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# Malaria Behavior Survey

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## Acronym List

ACT	Artemisinin-based combination therapies
ANC	Antenatal care
CCP	Johns Hopkins Center for Communication Programs
CDC	U.S. Centers for Disease Control and Prevention
CHW	Community health worker
CM	Case Management
DHMT	District Health Management Team
DHS	Demographic and Health Survey
EA	Enumeration area
HMIS	Health management information system
ICT	Information and communications technology
INS	Institut National des statistiques
IPTi	Intermittent preventive treatment of malaria in infants
IPTp	Intermittent preventive treatment of malaria in pregnancy
IRB	Institutional Review Board
IRS	Indoor residual spraying
ITN	Insecticide-treated net
MBS	Malaria Behavior Survey
MDA	Mass drug administration
MIS	Malaria Indicator Survey
MOH	Ministry of health
NGO	Non-governmental organization
NMCP	National Malaria Control Program
NSP	National Strategic Plan
OR	Odds Ratio
PMI	U.S. President's Malaria Initiative
PPE	Personal Protective Equipment
RDT	Rapid diagnostic test

SBC	Social and behavior change
SMC	Seasonal malaria chemoprevention
SP	Sulfadoxine pyrimethamine
TBA	Traditional birth assistant
USG	United States Government
USAID	United States Agency for International Development
WHO	World Health Organization

## Preface

The Ministry of Public Health, Hygiene and Prevention is delighted with this first Behavioral Survey related to Malaria conducted in the Democratic Republic of Congo (DRC). The fight against malaria and its elimination from our national territory require the combination of all preventive and therapeutic approaches based on evidence. One of the cornerstones in the success of these approaches is social and behavioral change in our communities. This survey fills a knowledge gap on factors that influence these behaviors by providing evidence through a household survey using innovative approaches.

I am firmly convinced that the effective use of the results of this study for programming interventions will bring us closer to the objectives of reducing malaria in the DRC. I invite all national institutions and all partners involved in the fight against malaria to make good use of this report which presents for the first time a better understanding of the socio-demographic and ideational characteristics associated with malaria-related behaviors at the national level.

Finally, I express my gratitude to PMI RDC (USAID and CDC) and the Global Fund for funding this study and to the technical partners Breakthrough ACTION and SANRU and of course to the entire NMCP technical team for making this study possible.

**Professor Eric Mukomena Sompwe**

DRC NMCP Director

## Executive Summary

Breakthrough ACTION worked with the DRC National Malaria Control Program (NMCP) to conduct the Malaria Behavior Survey (MBS) between March 18 and April 26, 2021, a period that coincides with the end of the rainy season. The MBS is a theory-based household survey that draws on the ideation model. The survey was conducted in 15 of the 26 provinces of the country, selected to represent four geographic regions (zones) of the country: Nord, Ouest, Kasai, and Grand Est. The survey collected relevant information on malaria-related behaviors and their determinants from a representative sample of households in each zone, stratified by urban-rural residence. The sample was designed to provide representativeness at the zonal level. Data collectors used electronic questionnaires developed using CSPro and loaded on Android tablets. The overall sample included 4,998 households, 6,034 women of reproductive age and 1,870 of their male spouses/partners. The study followed standard ethical procedures. During field work, trained data collectors took appropriate steps to minimize risks to participants, including obtaining informed consent prior to commencing interviews, emphasizing voluntary participation and the right of participants to decide not to participate in the survey or terminate the interview at any time, and stressing the right to refuse to answer any questions they did not feel comfortable with. No personal identifiers were retained in the electronic dataset. Approval for the survey was obtained from the Institutional Review Board of Johns Hopkins Bloomberg School of Public Health in Baltimore, USA (IRB # 13286), and the University of Kinshasa School of Public Health Ethics Committee in DRC. The data provide a basis on which to better identify, prioritize, and reach target audiences with tailored and effective social and behavior change (SBC) approaches. This section summarizes the key findings from the survey.

### Cross-cutting ideational variables

Whereas the majority of the respondents knew that fever was a symptom of malaria and that malaria is transmitted through mosquito bites, many respondents reported an incorrect mode of malaria transmission. Fewer than half of respondents correctly identified a mosquito bite as the sole cause of malaria. Respondents in the Kasai zone were less likely to correctly report this knowledge than those in the Ouest zone. Almost 6 in 10 respondents perceived susceptibility to malaria, that is, they believed that they were exposed to the risk of catching malaria. Perceived susceptibility was more common among men compared to women, in Kasai than in the other zones, and in rural than urban areas. Fewer than 4 in 10 respondents have perceived the severity of malaria. This construct was lower in Kasai zone than elsewhere. Spousal communication about malaria in the past six months is moderate, at about 31 percent. Proportionally more married men than their female counterparts reported that they discussed malaria with their spouse in the previous six months. This construct was less prevalent in Grand Est compared to the other zones. Three in four participants believed that health workers in general treat their patient with respect. In the Nord zone, women are more likely than men to hold this perception. Finally, the data revealed near universal support for egalitarian gender norms regarding the treatment and prevention of malaria in children.

## Malaria Case Management

Knowledge about recommended timing to seek care was only moderately high: only about half of respondents reported that care should be sought immediately or on the same day as the onset of fever. Most of the respondents knew that drawing blood for a malaria test was the best way to know if someone had malaria but fewer than half indicated they knew ACT as an effective treatment for malaria. Both knowledge indicators varied by zone. Knowledge of ACT as an effective treatment for malaria was more widespread among men, urban residents, and individuals with a secondary education or higher compared to women, rural residents, and individuals with primary or lower level of education, respectively. Positive attitudes toward care seeking and treatment were reported by two-thirds of respondents; these attitudes were less common in Kasai zone than in the other zones.

Six in ten respondents believed that malaria testing was efficacious as a diagnostic method. There were significant differences between urban and rural areas. About half of respondents perceived the response-efficacy of malaria treatment. For both of these efficacy belief indicators, Kasai lagged behind the other zones. About half of the respondents believed that prompt care seeking for children with fever was the norm in their community. This perception drastically varied significantly by zone and was less common in Grand Est compared to the other zones. Whereas the majority of the respondents agreed that health facilities had available malaria diagnostic test kits and medication to manage malaria cases in children, more than three quarters of respondents also believed that they would be charged by facility workers to test or treat their febrile children.

Prompt care-seeking for children with fever was not very common in the study zones: only about half of febrile children were taken for care promptly (i.e., the same or next day after onset of fever). Prompt care-seeking in a health facility or from a community health worker (appropriate care) was even less common with only about four in ten febrile children experiencing this type of care-seeking. Appropriate care was significantly more likely for children in the Nord zone compared to the other zones, as well as for children under two years old compared to older children under five. **The ideational variables associated with prompt care-seeking in a health facility or from a CHW include knowledge that care should be sought immediately or on the same day as the onset of fever in a child, spousal communication, and the perception that health facility workers treat patients with respect. In contrast, the belief that health workers make parents pay for malaria treatment for under-5 children was negatively associated with prompt care-seeking in a health facility or from a CHW.** Other significant correlates of prompt care-seeking in a health facility or from a CHW include age of the child (negative), awareness of the NMCP logo (positive), knowledge of the NMCP campaign slogan (positive), and urban residence (negative).

Malaria testing in febrile children taken to a facility varied significantly by zone. While over 70 percent of Ouest and Kasai children under five with fever at a health facility were tested for malaria, only half of Grand Est children were tested. About 9 in 10 children who were tested received a positive result. Fewer than half of children with confirmed malaria reportedly received ACT. Receiving ACT and receiving ACT promptly was more likely to occur in the Nord zone than in other zones. Receiving ACT was less likely for children whose mothers did not complete primary school.

## Malaria in Pregnancy

Knowledge about recommended ANC and IPTp practices was generally low: only about half of the respondents knew that a woman should start ANC in the first trimester of pregnancy or as soon as she suspects she might be pregnant; knowledge about the recommended number of ANC visits was displayed by a little over half of the respondents while fewer than half knew that a pregnant woman should receive at least three doses of SP during pregnancy. Knowledge about recommended ANC and IPTp behaviors varied significantly across zones and was lower in the Grand Est and higher in the Ouest compared to the other zones. There were also differences by sex, education, and place of residence.

Positive attitudes towards ANC and IPTp were only moderately common and less prevalent in the Grand Est compared to the other zones. The severity of malaria in pregnancy was generally widely perceived in the study population although less so in the Grand Est than elsewhere. Most of the respondents believed ANC and IPTp to be effective interventions for ensuring safe pregnancy. Similarly, the majority of the respondents were confident in their ability to obtain or support their female partners to obtain adequate ANC and IPTp services. For both of these efficacy belief indicators, Grand Est lagged behind the other zones. About two thirds of the respondents believed that attending at least four ANC visits was the norm in their community while slightly over half believed that obtaining at least three SP doses during pregnancy was the norm in their community. An injunctive norm about SP (the belief that people in their community would support their decision to obtain SP during pregnancy) was reported by about half of the respondents. These three social norms indicators were lower in Kasaï and Grand Est zones compared to Nord and Ouest zones. Whereas the majority of the respondents agreed that health service providers usually treat pregnant women with respect, a little over one third believed that providers made pregnant women pay for SP. The belief that pregnant women are charged for SP was more common in Kasaï than elsewhere. Participation in decisions about ANC attendance was significantly more likely to be reported by men compared to women. The data showed that women from the Nord and Kasaï zones were more likely to be marginalized in decisions regarding ANC attendance compared to their peers from the Ouest and Grand Est zones.

Whereas most women made at least one ANC visit, only about two-thirds reportedly obtained the recommended four ANC visits. Women in Kasaï and Grand Est zones were less likely than those from Ouest zone to have received the recommended number of ANC visits. Receiving the recommended number of ANC visits was also more common in urban than in rural areas and among post-primary educated women compared to their illiterate or primary educated peers. Furthermore, the first ANC visit took place in the first trimester for only about one third of the women. Receiving the first ANC in the first trimester of pregnancy was less common in the Nord zone and higher in Kasaï zone compared to the other zones. Spousal presence during ANC visits was not common, involving only about one quarter of the women that had a child in the last two years. Four out of every five women received at least one dose of SP during pregnancy but only two out of five received the recommended three doses. Even among women who had at least four ANC visits and those who started ANC in the first trimester, less than half obtained the recommended three doses of SP.

