondary or higher	70.4	60.8	68.4	31.9	26.7	30.8
Wealth quintile	*	***	***	**		***
Lowest	59.4	40.3	45.8	18.8	19.8	19.5
Second	60.2	39.6	51.7	20.9	16.0	18.9
Middle	64.5	51.2	59.9	25.9	19.0	23.5
Fourth	65.8	69.3	66.5	25.1	32.3	26.4
Highest	73.0	42.9	72.4	33.7	28.6	33.6
Total	66.1***	45.5***	59.3	26.5**	20.1**	24.4

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

A.8 Reactive Case Detection

Where appropriate, results are disaggregated by zone. Tables may be also included or referenced in the main body of the report.

Table A.8.1.

Summary of Ideational Variables Related to Reactive Case Detection Programs (N=1745)

	Aware of reactive case program (%)	Willing to participate in community/ household reactive case detection (testing and treatment) despite not feeling sick (%)	Favorable attitude towards reactive case detection (%)	Perceive reactive case detection as effective (%)	Perceive supportive community norms regarding reactive case detection (%)
Zone	*		**		***
Unguja	22.4	79.6	79.8	82.4	74.7
Pemba	27.8	76.1	85.9	82.6	85.2
Sex			**		
Female	25.0	77.5	79.2	81.9	78.5
Male	23.5	79.4	84.4	83.1	77.9
Age	*		*		
15-24	22.7	78.7	76.7	79.6	74.0
25-34	20.7	79.0	81.5	82.3	77.9
35-44	26.1	77.3	84.8	84.1	80.5
45+	28.3	78.9	83.2	83.2	79.6
Residence		**		***	***
Urban	24.0	81.5	81.3	87.3	74.5
Rural	24.4	75.7	82.3	78.1	81.6
Transmission risk	***	***	***	***	
High	33.5	85.5	86.3	90.0	79.3
Low	18.9	74.3	79.2	78.1	77.6
Level of education					
None	21.2	78.4	78.0	81.8	80.1
Primary	22.7	75.9	80.0	80.6	78.5
Secondary or higher	25.7	79.7	83.6	83.5	77.6
Wealth quintile					***
Lowest	24.4	77.4	80.2	79.7	83.8
Second	23.1	76.3	83.4	82.0	83.1
Middle	22.3	77.1	80.2	80.8	77.1
Fourth	24.4	80.8	81.9	85.4	74.8
Highest	27.0	80.7	83.3	84.5	72.1
Total	24.4	78.4	81.8	82.5	78.2

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

Table A.8.2.

Awareness of Reactive Case Detection Programs

	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
Know about Reactive Case Detection Program*	22.4	27.8	24.2
Sex			
Female	24.0	27.0	25.0
Male	20.9	28.7	23.5
Age		**	*
15-24	19.1	30.8	22.7
25-34	21.6	18.4	20.7
35-44	24.6	29.2	26.1
45 and above	24.3	34.6	28.3
Residence	*	*	
Urban	24.5	15.2	24.0
Rural	18.1	28.9	24.4
Transmission risk	***	***	***
High	29.4	41.0	33.5
Low	18.6	19.4	18.9
Level of education			
None	18.0	23.5	21.2
Primary	19.6	26.2	22.7
Secondary or higher	23.9	32.3	25.7
Wealth quintile	*		
Lowest	12.9	29.0	24.4
Second	21.8	25.0	23.1
Middle	21.0	24.8	22.3
Fourth	21.9	35.5	24.4
Highest	27.0	28.6	27.0

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

Table A.8.3.

Willingness to Participate in Reactive Case Detection Even When Not Feeling Sick (N=1745)

	Willing to get tested for malaria as part of reactive case detection even when not feeling sick (%)	Willing to get treated for malaria as part of reactive case detection after a positive test, even when not feeling sick (%)
Zone		
Unguja	80.5	84.0
Pemba	78.2	80.9
Sex		
Female	79.1	82.4
Male	80.3	83.5
Age		
15-24	79.6	82.5
25-34	80.3	82.8
35-44	78.4	81.8
45 and above	80.7	85.0
Residence	**	**
Urban	82.5	85.7
Rural	77.2	80.5
Transmission risk	***	***
High	86.0	89.4
Low	76.1	79.2
Level of education		
None	79.2	80.5
Primary	77.5	80.6
Secondary or higher	80.9	84.7
Wealth quintile		
Lowest	78.8	79.7
Second	77.1	80.9
Middle	77.9	83.1
Fourth	82.5	86.5
Highest	82.2	84.8
Total	79.7	83.0

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

Table A.8.4.