While practically all women who desire another child in the next two years intend to attend ANC, only about half indicated that they would attend their first ANC during the first trimester of pregnancy. Intention for early ANC attendance was more prevalent in the Ouest and less prevalent in the Nord compared to the other zones. Urban women were also more likely than their rural peers to express

intention for early ANC attendance. The ideational variables associated with intention for early ANC included **comprehensive knowledge about ANC and IPTp, the belief that women should feel comfortable discussing ANC attendance with their spouse, positive attitudes towards ANC and IPTp, and perceived self-efficacy for obtaining IPTp**. The results further revealed the significant ideational variables varied by zone.

In the **Nord zone, comprehensive knowledge about ANC and IPTp and the injunctive norm about IPTp** were the ideational variables positively associated with intention for early ANC attendance. In the **Ouest zone, comprehensive knowledge about ANC and IPTp, and positive perceptions about health service providers** were the ideational variables positively linked with early ANC attendance intention. In this zone, there was a positive relationship with exposure to malaria messages, poverty, and urban residence. Furthermore, the data indicate a significant clustering of intentions at the community level. In **Kasaï, comprehensive knowledge about ANC and IPTp, and the belief that a woman should feel comfortable discussing ANC attendance with her spouse** were significantly and positively associated with intention for early ANC attendance. The data for this zone also showed a large and significant clustering of intention at the community level. In **Grand Est, perceived self-efficacy to obtain IPTp and comprehensive knowledge about ANC and IPTp** were positively associated with intention to obtain ANC early in pregnancy.

## Insecticide-Treated Nets

Knowledge about bed nets as a way to prevent malaria is widespread in all the zones of the study although there were some slight variations by zone, sex, education, place of residence and wealth quintile. In general, attitudes were positive towards use of bed nets with, overall, about nine out of every ten respondents demonstrating a positive attitude towards use of bed nets. All the same, positive attitudes were less prevalent in Kasaï zone compared to the Nord and Ouest zones, and among primary educated respondents compared to those with no formal education.

Perceived response-efficacy of ITNs was relatively high with about three-quarters of the study population demonstrating belief in the effectiveness of ITNs. This indicator was lower among people with no education compared to their educated peers. Perceived self-efficacy for consistent use of bed nets was high across board while less than two thirds of the study population believed consistent use of bed nets to be the norm in their community. The belief that consistent use of bed nets was a community norm was less common in Kasaï and Grand Est zones compared to Nord and Ouest zones. Respondents from the Grand Est zone (44.41%) were more likely than those from the other zones to report that they did not know whether or not consistent use of bed nets was a community norm. Overall, four out of every five respondents perceived social support for consistent use of bed nets. This indicator was less common in the Ouest zone compared to Nord and Kasaï zones and in urban than rural areas.

There were gaps in bed net ownership in all study zones. Whereas under three quarters of the households own at least one bed net, only about one third owned enough nets for household members assuming that two people share a bed net. This indicator of universal household net coverage was significantly lower in the Kasaï compared to the other zones, for rural than urban households, among poorer households compared to wealthier households, and in larger (7 members or more) compared to smaller households.

Almost all the 7,089 bed nets enumerated in the study zones were ITNs and white. The majority of the bed nets were obtained from a mass distribution campaign and aged less than three years old. The data showed that bed nets were, on average, older in Kasai than in the other zones. Furthermore, compared to what we observed in the other zones, the bed nets in Kasai zone were less likely to come from a mass distribution campaign, more likely to have been obtained during an ANC visit, and less likely to be white. More than four out of every five available bed nets were used for sleeping on the night preceding the survey. All the same, the proportion of available nets used for sleeping on the night preceding the survey or consistently in the last week was lower in the Ouest zone compared to the other zones.

There is significant room for improvement in the way the population cares for their bed nets. Whereas most of the nets that have already been washed were washed with mild soap as recommended, a significant proportion of these nets were left to dry in the sun instead of outside in the shade as recommended. Leaving nets to dry in the sun was a more common practice in the Nord and Grand Est zones (about half of the nets were dried in this manner) compared to the Ouest and Kasai zones. About four of five nets that were used for sleeping the previous night were found simply hanging loosely over the bed during the survey; not rolled up or tied up as recommended. The practice of rolling or tying up nets that were hung when not in use was rare in Grand Est and Kasai zones.

In households with at least one net, about four-fifths of household members slept under a net on the night preceding the survey. In households with universal bed net coverage almost nine-tenths of household members used a net on the night before the survey. The data showed that when a household does not have enough nets, adults and children under five years old tend to be prioritized over children aged 5 – 17 years. In addition, in the Nord and Ouest zone, women tended to be prioritized over men in net allocation.

Overall, the use:access ratio was 0.88 indicating that whereas most people with access to a bed net actually use it, there is room for improvement. The indicator was lower in Kasai than in the other zones. A closer look at the two components of the indicator – use and access measures - reveals different patterns in Kasai than in the other zones. Specifically, both measures were very low in Kasai whereas they were moderate in the other zones.

The data indicate that consistent use of bed nets is common among the men and women interviewed in the survey. In households with at least one net, about four fifths of the men and women reported consistent use of nets. This indicator varied significantly by zone with lower rates in Kasai and Ouest zones compared to the Nord and Grand Est zones. **The variables associated with consistent use of bed nets varied by zone. In the Nord zone, the belief that there were actions that a person could take to extend the life of their bed nets, interpersonal communication about malaria in the last six months, and the belief that consistent use of bed nets is a community norm were the ideational variables significantly associated with consistent use. In addition, there was a positive association with household universal bed net coverage and the presence of a child under five years old in the household. The association with regular radio listenership was negative. In the Ouest zone, favorable attitudes towards bed nets and the belief that consistent use of bed nets is a community norm were the ideational variables significantly associated with consistent use, Furthermore, exposure to malaria-related messages, household universal net coverage, the presence of a child under five years old in the household, and age were positively correlated with the behavior. In contrast, there is a negative association with urban residence. The data also revealed significant clustering of consistent use of bed nets at the community**

level. Similar to the Ouest zone, in Kasai, favorable attitudes towards bed nets and the belief that consistent use of bed nets is a community norm were the ideational variables significantly associated with consistent use. There was a marginally significant positive correlation with perceived social approval of use of bed nets and the belief that there were actions that a person could take to extend the life of their bed nets. The relationship with perceived susceptibility to malaria was curiously negative. In addition, household universal net coverage, the presence of a child under five years old in the household, age, regular television viewing, and poverty level were positively correlated with the behavior. Furthermore, the data showed that consistent use of bed nets clustered significantly at the community level. In the Grand Est, the variables strongly and positively associated with consistent use include favorable attitudes towards bed nets, knowledge about bed nets as a way to prevent malaria, and the belief that there were actions that a person could take to extend the life of their bed nets. In addition, household universal net coverage and, to some limited extent, the presence of a child under five years old in the household were significant correlates. As observed in the other zones, there was clustering of the behavior at the community level.

## Indoor Residual Spraying

Fewer than one in ten respondents reported they were aware of an IRS program in their community. The awareness that was reported focused in urban settings, particularly within the Ouest zone. More than four-fifths of respondents aware of an IRS program perceived the program as efficacious, with significant differences by zone. Residents of Kasai zone were less likely to report perceived response efficacy of IRS when compared to other zones. Perceived self-efficacy to take actions related to IRS was reported by about three-quarters of the population. These actions include moving furniture in preparation for spraying and sleeping in the house the night after it is sprayed.

Among those previously aware of IRS, there is widespread willingness to accept it in their community and is near universal among rural populations. About 7 in 10 of respondents not previously aware of IRS reported willingness to accept it if it came to their community. Men were more likely to be willing to accept IRS than women.

## Media Consumption and Exposure

Radio and television ownership is limited in the study zones. In many households with radio, many people, especially women, do not listen to the radio regularly. The proportion of the population that can potentially be reached through the radio is less than half. Potential radio reach is lower in Kasai zone than elsewhere. In all zones, proportionally fewer women than men can be potentially reached through this medium. Also, with the exception of the Ouest zone, potential reach is lower among rural than urban residents. For those who listen to the radio, the most popular listening time slots varied by zone. In the Nord, Ouest and Grand Est zones, radio programs have the potential to reach more people if they are broadcast early morning before 8am or early evening, between 4 pm and 8pm. In the Kasai zone, the time to broadcast on the radio to maximize reach is either early morning or late evening (between 8pm and 12 midnight). Early morning programs would potentially reach about half of the population in the Grand Est zone while early evening radio programs would reach more than two-fifths of listeners in the Nord zone. Only by broadcasting in both early morning and early evening in the Ouest and Kasai can radio programs expect to reach at least half of the population.

Most people in households with a television watched television regularly although there were a number of people whose households did not own a television but that reported regular television viewing, probably because they watched television at a neighbor's house. All the same because of the very low ownership of television in the study zones, the potential reach of the television is relatively low; just a little over four in ten individuals can be reached through television programs. Potential reach of the television is higher in the Ouest zone (about two-thirds of the population can be reached) than elsewhere. Very few people can be reached through the television in Kasaï and Nord zones. In Nord, Ouest, and Grand Est zones, the popular time slots for watching television programs are early evening and late evening. In Kasaï zones, the most popular slots are early morning and late evening.

Fewer than half of the men and women interviewed reportedly owned a personal telephone or tablet. Personal telephone ownership is more common in Ouest and Grand Est compared to Nord and Kasaï. Men were more likely to own a telephone or tablet compared to women. Women in Kasaï zone were particularly at a disadvantage in terms of telephone ownership. By and large, the groups least likely to own a personal telephone were women, young adults, illiterate men and women in Kasaï and Nord zones. Most of the available telephones or tablets were capable of receiving SMS while about two-thirds can receive photographs, videos or audio files. About two-fifths could activate an embedded link to a website while about one third were capable of receiving emails. The most technologically advanced telephones or tablets are found in the Ouest. Compared to the other zones, devices in the Nord and Kasaï were less likely to be capable of accessing an internet link and receiving emails.

A strategy that combines radio, television and mobile technology has the potential to reach about seven tenths of the population, with variations by zone, sex, and place of residence. The potential reach of such a combined strategy is lower in the Kasaï zone than in the other zones. The combined strategy is also likely to reach proportionally fewer women than men, and a smaller proportion of rural than urban residents in each zone.

Only about one third of the men and women were reportedly exposed to a malaria message in the last one year. Exposure was lower in the Grand Est and Nord zones compared to Ouest zone. In general, rural residents were less likely to be exposed compared to their urban peers.

## 1. Introduction

### 1.1 Context of Malaria in the Democratic Republic of the Congo

Malaria continues to be a major public health concern across the Democratic Republic of the Congo (DRC), with 23,888,424 estimated cases in 2018 and more than 84,000,000 of the Congolese population determined to be at risk of infection.[1] In 2016-2017, DRC accounted for 11% of the world's malaria cases (2<sup>nd</sup> highest globally), resulting in 435,000 deaths.[3] Indeed, with 96.76 deaths per 100,000 individuals in DRC attributed to malaria, DRC experiences one of the highest malaria mortality rates in the world.[4] In 2018, DRC accounted for 54.6% of malaria cases in Central Africa and has shown an increase in case incidence since 2015.[1] Approximately 97% of the population lives in areas with stable malaria transmission, which lasts between 8 and 12 months per year.[2] Transmission seasons vary across epidemiological zones within the country – in the mountainous zones of North Kivu, the transmission season is very short; in the tropical and equatorial zones, transmission is highest during rainy seasons which can occur year round.[2]

Pregnant women and children under 5 years of age are especially at-risk, and transmission in DRC among these key populations is heterogenous - In 2017-2018, prevalence among children under 5 years ranged from 6% in Nord-Kivu province to over 60% in Bas Uele.[5] Ten of the country's 26 provinces currently experience malaria prevalence rates greater than 45% among children under 5.[5] Common effects of pregnancy-associated malaria include low birth weight, fetal anemia, and preterm delivery, each of which has prolonged effects on morbidity and mortality as well as child development.[6-8] Malaria may also affect child nutritional status, which can weaken their immunity to infectious diseases.[9]

### 1.2 Malaria Interventions in DRC

In 2010, DRC was selected as a focus country of the President's Malaria Initiative (PMI). PMI works in collaboration with the Programme National de Lutte contre le Paludisme (PNLP). At the national level, the Ministry of Public Health (MOPH) establishes the policy framework for all health interventions, which are implemented at the provincial level.

The PNLN focuses its efforts in DRC on facilitating the distribution of insecticide treated nets (ITNs) and conducting case management as well as intermittent preventive treatment in pregnancy (IPTp). The DRC seeks to achieve high ownership and use of ITNs among the general Congolese population by ensuring that at least 80% of people at risk of malaria sleep under an ITN.

With the scale-up of prevention and treatment interventions, many indicators have improved since 2007. Sleeping under ITNs has been associated with reductions in malaria incidence. In DRC, the percentage of households with at least one ITN has increased from 9% in 2007[10] to 70% in 2013-2014,[11] before decreasing to 62% in 2017-2018.[12] Current estimates of ITN use by children under five is 79.8% although this figure varies across different regions.[12] Estimates of the percentage of pregnant women who received three or more doses of IPTp during their last pregnancy have only slightly increased from 5% in 2007 to 14% in 2013-2014.[11], and remains an area targeted for intervention.

## 1.3 Rationale for MBS Study in DRC

Existing national and regional data, including the 2013-2014 DHS and 2017-2018 MICS largely focus on the prevalence of relevant behavioral indicators and provide limited information on behavioral determinants. Research increasingly demonstrates the effective role of social and behavioral change communication (SBCC) programs in increasing the prevalence of positive health behaviors related to malaria prevention and treatment. SBCC program messages need to target the specific ideational variables that influence decisions related to malaria-related behaviors such as prompt care-seeking and use of ITNs.

The DRC MBS is designed to provide representative data at the zonal level (i.e., groups of provinces) with a focus on ideational factors that are not included in large national surveys. Such data can be used to (i) estimate the prevalence of both behaviors and their ideational factors, (ii) estimate the independent and combined effects of ideational characteristics on behaviors, and (iii) identify ideational profiles based on underlying patterns across groups to examine how membership in ideational segments correlates to corresponding behaviors. These analyses will help malaria programs and policymakers create and prioritize audience segments and SBCC messaging.

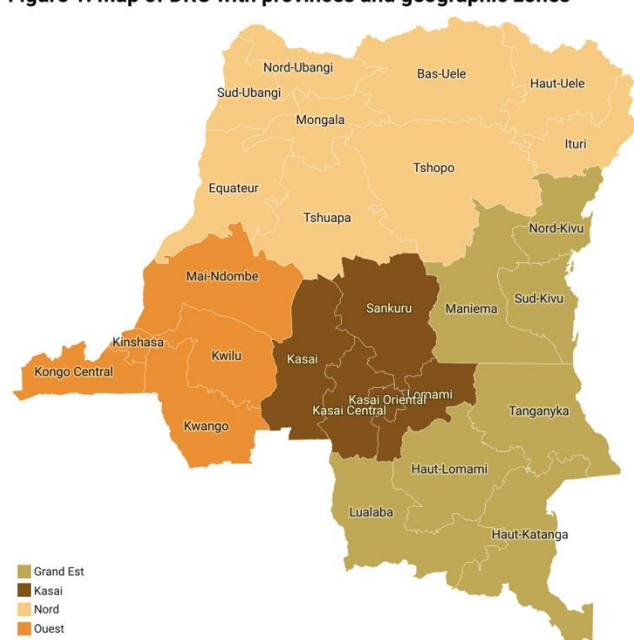
## 1.4 Goals and Objectives of the DRC MBS

The DRC MBS was implemented with two primary goals: 1) To provide a better understanding of the socio-demographic and ideational characteristics associated with malaria-related behavioral outcomes in DRC; and 2) To determine the appropriate focus of programmatic activities designed to improve malaria-related ideational and behavioral outcomes.

The specific objectives of the survey are the following:

- Determine the ideational factors that are related to bed net use, care and repair;
- Identify the ideational factors related to the uptake of IPTp;
- Identify the ideational factors associated with prompt and appropriate treatment of malaria in children;
- Understand reasons for not adopting appropriate malaria prevention and treatment behaviors; and,
- Determine what should be the focus of future programs designed to promote appropriate malaria prevention and treatment behaviors in DRC.

**Figure 1: Map of DRC with provinces and geographic zones**



## 2. Methodology

### 2.1 Survey Design

This study used a cross-sectional design with a randomly selected sample of women and men interviewed at one point in time using structured questionnaires. The respondents were selected through a multi-stage random process that will yield samples representative at the zonal (group of provinces) level. The primary geo-political sub-division in DRC is the province. The country is divided into 26 provinces, which are further divided into districts. For the purpose of sample size determination for this study, we clustered the 26 provinces into four geographic zones (Nord, Ovest, Kasai, Grand Est) as shown on Figure 1. The survey was not conducted in all the provinces in each zone. Instead, we selected a number of provinces to represent each zone, viz.:

- **Nord:** Équateur, Tshopo, Bas-Uele, Mongala and Sud-Ubangi
- **Ovest:** Kinshasa, Kongo Central and Kwilu
- **Kasai:** Lomami, Kasai Central and Sankuru
- **Grand Est:** Haut-Katanga, Sud-Kivu, Tanganyika and Maniema

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

### 2.2 Sampling

#### 2.2.1 Required Sample Size and Justification

To determine the number of households required for this survey, we estimated the sample size needed to measure each of the relevant malaria-related outcomes, including the percentage of women of reproductive age sleeping under bed nets, the percentage of children with fever in the past 2 weeks, and the percentage of women of reproductive age with positive attitudes towards bed nets (assumed to be 0.50 for maximum variability). Estimates based on the indicator that produced the largest sample size with a design effect of 2.5 at the zonal level and using data from the 2017/2018 MICS are summarized in Table 1 below. The following formula was applied to estimate the required sample size:

$$n = D * \frac{z_{1-\frac{\alpha}{2}}^2 * p(1-p)}{\delta^2 * R_h * R_i}$$

Where:

- n is the required sample of households.
- Z is the Z value corresponding to the desired confidence level. In the analyses, we assume Z = 1.96, corresponding to the 95% confidence level.
- d is the design effect due to departure from simple random sampling (we assumed this to be 2.5).
- p is the estimated outcome indicator.
- $\delta$  is the desired margin of error. We derived the various sample sizes with  $\delta = 5\%$ ;
- $R_h$  is the response rate for households. We assume 90% for this parameter.
- $R_i$  is the response rate for women in selected households. We assume 95% for this parameter.

As the information on Table 1 indicates, a sample comprising 4,980 households, 5,470 female respondents, and 1,670 male respondents is sufficient for us to make relevant inferences. This sample size considers the potential non-response at the household and individual levels, provides a representative sample at the zonal level, and allows valid estimation of key malaria behavioral and ideational indicators.

Participants	Nord	Ouest	Kasaï	Grand Est	Overall
Enumeration areas (clusters)	54	51	97	47	249
Households	1080	1020	1940	940	4980
Heads of household	1080	1020	1940	940	4980
Women	1112	1132	2106	1120	5470
Men	360	340	650	320	1670

### 2.2.2 Participant Inclusion and Exclusion

The survey targeted men and women of reproductive age (15 - 49 for women and 18 - 59 for men). The inclusion criteria for sample selection included:

- Aged 15 to 49 years for women and 18 to 59 years for men;
- Men must be the husband or partner of a recruited woman participant
- Usual resident of the selected household; and
- Ability to communicate in French, Lingala, Kikongo, Swahili, or Tshiluba.

Eligible men and women with the following characteristics were excluded from the study:

- Inability to consent to participate in the study; and,
- Inability to understand the questions and/or respond intelligibly.

### 2.2.3 Participant Selection Process

Study participants were selected through a multi-stage process that involved successively and randomly selecting clusters, households and individuals. The study team obtained a comprehensive list of clusters (groups of enumeration areas; EAs) in DRC from the Institut National de la Statistique (INS). This list served as the sampling frame for selecting a sample of clusters. Each zone was divided into two strata: urban and rural. From each stratum, a number of clusters were selected with probability proportional to size. It is important to state that the most recent census in DRC dated back to 1984. As a result, the information on the list of clusters that we received from INS was outdated and no sketch maps were available. For example, most of the clusters had an estimated population larger than 20,000 and many had a population of 200,000 or more. Obviously, these clusters could not be treated as an enumeration area defined as including a maximum of 500 households or a population of about 3,000. As a result, we had to introduce an additional step to the sample selection process. This step involved the study team dividing the population of the cluster by 2000, walking around the cluster to segment it into the resulting number of EAs, and then randomly selecting one of the EAs.