Attitudes Towards Reactive Case Detection

	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
AGREE: Leaders in my community support health workers/providers visiting houses to test for malaria.***	74.4	74.0	74.3
AGREE: Religious leaders in my community support health workers/providers visiting houses to test for malaria.***	60.2	70.8	63.7
DISAGREE: I do not trust the people who conduct unsolicited visits to test for malaria.***	23.5	31.6	26.2
DISAGREE: If someone feels healthy, they do not need to be tested for malaria when asked by a health worker/provider who comes to their home.*	44.3	43.5	44.0
DISAGREE: If someone feels healthy, they do not need to accept treatment following a positive malaria test administered at their home by a health worker/provider.**	45.2	50.7	47.0
AGREE: I would be willing to give health officials accurate information about myself if they came to my home to test for malaria.***	80.7	85.2	82.2
AGREE: I would feel comfortable being tested for malaria in my workplace, even if I do not feel sick.***	68.5	82.1	73.1
Total with favorable attitudes towards reactive case detection**	**79.8**	**85.9**	**81.8**
Sex	*		**
Female	77.0	83.4	79.2
Male	82.5	88.5	84.4
Age		*	*
15-24	76.7	76.6	76.7
25-34	78.9	87.5	81.5
35-44	82.7	89.0	84.8
45 and above	80.4	87.6	83.2
Residence		**	
Urban	80.2	100.0	81.3
Rural	79.0	84.7	82.3
Transmission risk	**	*	***
High	84.1	90.3	86.3
Low	77.4	83.1	79.2
Level of education		***	
None	80.0	76.5	78.0
Primary	76.2	84.3	80.0
Secondary or higher	80.9	93.5	83.6
Wealth quintile			
Lowest	74.3	82.7	80.2
Second	78.6	90.3	83.4
Middle	76.7	86.8	80.2
Fourth	81.2	85.5	81.9
Highest	83.0	100.0	83.3
Total	79.8	85.9	81.8

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

Table A.8.5.

Perceived Response Efficacy of Reactive Case Detection

	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
AGREE: Someone visiting certain houses in my community to test everyone in the house for malaria after an infection has been diagnosed is effective in identifying new cases of malaria.***	83.1	87.6	84.6
AGREE: If new malaria infections are identified during a home visit from health workers/providers, appropriate treatment would be provided.***	82.4	89.3	84.7
Total who perceived reactive case detection efficacy* **	**81.7**	**89.5**	**84.3**
Sex			
Female	80.7	88.8	83.5
Male	82.6	90.2	85.1
Age		*	
15-24	78.0	84.1	79.9
25-34	82.8	86.9	84.1
35-44	82.4	92.9	85.9
45 and above	82.5	92.8	86.6
Residence	***		
Urban	85.0	95.6	85.6
Rural	74.7	89.0	83.1
Transmission risk	***		***
High	88.7	92.5	90.0
Low	77.8	87.6	81.0
Level of education		*	
None	87.0	84.6	85.6
Primary	77.7	89.1	83.0
Secondary or higher	82.3	93.1	84.6
Wealth quintile	**		
Lowest	78.2	86.3	83.9
Second	72.8	93.7	81.4
Middle	82.5	91.7	85.7
Fourth	84.3	88.7	85.1
Highest	85.3	85.7	85.3
Total	81.7	89.5	84.3

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

Table A.8.6.