Following the procedures described above, a total of 249 clusters were selected for inclusion in the study as follows: 54 from Nord, 48 from Grand Est, 97 from Kasai, and 51 from Ouest. Upon arriving in a selected EA and after obtaining the necessary permissions from community leaders, the study team walked around the EA to develop a sketch map, specifying roads and dwelling structures. The study team then conducted a census of the households in the EA using a household listing form. The household listing form included cluster number, EA number, building/compound number, the nickname of the head of household, the household address or location description, the number of women ages 15-49 and the number of men ages 18-59 years in the household. To obtain the information necessary to complete the household listing form, the study team approached a responsible adult in each building or compound, briefly introduced the study using a prepared introduction script, and asked if they were willing to provide the necessary information.

Once household listing was complete, the study team selected 20 households from the list using a random number generator: Random UX. For the purpose of this survey, a household was defined as a group of people who live in the same dwelling, share meals, and recognize one individual as the head of the household. If a selected EA did not have the required number of households needed for the survey, the study team listed households from an adjoining EA to make up the number. The household list was destroyed once data collection was finished in each cluster.

Interviewers visited each of the 20 selected households per cluster, recruited and consented an adult in the household and administered the household questionnaire. The household questionnaire included a listing of all members of the household, questions on household characteristics and assets, and a bed net roster. As part of the administration of the household questionnaire, the interviewer asked to see all the available mosquito nets in the household and asked specific questions about each one of them. Observing the nets was necessary to assess the brand of the net and to verify whether WHO recommendations about net care were being implemented or not. Following the completion of the household questionnaire, the

interviewer used the household member listing to select all women ages 15-49 years for interviews using the individual women's questionnaire. The interviewer approached each eligible woman and used a screening tool to determine her eligibility. The screening tool included questions on age, whether or not the woman was a usual member of the selected household, and languages spoken. If the woman met eligibility criteria, the interviewer consented her and administered the individual women's questionnaire. Refusal rates at this level were negligible.

Seven of the 20 selected households (every third household) in each EA were randomly selected and designated as households eligible for male interviews in addition to the female and head of household interviews. The eligible male respondent in each of this subset of households was the spouse/partner of one of the eligible women. In cases where there were multiple eligible women in a household, to select the male respondent, the interviewer selected one married or cohabiting female participant randomly by marking their first name or nickname on a separate small piece of paper, placing those pieces of paper in a bowl or hat, and randomly drawing one piece of paper. The husband/partner of the selected woman was then selected for inclusion in the study. The interviewer consented him and administered the individual men's questionnaire.

In all, our sample included 4,998 households, 6,034 women and 1,780 men.

## 2.3 Data Collection and Analysis

### 2.3.1 Data Collection Tools

This study was based on similar surveys carried out by CCP, which investigated the prevalence and ideational determinants of malaria-related behaviors, including ITN use and care, prompt care-seeking for fever in children, use of antenatal care and receipt of IPTp during pregnancy, and, acceptance of IRS. Three tools were used to collect information from the respondents: household, women and men questionnaires. The tools were adapted from similar tools previously used in Côte d'Ivoire, Cameroon, and Sierra Leone. The men and women questionnaires included questions to assess relevant constructs from the ideation model (**Figure 2.3.1**).

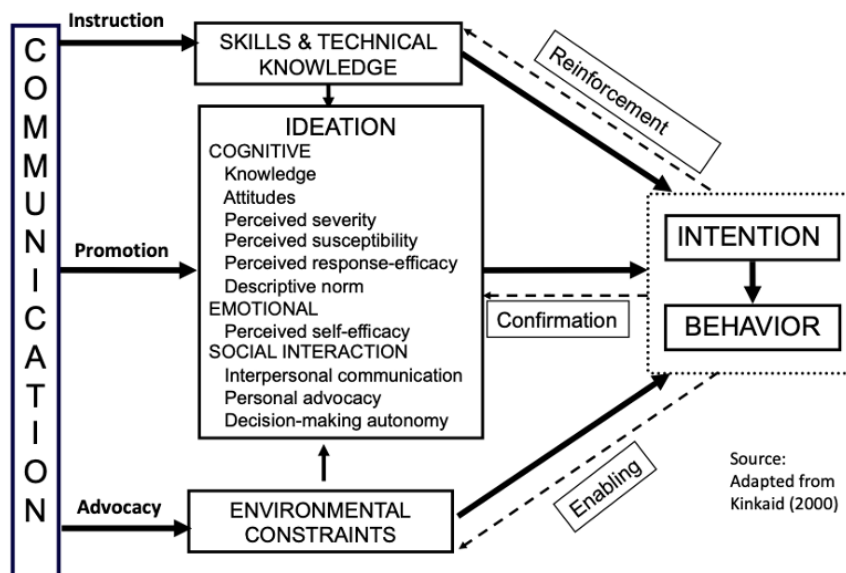


Figure 2: Ideation model of strategic communication and behavior change

The ideation model [13] posits that SBCC strategies can change intention to act and subsequently actual behaviors to the extent that they change people's ideation (or views and ideas that people hold about the behavior). The model recognizes three dimensions of ideation that are relevant for behavior change: cognitive, emotional, and social interaction. The variables under each dimension were borrowed from leading theories of behavior change and have been found to be associated with various health behaviors [14].

The household questionnaire was designed to collect basic socio-demographic information about each household, determine the relative wealth status of the household, estimate the distance of the household from various sources of health care, determine the age and sex of each person within a household, as well as to collect information about each net owned by the household. The women's and men's questionnaires were similar but had some significant differences. Both questionnaires collected basic sociodemographic information about the respondent and included questions about ITN use, repurposing, and disposal. Both questionnaires also included questions to measure ideational factors related to recommended malaria prevention and treatment behaviors as well as exposure to malaria-related messages. The ideational constructs were assessed using a battery of items that formed scales previously validated using data from pre-MBS studies conducted in Nigeria and Liberia. Only women were asked about any recent episodes of care-seeking for a child with fever and receipt of IPTp during their last pregnancy. By including questions on malaria-related behaviors and their sociodemographic and ideational determinants, the research team can examine correlations between exposure and ideational factors, as well as between ideational factors and key behaviors.

### 2.3.2 Data Collection Procedures and Treatment

Breakthrough ACTION hired a local research firm, BEGIS, to implement data collection in the study sites. BEGIS created digital versions of the questionnaires using CSPro and loaded them on Android tablets. BEGIS and Breakthrough ACTION staff co-facilitated a four-day training of trainers followed by six five-day trainings of more than 100 data collectors and team leaders. Each training was followed by one day of pretesting the data collection instruments and procedures in selected non-survey EAs. From the group of trained data collectors, a number of them were selected based on a combination of the following criteria: prior experience in similar surveys; familiarity with relevant languages (French and the predominant language in the study zone); mastery of the digital questionnaires assessed during the role plays; performance during field practice to pretest the instrument; and scores on written daily assessment tests. Twenty-eight teams of data collectors worked to collect data between March 18 and April 26, 2021. In addition, teams of data quality control agents visited about 10% of surveyed households and asked specific questions using a digital questionnaire designed to assess the accuracy of the original interview responses. During this time, Breakthrough ACTION and NMCP staff visited teams in the field to monitor their progress and provide needed support. At the end of data collection, BEGIS submitted three clean data sets, one for households, one for women, and one for men to CCP which then analyzed them using Stata 16.0.

### 2.3.3 Data Analysis Procedures

Measures of ideational variables (e.g., positive attitudes, perceived self-efficacy to take actions, perceived response-efficacy of malaria treatment) were derived based on relevant questions from the women's and men's questionnaires. Similar to the analytic procedure described in the Malaria SBCC Indicator Reference Guide [15], responses for each item were scored, scores for items measuring the same construct added together and the resulting sum collapsed into dichotomous measures. Most of the ideational variables were measured by asking respondents to indicate agreement or disagreement with Likert statements such as, "A blood test for malaria is the only way to know if someone really has malaria or not." Respondents were asked whether they agreed or disagreed with each statement. For these variables, each respondent received a score for that question based on their response and the wording of the question. For example, if agreement with the statement corresponded to a favorable response, the respondents were scored -1 for disagree, 0 for don't know/not sure, and 1 for agree. If disagreement with the statement corresponded to a favorable response, the scoring for that particular statement was reversed. An index score was calculated to reflect how each individual responded to the set of questions for the same ideational construct. The index score was the sum of the individual question scores across all the questions for a given ideational factor. A binary variable was then created by splitting the index score at 0 to distinguish between those with and without the favorable ideational characteristic.

In addition to presenting the prevalence of recommended malaria behaviors and their psychosocial determinants, this report also presents the results of multivariable logistic regression to assess associations between outcomes and several background and ideational variables. The results presented in the Tables show the relationship between the behavioral outcome and the predictor variables, expressed

as odds ratios. The multivariate regression models are useful to identify the potentially modifiable variables that programs could focus on in attempts to change behavioral outcomes. In order to inform the multivariate models, the research team first conducted bivariate regression tests in all zones, and statistically relevant variables (wherein  $p \leq 0.2$ ) were retained and included.

## 2.3 Research Ethics

Prior to implementation, the research team obtained ethical approval from the Johns Hopkins School of Public Health Institutional Review Board and the University of Kinshasa School of Public Health Ethics Committee. Several steps taken during training, recruitment, and interviewing of participants minimized potential risks to study participants. Data collectors underwent training on the ethics guidelines to follow when collecting data on human research subjects. To obtain informed consent from participants, trained data collectors explained the purpose of the survey, the types of questions that would be asked, the potential risks associated with taking part in the survey, and the actions the study team would take to protect the confidentiality of the participants. In addition, data collectors made clear that participants did not have to participate in the study, that they could decide at any point to discontinue their interview, and that they did not need to answer any questions they did not want to. Data collectors obtained assent for research participants under the age of 18 years unless they were married and therefore considered legally emancipated. Minors were given the option, although not obliged, to participate in data collection if their parent or legal guardian agreed to their participation first. The consent, assent and parental permission forms included the contact information of the Principal Investigator of the study and University of Kinshasa School of Public Health ethics Committee so that participants could ask questions or express concerns about their participation in the activity.

To protect the identity of participants, nicknames were used, when possible, instead of legal names. The household listing sheet in each EA was destroyed when data collection finished. Signed consent, assent and parental permission forms were always kept in locked and secure locations.

## 3 Results

### 3.1 Sample Description

This section presents the characteristics of the households from which participants were interviewed. It includes a basic description of the household population, the physical characteristics of the household dwelling unit, and household possession of various assets. The basic sociodemographic characteristics of the men and women of reproductive age interviewed with the individual questionnaire, such as level of education and age category, are also presented in this section. In summary, information was collected on 4998 households and from 6034 women, and 1870 men

#### 3.1.1 Household characteristics

Housing characteristics differ significantly by zone ([Table 3.1.1](#)). For example, on average, households in the Nord zone (2.96) have access to more rooms for sleeping than their peers in Ouest (2.41), Kasai (2.34) and Grand Est (2.45) zones. There are also significant differences in the proportion of households with electricity, varying between 2.68% in Kasai to 60.25% in Ouest zone. The majority (78.66%) of the dwelling units had no ceiling. Proportionally more dwelling units in Nord zone (93.07%) had no ceiling compared to Ouest (73.05%), Kasai (75.41%), and Grand Est (80.04%). Most of the dwelling units in all the zones were constructed with natural or rudimentary materials. Only two in five dwelling units had finished floors (e.g., cement, ceramic tiles, polished wood, vinyl, carpet). The proportion with finished flooring varied considerably across zones: 9.10% in Kasai, 12.81% in Nord, 37.58% in Grand Est, and 62.31% in Ouest. A little over half (54.12%) of the households had finished walls made of cement, stone, covered adobe, bricks or cement blocks. Again, there were significant variations by zone from 24.40% in Kasai to 70.48% in Ouest zone.

Household Characteristic	Nord	Ouest	Kasai	Grand Est	All Zones
Average household size ***	6.54	5.19	4.68	5.59	5.46
Average number of sleeping rooms ***	2.96	2.41	2.34	2.46	2.52
Number of people per sleeping room ***	2.38	2.41	2.15	2.47	2.38
Percentage of households with electricity ***	10.06	60.25	2.68	53.62	41.15
Percent of dwelling units without a ceiling ***	93.07	73.05	75.41	80.04	78.66
Percentage of households near <sup>1</sup> a public health facility ***	93.20	85.96	84.48	75.15	84.76
Percentage of households near <sup>1</sup> a private health facility ***	51.01	66.86	48.08	58.53	59.39
Percentage of households near <sup>1</sup> a pharmacy/chemist ***	84.11	95.53	79.16	82.84	88.29
Percentage of households with finished floors ***	12.81	62.31	9.10	37.68	40.06
Percentage of households with finished walls ***	24.66	70.48	24.40	65.13	54.12

Percentage of households with finished roofs ***	29.87	73.63	36.21	64.08	57.99
<b>Number of observations</b>	<b>1080</b>	<b>1035</b>	<b>1943</b>	<b>940</b>	<b>4998</b>
Notes: <sup>1</sup> Located 5 kilometers or less, less than 30 minutes on foot, or less than 10 minutes by car.					
Significance of differences across zones: *** p<.001					

On average, each household included 5.46 persons, varying between 4.68 in Kasai to 6.54 in Nord zone. Most (85.76%) of the households were located within relatively easy access of a public health facility, defined as living within five kilometers, 30-minute walk or 10-minute car ride of a health facility. Accessibility to a public health facility was more limited in Grand Est (75.15%) compared to Nord (93.20%), Ouest (85.96%) and Kasai (84.48%). In contrast, less than two-thirds (59.39%) of the households had relatively easy access to a private health facility, varying between 48.08% in Kasai to 66.86% in Ouest zone.

### 3.1.2 Household ownership of selected assets

Data on ownership of selected assets are presented on [Table 3.1.2](#) in Annex A. Less than half (47.26%) of all survey households had a radio while about two out of five households (38.99%) owned a television. The proportion of households reporting ownership of a television or a radio was lowest in Kasai and highest in Ouest zone. Ownership of a refrigerator and access to the internet were limited and reported by only about one tenth of the households. Fewer than half (46.76%) of the households owned a watch, varying between 25.12% in Kasai to 59.00% in Ouest zone. Whereas more than two thirds (70.50%) of the households owned a simple mobile phone, only about one quarter (25.45%) had a smartphone. Very few of the households reported owning a car or a computer, particularly in Kasai and Nord zones. In contrast, proportionally more households in Nord (37.29%) and Kasai (38.19%) reported owning a bicycle compared to Ouest (10.88%) and Grand Est (19.35%). The distribution of the households by wealth quintile shows a larger proportion of wealthier households in Ouest and Grand Est compared to Nord and Kasai. For example, 57.64% of the households in Ouest zone and 35.32% in Grand Est fall in the highest wealth quintile compared to 8.31% in Nord and 5.16% in Kasai zones.

### 3.1.3 Sociodemographic characteristics of household population and survey respondents

The 4,998 surveyed households included a total of 26,573 individuals. The distribution by sex varied by zone but across all zones, there were more women than men ([Table 3.1.3](#)). The skewness in favor of women was more pronounced in the Nord (53.73%) and Ouest (55.25%) zones compared to Kasai (51.03%) and Grand Est (51.39%) zones. The distribution by type of place of residence also varied by zone with the Ouest zone (71.73%) including proportionally more urban residents than the other zones (41.05% in Nord, 36.53% in Kasai, and 43.25% in Grand Est). The age structure is consistent with the pattern expected of a young population. The average age of household members was 22.07 years, varying between 19.42 years in Nord zone to 23.34 years in Ouest zone.

The distribution of the men and women individually interviewed by education level and age group is described in [Table 3.1.4](#). There were differences between men and women and across zones. In general, men were more likely than women to report post-primary education. In contrast, whereas about one tenth of women reported having no formal education, no man did. Men were, on average, older than women. For example, whereas only about one third of women were aged 35 years or older, more than two-thirds of men fell into this age group. This pattern of age differentials by sex is consistent across

zones. Looking at differences across zones, the data reveal that, on average, both men and women from the Ouest zone had a higher level of education than their peers from the other regions. For example, among women, whereas 19.64% in Kasaï, 18.65% in Grand Est and 11.45% in Nord zone reported no education, only 3.97% of their peers in the Ouest zone did. In contrast, the percentage of women with post-primary education was 74.66% in the Ouest zone compared to 43.46% in Kasaï, 54.91% in Nord and 59.49% in Grand Est zones.

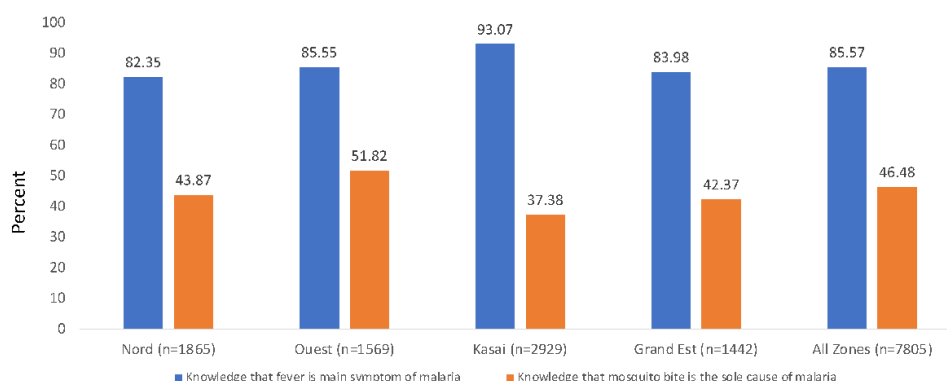
## 3.2 Cross-Cutting Ideational Determinants

This section describes data on cross-cutting ideational variables, including respondents' knowledge about malaria, their level of perceived threat (i.e., severity and susceptibility) related to malaria, interpersonal communication regarding malaria, and general perceptions toward health workers (community and facility-based) regarding malaria. These variables are included in regression models in several behavioral modules. The following subsections will describe results in further detail. Questions used to comprise each indicator are available in [Table 3.2.1](#)

### Knowledge of Malaria

Knowledge about malaria was assessed in this survey through questions about the symptoms and causes of malaria. The majority of respondents (Nord: 82.35%; Ouest: 85.55%; Kasai: 93.07%; Grand Est: 83.98%) identified fever as a symptom of malaria. Similarly, more than 90% of respondents in the sample reported correct knowledge of at least one major malaria prevention measure. [Table 3.2.2](#) summarizes respondents' level of knowledge of malaria. While knowledge of malaria symptoms and major prevention measures is high, fewer than half of respondents (46.48%) correctly identified mosquito bites as the sole cause of malaria.

Figure 3.2.2 Knowledge of malaria symptoms and cause, 2021  
DRC MBS



Correct knowledge of malaria cause (that is, by mosquito bites alone) varied by zone (Nord: 43.87%; Ouest: 51.82%; Kasai: 37.38%; Grand Est: 42.37%, see Figure 3.2.2). Overall as well as in the Ouest and Kasai zones, this knowledge indicator was also higher among women (49.20%) compared to men (42.86%). Correct knowledge of malaria cause was less prevalent among respondents with no formal education (36.75%) compared to those with primary (52.43%) or post-primary education (45.71%). This indicator did not significantly differ based on urbanicity or household wealth. It is pertinent to note that correct knowledge of malaria cause is positively correlated with several malaria behaviors; these associations will be described in further sections.