Perceived Self-efficacy for Reactive Case Detection

	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
Can make sure that your spouse/partner accepts the invitation for testing when asked by a health worker/provider who comes to your home.**	84.9	90.2	86.7
Would accept the invitation for testing when asked by a health worker/provider who comes to your home without getting anyone else's permission.	83.2	83.7	83.4
Total with perceived self-efficacy for reactive case detection	**82.4**	**82.6**	**82.5**
Sex			
Female	81.4	82.8	81.9
Male	83.3	82.5	83.1
Age			
15-24	78.8	81.3	79.6
25-34	82.3	82.1	82.3
35-44	83.4	85.7	84.1
≥45	84.7	81.0	83.2
Residence	***		***
Urban	87.2	89.1	87.3
Rural	72.3	82.1	78.1
Transmission risk	***	***	***
High	89.4	91.2	90.0
Low	78.5	77.2	78.1
Education			
None	82.0	81.6	81.8
Primary	78.5	83.0	80.6
≥ Secondary	83.7	82.9	83.5
Wealth quintile			
Lowest	77.2	80.6	79.7
Second	81.1	83.3	82.0
Middle	78.5	85.1	80.8
Fourth	85.0	87.1	85.4
Highest	85.0	57.1	84.5

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

Table A.8.7.

Perceptions of Community Norms Regarding Reactive Case Detection (N=1745)

	Believe most community members would accept invitation for malaria testing if household member or close neighbor is diagnosed with malaria. (%)	Believe most community members would approve of getting tested for malaria after someone in the household or a close neighbor is diagnosed with malaria. (%)	Believe most community members would accept treatment for malaria following a positive test performed by a health worker/provider at their home. (%)	Believe most neighbors would approve of their community members receiving treatment for malaria following a positive test administered at home by a health worker/provider. (%)	Believe most community members would give accurate information about themselves to a health worker/provider who is doing reactive case detection due to a household member or close neighbor testing positive for malaria. (%)
Zone	***	***	***	***	***
Unguja	66.5	62.2	68.5	67.0	68.4
Pemba	78.9	74.6	79.0	77.1	79.5
Sex					
Female	71.2	67.2	71.3	70.3	73.0
Male	70.0	65.4	72.8	70.5	71.3
Age					*
15-24	65.9	63.8	69.1	65.9	66.2
25-34	70.7	66.2	72.8	71.5	72.4
35-44	72.4	67.7	73.4	71.7	74.3
≥45	72.4	67.0	71.9	71.1	74.5
Residence	***	*	**	**	**
Urban	66.4	63.4	68.8	67.0	69.0
Rural	74.4	69.0	75.0	73.5	75.0
Transmission risk		*			
High	70.6	69.6	73.2	71.6	72.6
Low	70.6	64.4	71.3	69.6	71.9
Education		*			
None	75.8	74.6	74.6	73.3	74.6
Primary	71.5	64.2	70.2	69.4	70.8
≥Secondary	69.0	65.4	72.3	70.1	72.2
Wealth quintile	***	**	**	**	**
Lowest	77.6	72.5	76.2	76.5	77.6
Second	75.4	69.4	77.1	75.4	76.6
Middle	71.1	65.6	72.2	68.8	71.1
Fourth	66.5	64.2	67.3	67.3	69.6
Highest	62.4	59.8	67.2	63.8	65.8
Total	70.6	66.3	72.0	70.4	72.1

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

Table A.8.8.

Reactive Case Detection Coverage

	Unguja (%) (n=261)	Pemba (%) (n=162)	Total (%) (n=423)
Reported a health worker or provider visit to house to test someone in the household for malaria**	31.0	45.7	36.6
Residence	*		
Urban	35.7	28.6	35.5
Rural	17.6	46.4	37.7
Transmission risk	**	**	***
Higher	41.8	57.0	48.4
Lower	21.6	30.4	24.5
Wealth quintile	*		
Lowest	7.7	52.8	45.9
Second	20.0	44.4	30.9
Third	20.8	43.3	29.5
Fourth	38.1	31.8	36.5
Highest	40.2	0.0	39.4
Of those reporting a health worker or provider visit to house to test someone in the household for malaria…	**n=81**	**n=74**	**n=155**
Tested for malaria among those reporting a health worker visit^	34.6	55.4	44.5
Residence			
Urban	36.2	0.0	35.2
Rural	25.0	56.9	52.4
Transmission risk			
High	41.2	54.7	48.1
Low	23.3	57.1	37.2
Wealth quintile			
Lowest	0.0	60.5	59.0
Second	44.4	50.0	48.0
Third	20.0	61.5	43.5
Fourth	25.0	28.6	25.8
Highest	43.2	n/a	43.2

Notes: *p<0.05; **p<0.01; ***p<0.001. ^Only seven respondents (out of 69) reported testing positive using a reactive case detection malaria test performed at home.