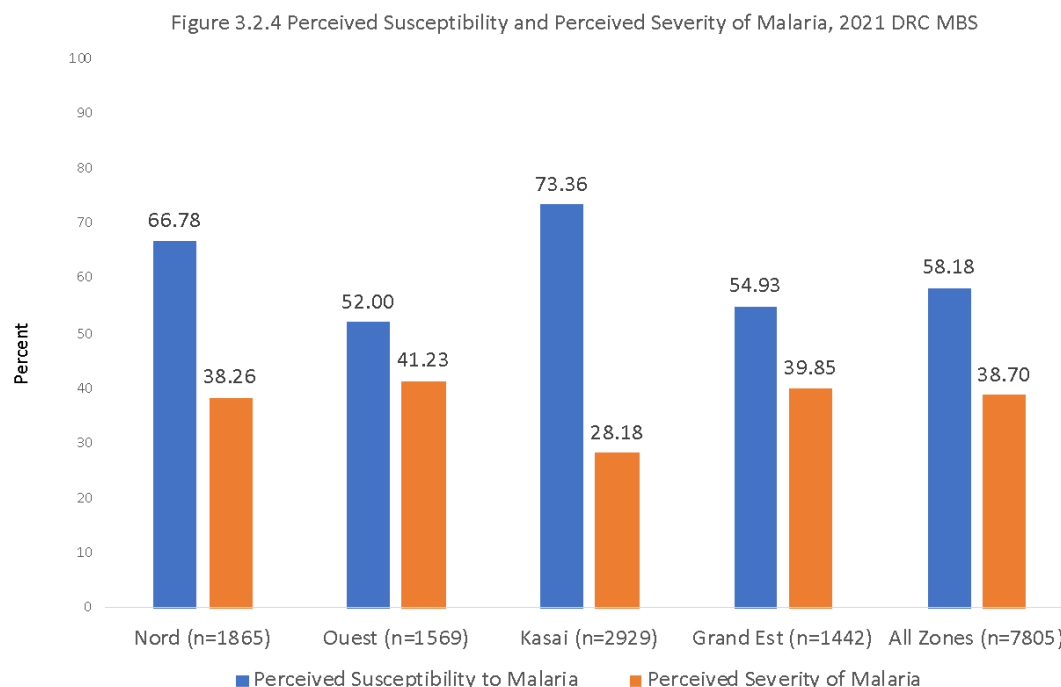
### Perceived Susceptibility

Almost 6 in 10 respondents perceived susceptibility to malaria, which refers to one's perception of their risk of acquiring malaria. Perceived susceptibility was assessed by measuring a respondent's agreement with four related statements. Overall, perceived susceptibility was more common among men (60.89%) compared to women (56.15%) ([Table 3.2.3](#)). Kasai respondents (73.36%) reported perceived susceptibility more commonly than in other zones (Nord: 66.78%; Ouest: 52.00%; Kasai: 73.36%; Grand Est: 54.93%). Rural residents were significantly more likely than urban residents to report perceived severity (Rural = 65.13%; urban = 53.90%). There were intra-zonal variations but only in Ouest and Grand Est. In Ouest zone, there were differences by sex (higher for males than for females), education level (higher among those with no education compared to others), and wealth quintile (higher in the second wealth quintile than for others). In Grand Est, the only significant difference was with respect to wealth quintile (higher in the lowest wealth quintile compared to others).

### Perceived Severity

Perceived severity refers to one's perception that a disease or illness is serious. This cross-cutting ideational determinant was assessed by measuring respondents' agreement or disagreement with four statements related to perceived severity of malaria (see [Table 3.2.1](#)).

Overall, fewer than 4 in 10 respondents perceived severity of malaria and this perception varied across zones: Nord: 38.26%; Ouest: 41.23%; Kasai: 28.18%; Grand Est: 39.85% (Figure 3.2.4). Kasai residents were significantly less likely to perceive the severity of malaria than residents in other zones ( $p < 0.05$ ; [Table 3.2.4](#)). Differences based on urbanicity were revealed in the Ouest zone: respondents living in urban areas were more likely than their rural counterparts to perceive the severity of malaria. Men in the Nord and Kasai zones were more likely than women to perceive malaria severity. In Kasai, people with no education were significantly less likely to perceive malaria as a potentially severe disease whereas the reverse was the case in Ouest zone.



### Interpersonal Communication About Malaria

Interpersonal communication about a health behavior has been found to be associated with one's likelihood of practicing that behavior [16-18]. Discussions about malaria were not very common among participants ([Table 3.2.5](#)). Overall, about three in ten of respondents reported having discussions with their spouse/partner in the six months prior to the survey, and only 24.99% of respondents reported talking with a friend or family member (not spouse) about malaria in the previous six months. The percentage reporting interpersonal communication varied across zone, with Grand Est residents being the least likely to report interpersonal communication, both with one's spouse (18.15%) or another family member or friend (11.63%). In the Ouest and Kasaï zones, women were less likely to report interpersonal communication about malaria than men. Urban Kasaï residents (49.32%) were also significantly more likely to report interpersonal communication than the rural population (30.79%). No additional differences by urbanicity, sex, or education level were found.

### Perceptions About Health Workers

Positive perception about a facility health worker's general treatment of their patients was derived from agreement or disagreement with a statement that health workers in their community treat patients with respect. Most respondents (74.99%) held a positive general perception about health workers, and the prevalence of this perception did not significantly differ by zone (Nord = 75.46%; Ouest = 75.06%; Kasaï = 72.72%; Grand Est = 75.79%; [Table 3.2.6](#)). Overall, respondents in the highest wealth quintile were more likely to have this type of positive perception compared to their peers in the lower wealth quintile. Women in the Nord zone were more likely than men to hold positive perceptions as were responders aged 45 years or older in Grand Est compared to younger peers. There were no other differences by sex, education, urbanicity, or wealth quintile.

### Gender Norms

Four questions were used to assess equitable gender norms ([Table 3.2.7](#)). In general, the data revealed egalitarian gender attitudes related to malaria prevention and treatment. Very few respondents favored preferential treatment of boys or girls in terms of treatment of malaria or allocation of available nets. Roughly 1 in ten respondents agreed with the statement that it is more important for female children to sleep under a net when nets are scarce (Nord = 10.99%; Ouest = 10.14%; Kasaï = 11.01%; Grand Est = 7.81%). The percentage agreeing with this statement was higher in urban settings ( $p < 0.01$ ). Very few participants agreed with the statement that male children should sleep under nets rather than female children when there were not enough nets (Nord = 3.72%; Ouest = 5.48%; Kasaï = 9.44%; Grand Est = 2.40%). Few respondents agreed with statements that supported preferential care seeking based on the gender of the child. After aggregation of the responses to the four questions, a large majority (94.2%) reported egalitarian gender attitudes. Urban respondents were less likely to report equitable gender attitudes ( $p < 0.01$ ), particularly in the Ouest and Kasaï zones. No differences based on sex or household wealth were found.

About three-quarters of participants agreed with the statement that pregnant women should feel comfortable asking her husband/partner to go to the health facility for a prenatal consultation, with some slight variations by zone (Nord = 74.25%; Ouest = 74.93%; Kasaï = 80.04%; Grand Est = 71.74%). Furthermore, women (72.71%) were less likely to agree with this statement than men (77.57%).

### 3.3 Malaria Case Management for Children Under Five Years Old

To ensure effective and appropriate care of malaria, diagnosis and treatment is recommended the same or next day following onset of fever. Malaria among children under five is particularly concerning and is a leading cause of child morbidity and mortality in DRC. In DRC, malaria diagnostic testing and treatment is provided at health facilities and by CHWs. For children under five, these services are supposed to be free in public health facilities and from CHWs. This section describes the ideational and behavioral variables regarding management of malaria in children under five years old.

#### 3.3.1 Ideational Variables Linked with Care-Seeking

The ideational factors measured in the case management module include: knowledge of when to seek care for fever, attitudes toward prompt care-seeking for fever, perceived response-efficacy of diagnostic testing, perceived response-efficacy of malaria treatment, perceived self-efficacy for prompt care-seeking, descriptive and injunctive norm toward prompt care-seeking, perceptions of health facilities and health workers regarding treatment of malaria in children, and decision-making related to malaria case management. [Table 3.3.1](#) summarizes the questions used to comprise each ideational indicator.

##### Knowledge

When asked when one should seek advice or treatment for a child with fever, more than 85% of participants responded “same or next day” after onset of fever. Women (84.16%), respondents under 24 years old (79.79%), and residents in Grand Est zone (80.44%) were significantly less likely to report this knowledge compared to men, respondents older than 24, and residents of other zones ([Table 3.3.2](#)). Furthermore, approximately half (51.03%) of participants responded that one should do so immediately or the same day after onset of fever. Kasai residents were more likely (64.03%) than other zones to report that a child with fever should be taken for care immediately or the same day after onset of fever. More than 85% of respondents reported correct knowledge that drawing blood for a malaria test is the best way to know if someone has malaria. This knowledge is less prevalent in the Grand Est zone (73.87%) and among women who have received less than a primary level of education (73.23%). Data indicate near universal knowledge that a health facility is the best place to go to treat malaria (97.19%). Finally, fewer than half (48.66%) of participants indicated correct knowledge that ACT is an effective treatment for malaria. Men, urban residents, and individuals with a secondary education or higher were more likely than women, rural residents, and individuals with lower education, respectively, to display this knowledge. In addition, participants in the Ouest zone were least likely (39.14%) to correctly report ACT as an effective treatment for malaria.

##### Attitudes toward care-seeking and treatment

Care-seeking and treatment attitudes were assessed through nine items in the questionnaire. Data for all items are available in [Table 3.3.3](#). When combined, the data showed that about two-thirds (67.47%) of the study population held positive attitudes towards care-seeking and treatment. Positive attitudes were significantly less widespread in Kasai (53.95%,  $p < 0.001$ ) when compared to the other zones, as well as among those who did not complete primary school (57.98%, as compared to 68.91% among those who completed primary school,  $p < 0.01$ ). Agreement with individual attitudinal statements varied across sociodemographic characteristics. For example, Kasai respondents were more likely than those in other zones to believe a patient should ask for malaria medicine from a provider even if the provider confirms the fever is not caused by malaria ( $p < 0.001$ ). Kasai residents (64.03%) were also more likely than residents

in the Ouest zone (48.43%) to agree that it is better to start by giving their febrile child any malaria medicine they have at home. Women (46.93%) were less likely than men (51.34%) to agree that a parent should first ask the provider for an injection if they think their child has malaria.

#### Perceived response-efficacy: malaria testing and treatment

Perceived response-efficacy of malaria testing was assessed through three items: the belief that a blood test is the only way to properly diagnose malaria; a belief that malaria treatment medicine is not needed if blood test results are negative; and disagreement that parents can diagnose malaria as well as a blood test. Based on these questions, six in 10 (60.84%) of respondents reported perceived response efficacy toward malaria testing ([Table 3.3.4](#)). Perceived response-efficacy of malaria testing is significantly lower in the Kasai zone (46.88%), as well as among respondents who did not complete primary school (49.90%). When considering variations within zones, rural respondents in the Ouest (73.83%) and Kasai (50.58%) zones were more likely to perceive malaria testing as efficacious when compared to their urban counterparts. Education level and household wealth quintile were positively associated with perceived response-efficacy of malaria testing in the Grand Est zone. There were no significant differences by sex or age.

When considering malaria treatment, perceived response-efficacy was assessed through three items: perception that an injection to treat malaria is more effective than oral medication; belief that malaria drugs obtained from health facilities are effective treatment; and the perception that malaria medicines from the market are not the same quality as those distributed in health facilities. Across all zones, 55.43% of respondents have perceived the response-efficacy of malaria treatment. Kasai residents have a significantly lower rate (45.69%) than other zones, as do individuals with less than a primary education (48.42%). No significant differences were present by respondent sex, age, urbanicity, or household wealth. This is true when considering the total sample, as well as within each zone.

#### Perceived self-efficacy for malaria testing and treatment

Perceived self-efficacy refers to a person's confidence in their ability to take specific measures to protect themselves or their family against an unpleasant outcome. Within the case management module, this construct was measured using six items worded differently for men and women, which related to respondents' perceived self-efficacy to do or support several actions, including: find the money to take their sick child to the health facility; obtain/provide permission to their spouse or family member to take their febrile child to the health facility; take their child to the health facility the same or next day after s/he develops a fever; request a blood test for malaria when at the health facility with their child; and find the money to pay for recommended malaria medication. Perceived self-efficacy for malaria testing and treatment was derived based on responses to each of the above items.

Results indicate near universal (93.47%) perceived-self efficacy for malaria testing and treatment across the sample ([Table 3.3.5](#)). There are significant differences by sex, level of education, household wealth quintile, and zone: Men (95.23%) and residents in the Ouest Zone (96.77%) are more likely than women or respondents in other zones to report perceived self-efficacy. Participants under 24 years old (89.49%) as well as those with less than a primary education (86.82%) or whose household is in the lowest wealth quintile (90.76%) are less likely than others to perceive self-efficacy regarding malaria testing and treatment.

### Descriptive and injunctive norms: care-seeking and treatment

There is literature supporting the notion that individuals are more likely to practice a malaria-related behavior if they perceive others in their community practice or approve of the behavior. Descriptive norms related to prompt care-seeking and malaria testing were defined as perceiving that at least half of the people in their community practice the behavior. Favorable injunctive norm was defined as perceiving that fewer than half of the people in their community would criticize them if they knew that they took their febrile child for care promptly. [Table 3.3.6](#) describes the prevalence of 1) the descriptive norm of prompt care-seeking in the community; 2) the descriptive norm that febrile children who are taken to a health facility get tested; and 3) the injunctive norm of prompt care seeking for children with fever.

Results show wide variability across study zones regarding the descriptive norm about prompt care-seeking. In the Nord zone, 73.64% of respondents perceive that most people in their community promptly take their child to a provider the same or next day after onset of fever. This percentage contrasts with the Grand Est zone, where 44.03% of respondents held this perception of their community. There were no significant differences by respondent sex, age, urbanicity, or education. Regarding malaria testing, 58.55% of respondents believe at least half of febrile children in their community who are taken to a health facility are tested for malaria. There are again zonal differences, with proportionally fewer Grand Est respondents (42.62%) reporting this norm compared to the other zones. Finally, perceived injunctive norm in favor of prompt care seeking for children with fever was reported by nearly six in ten participants. Individuals in the Nord zone were significantly more likely (75.64%) than their peers from the other zones to perceive an injunctive norm that favors prompt care seeking. Urbanicity, education, and household wealth also yielded significant differences in reporting of injunctive norms. Rural residents (66.11%) reported a positive injunctive norm at a higher rate than urban residents. Those in the highest wealth quintile (51.01%), as well as those with less than a primary education (48.96%) also reported a supportive injunctive norm at a lower rate than other groups.

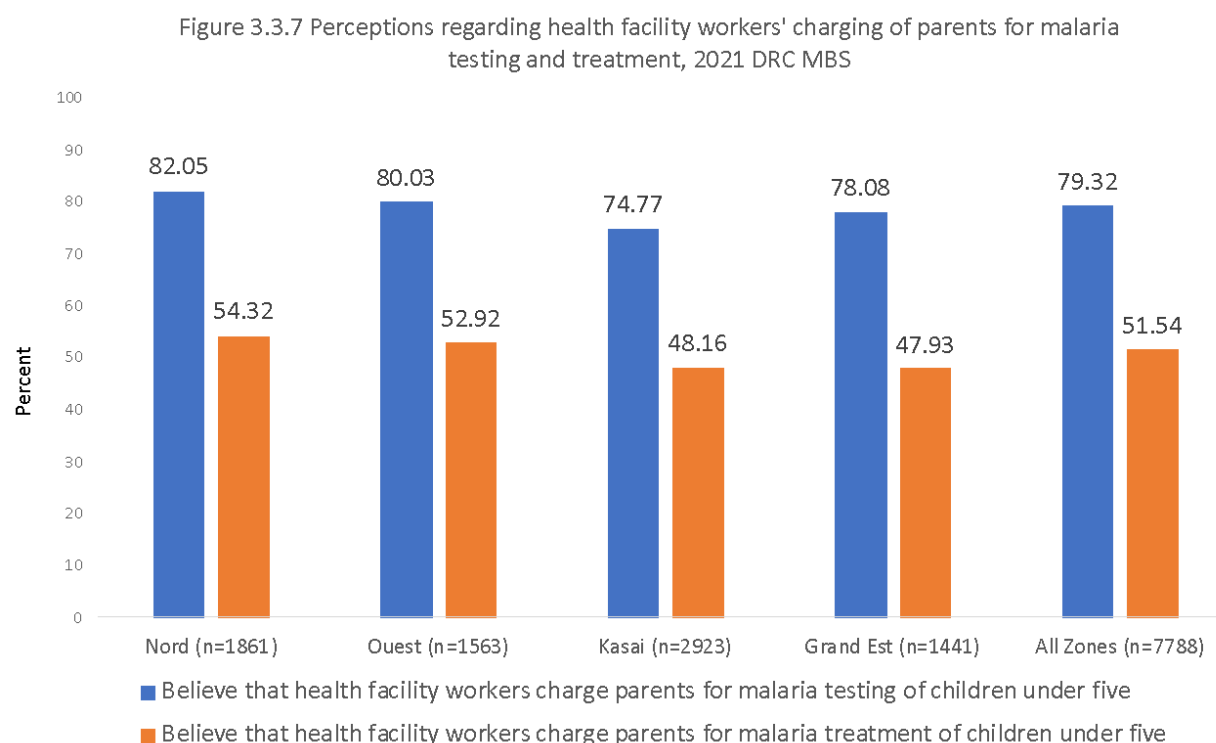
### Perceptions toward health facilities and health workers: case management

Respondents were determined to hold favorable perceptions toward health facilities regarding malaria diagnosis and treatment if they agreed that health facilities in their community have a) the blood test kit to diagnose malaria; and b) the medication to treat malaria. Overall, 70.37% of respondents reported favorable perception toward health facilities in this regard ([Table 3.3.7a](#)). Within the Grand Est zone, favorable perceptions toward health facilities were less common among men (61.99%) than among women (63.37%). No other significant variations emerged across or within zones.

Perceptions toward health workers regarding malaria diagnosis and treatment were in two categories: perceptions toward health facility workers, and perceptions toward community health workers. Positive perceptions were based on participant report that a) local health providers (based in a facility or the CHW) know how to treat malaria in children; b) the provider charges parents for malaria medication in children less than five years old; and c) the provider charges parents for malaria testing in children less than five years old. Per national policy, all malaria testing and medication at health facilities are free of charge when the case involves a child under five years old.

Results indicate a largely negative perception of health facility workers – fewer than two in ten respondents (18.58%) reported favorable perceptions toward health facility workers ([Table 3.3.7b](#)). This low rate is driven largely by a common belief that health facility workers charge parents of children under five years old for malaria treatment and testing. More than three quarters (79.32%) of respondents

reported they believe health facility workers will charge parents for a malaria test of children under five (Figure 3.3.7). Further, more than half (51.54%) of respondents cited a belief that health facility workers charge parents for malaria treatment of children under five years old.



Perceptions toward community health workers' case management were moderately favorable. Approximately half (47.06%) of respondents reported favorable perceptions toward CHWs. Favorable perceptions were significantly less common in the Grand Est zone (31.85%), as well as among rural residents (41.45%). The belief that CHWs charge their parents for malaria testing was common (54.84%) although less so than what we observed regarding facility-based health workers.

#### Participation in decisions about malaria care-seeking and treatment

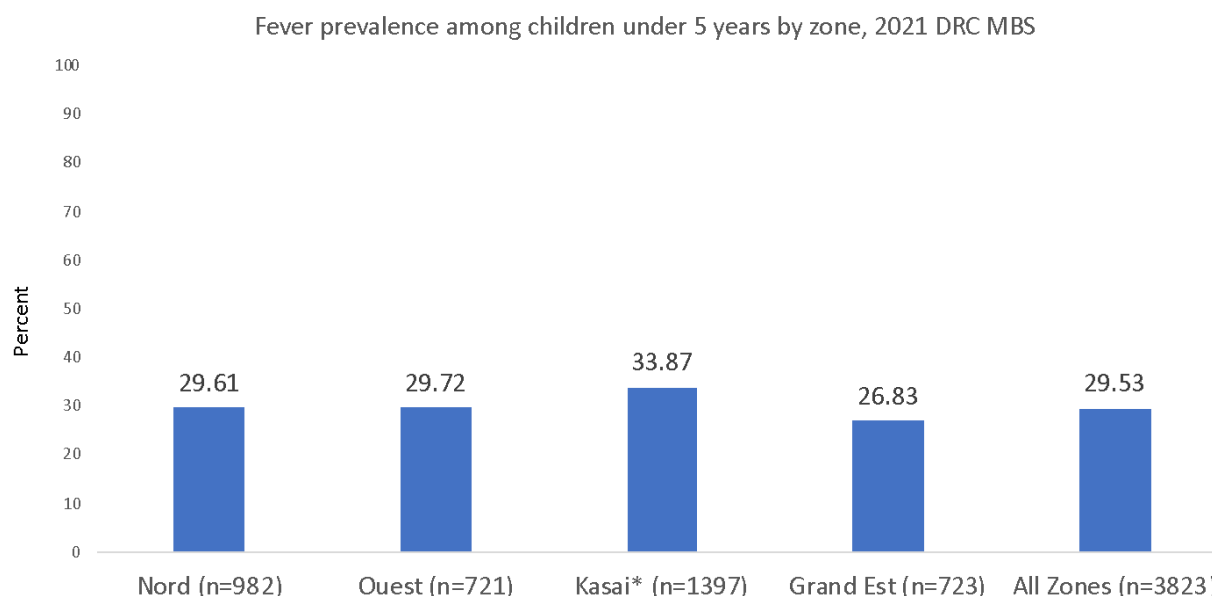
In the case management module, married respondents were asked who in their household/family makes the decision about a) whether to go to a health facility when they think their child has malaria; and b) whether to purchase medicine when the child is sick with fever. Response options included sole or joint decision between the husband and wife. When deciding whether to go to a health facility for a child that may have malaria, men (77.89%) were more likely than women (46.46%) to participate in the decision ([Table 3.3.8a](#)). The same pattern is true when considering the decision to purchase medicine for a sick child (Men = 88.05%; women = 44.00%). In each zone and for each decision type, men were more likely than women to participate in case management decisions ([Table 3.3.8b](#)). Similarly, individuals with post-primary education were more likely than those with lower education to report participation in these decisions.