A.9 Mass Drug Administration

Where appropriate, results are disaggregated by zone. Tables may be also included or referenced in the main body of the report.

Table A.9.1.

Summary of Ideational Variables Related to Mass Drug Administration (N=1745)

	Aware of Mass Drug Administration Program (%)	Will Accept Antimalarials from Mass Drug Administration Program Despite Not Feeling Sick (%)	Perceived Supportive Community Norms Regarding Mass Drug Administration of Antimalarials (%)	Reported Health Worker Visit to Workplace to Distribute Antimalarials in Past Year^ (%) (n=287)
Zone			***	***
Unguja	15.7	69.1	66.6	41.5
Pemba	17.9	69.1	75.3	21.1
Sex	*			
Female	14.6	69.1	69.8	40.2
Male	18.3	69.1	69.2	29.4
Age	***			
15-24	13.1	68.8	66.8	33.3
25-34	13.3	69.8	69.6	34.2
35-44	17.3	67.7	69.2	38.3
45+	22.7	70.1	72.2	30.7
Residence		***		
Urban	17.2	74.8	69.4	36.4
Rural	15.8	63.9	69.6	31.9
Transmission risk				
High	18.7	71.5	69.2	35.8
Low	15.1	67.7	69.7	32.9
Level of education	**			
None	9.3	68.6	69.5	40.9
Primary	16.6	68.2	67.8	26.8
Secondary or higher	18.0	69.7	70.3	36.6
Wealth quintile			*	
Lowest	16.3	71.9	71.9	19.3
Second	15.1	66.0	72.9	35.8
Middle	13.7	71.6	71.1	41.7
Fourth	17.5	70.2	68.8	31.1
Highest	19.5	65.8	62.9	42.6
Total	16.4	69.1	69.5	34.1

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

^Only those reporting working outside included in this sample (n=287).

Table A.9.2.

Awareness of Mass Drug Administration Program

	Unguja (%) (n=1163)	Pemba (%) (n=582)	Total (%) (N=1745)
Total who knew about mass drug administration program	15.7	17.9	16.4
Sex			*
Female	14.1	15.5	14.6
Male	17.3	20.3	18.3
Age		*	***
15-24	13.6	12.1	13.1
25-34	13.5	13.1	13.3
35-44	16.3	19.5	17.3
45 and above	20.8	25.5	22.7
Residence			
Urban	17.1	17.4	17.2
Rural	12.8	17.9	15.8
Transmission risk	*		
High	19.3	17.6	18.7
Low	13.8	18.0	15.1
Level of education		**	**
None	10.0	8.8	9.3
Primary	13.2	20.5	16.6
Secondary or higher	17.3	20.7	18.0
Wealth quintile			
Lowest	9.9	18.9	16.3
Second	13.1	18.1	15.1
Middle	14.5	12.4	13.7
Fourth	16.0	24.2	17.5
Highest	19.6	14.3	19.5

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

Table A.9.3.

Perceived Community Norms Regarding Mass Drug Administration (N=1745)

	Believe Most People in Community Would Accept Antimalarial Medication if Offered Through Mass Community Distribution (%)	Believe Most Community Leaders Would Accept Antimalarial Medicine if Offered Through Mass Community Distribution (%)
Zone	**	***
Unguja	63.7	64.5
Pemba	70.3	73.4
Sex		
Female	65.8	67.7
Male	66.0	67.2
Age		
15-24	63.3	64.1
25-34	67.3	68.0
35-44	65.3	66.6
≥45	67.0	70.6
Residence		
Urban	66.9	67.7
Rural	65.0	67.2
Transmission risk		
High	65.7	66.5
Low	66.0	68.0
Education		
None	67.4	68.2
Primary	63.0	65.6
≥Secondary	67.0	68.2
Wealth quintile		*
Lowest	66.5	70.2
Second	69.4	70.9
Middle	68.5	68.2
Fourth	65.3	67.3
Highest	59.8	60.6
Total	65.9	67.4

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