### 3.3.2 Case Management Behaviors

Mothers or caretakers were asked about care-seeking behaviors for children under five years old who experienced a fever within the prior two weeks. Behaviors included whether care was sought for the child; where care was sought for the child; and how much time elapsed between the onset of fever and when care was sought. For children who were taken to a health facility, caretakers were asked whether a malaria test was administered and if so, the results of the malaria test; whether they (the caretaker) requested an injection against malaria for their child; and whether the child was given medicine for malaria following the test.

#### Prevalence of Fever

While the MBS is not designed to estimate fever prevalence at the population level, data on fever was collected to provide us with the necessary context for care-seeking and treatment for children. Women with children under five years old at their charge were asked whether any of those children had a fever within the two weeks prior to the survey. Across all zones, 29.52% of children under 5 years old had a fever within the two weeks prior to the survey, according to their woman's self-report. Prevalence varied by zone, with children under five years old in Kasai zone experiencing fever at a significantly higher rate (33.87%) than other zones (Figure 3.3.9).



#### Care-Seeking for Fever

With regards to the timing of care seeking, fewer than half (49.12%) of caretakers of children under 5 reported having sought treatment or advice for their febrile child promptly, that is, on the same or next day as the onset of fever ([Table 3.3.9](#)). Results did not vary significantly by zone, but variation did exist by age of the child. Children under one year old were more likely to be taken promptly for care compared to those aged 1 – 2 years ( $p<0.05$ ), and those aged 3 – 5 years old ( $p<0.01$ ).

About six in ten (57.06%) children under 5 years old with fever were taken to a health facility for care. Seeking care at a health facility occurred at a lower rate for children in the Grand Est zone (40.41%) when compared to other study zones. Children 36 months old or older were less likely than younger children to

be taken to a health facility at any time ( $p < 0.01$ ), and there were no significant differences based on urbanicity, household wealth, or education level of the mother.

Across all zones, 40.62% of children under five with fever were taken to a health facility for care the same or next day after its onset. This behavior is referred to as appropriate care-seeking and is the primary behavioral outcome that we focus on in the rest of this section. The rate at which appropriate care was sought varies by zone, being least likely to occur in Grand Est (30.79%) compared to the other zones. Children 36 months or older received appropriate care at a lower rate than children under 12 months old – 32.42% of children 36 months or older received appropriate care, compared with 48.72% of children under 12 months old ( $p < 0.001$ ).

Characteristic	Care was sought for child under 5 with fever the same or next day after fever onset	Care was sought for child under 5 with fever at health facility at any time	Care was sought for child under 5 with fever at facility and the same or next day after fever onset (i.e., appropriate care) <sup>2</sup>
<b>Zone</b>			
Nord	55.57	65.96	50.10
Ouest	47.81	60.61	40.80
Kasaï	47.52	55.66	39.76
Grand Est	46.36	40.41**	30.79***
<b>Age of child</b>			
0-11 months	57.83	61.75	48.72
12-35 months	48.57	62.99	42.78
36-59 months	43.46**	47.23**	32.42***
<b>Residence</b>			
Urban	50.34	57.79	42.47
Rural	48.22	56.09	39.23
<b>Mother's education</b>			
None	46.59	52.83	42.00
Primary	52.85	60.75	45.02
Secondary+	47.36	55.55	37.93
<b>Wealth quintile</b>			
Lowest	49.75	53.58	42.27
Second	40.95	50.64	33.59
Middle	51.09	59.76	43.22
Fourth	41.50	55.00	32.74
Highest	56.62	61.40	47.13
<b>Total</b>	<b>49.12</b>	<b>57.06</b>	<b>40.62</b>
<b>Number of Observations</b>	<b>974</b>	<b>974</b>	<b>974</b>
2 Defined as taking the child to a health facility or CHW as a first recourse the same or next day after onset of fever. Notes: Significance of difference of means across groups * $p < .05$ ; ** $p < .01$ ; *** $p < .001$			

### Testing, Diagnosis and Treatment of Fever in Children

More than two-thirds (67.80%) of children under 5 who were taken to a health facility were then tested for malaria. Testing rates varied significantly by zone, with Grand Est (50.45%) children receiving tests at a significantly lower rate than other zones ([Table 3.3.10](#)). While children under two years old were most likely to be taken to a health facility, testing rates once at the facility did not vary based on the age of the child. Urbanicity and household wealth also did not yield significant variation in testing.

Overall, 88.79% of children tested for malaria yielded a positive result, confirming a malaria diagnosis. Results did not vary significantly by sociodemographic characteristics or zone. Of the 385 children in the sample who were diagnosed with malaria, fewer than half (40.64%) reportedly received ACT. Note that during the survey special efforts were made to ascertain the name of the medications received by the child, including asking the caretaker for the name of the medications that the child received and showing the caretaker pictures of ACTs commonly available in DRC to enable the respondent to choose the one that most closely resembled the medication taken by the child. The percentage of children with diagnosed malaria that reportedly received an ACT was significantly higher for children in the Nord zone (58.51%) and lowest in the Grand Est zone (32.84%). Results did not significantly vary based on the age of the child, urbanicity, or household wealth. Finally, among the children with confirmed malaria who received ACT, 71.94% received the medicine the same or next day after the start of the child's fever. Prompt receipt of ACT following a confirmed malaria test widely varies across study zones – in the Nord zone, more than 90% of children who received ACT received it the same or next day, compared to about two-thirds of children in the other three zones (Ouest = 58.97%; Kasai = 69.87%; Grand Est = 61.39%).

Results of the multivariable logistic regression models showing the factors associated with appropriate care for children under five with fever are presented on [Table 3.3.11](#). The analysis found several ideational variables to be significantly positively associated with appropriate care seeking in the overall sample. These include knowledge that the best time to seek care for a child sick with fever is immediately or same day after its onset; interpersonal communication about malaria in the prior six months; identification of a malaria campaign logo; successful completion of the PNLP campaign slogan; and the perception that health facility workers treat patients with respect. Specifically, caretakers who responded that the best time to seek care for a child with fever was immediately or the same day as its onset were more than three times as likely as other caretakers to report appropriate care. Odds of appropriate care were 90% higher for caretakers who reported interpersonal communication about malaria in the past six months. In addition, caretakers who correctly identified the malaria campaign logo or completed the campaign slogan experienced increased odds (52% and 50%, respectively) of appropriate care. The perceptions that health facility workers treat patients with respect was found to increase the odds of appropriate care by 65%. The association with knowledge about malaria diagnosis was positive albeit weakly significant ( $p < 0.1$ ). Caretakers who perceived that facility workers charge parents for malaria treatment were 33% less likely than others to practice appropriate care, while other ideational variables included in the model (correct knowledge of cause of malaria; perceived susceptibility of malaria; perceived severity of malaria) did not yield statistically relevant associations.

In addition to ideational variables, several sociodemographic characteristics emerged as predictive of appropriate care. Caretakers in Kasai zone had reduced odds of appropriate care-seeking when compared to Nord zone. Age of the child also appeared to be strongly correlated with appropriate care – children 36

months or older were 43% less likely than children under 12 months old to receive appropriate care-seeking.

**Table 3.3.11: Results of the logistic regression of appropriate care-seeking of children with fever in the past 2 weeks<sup>1</sup>**

CORRELATES	ADJUSTED ODDS RATIO	STD. ERROR
<b>IDEATIONAL DETERMINANTS</b>		
Knowledge that best time to seek care for a child sick with fever is immediately or same day after its onset	3.25***	0.49
Discussed malaria with spouse or relative/friend in the prior six months	1.90***	0.29
Perceived that health facility workers treat patients with respect	1.65*	0.40
Perceived that health facility workers charge parents for malaria treatment for children under five	0.67*	0.13
Knows that a blood test is the best way to diagnose malaria	1.52‡	0.35
Knows that mosquito bites are the only cause of malaria	0.86	0.13
Perceived severity of malaria	1.07	0.17
Perceived susceptibility of malaria	0.87	0.15
<b>SOCIODEMOGRAPHIC DETERMINANTS</b>		
Correctly identified malaria campaign logo	1.52**	0.25
Child age in months (RC = child under 12 months)		
12-35 months	0.84	0.16
36-59 months	0.57**	0.11
Successfully completed malaria campaign slogan	1.50*	0.31
Urban residence	0.69*	0.12
Zone (RC=Nord)		
Ouest	0.79	0.19
Kasaï	0.63*	0.12
Grand Est	0.76	0.18
Household Wealth Quintile (RC=Lowest)		
Second	0.69	0.16
Middle	1.12	0.25
Fourth	0.77	0.19
Highest	1.30	0.40
Mother completed primary school	0.85	0.21
Pseudo-R <sup>2</sup>	12.94%	
Number of observations	973	
Notes: ‡ p<0.1 * p<0.05; ** p<0.01; *** p<0.001. n/a: not applicable		
<sup>1</sup> Defined as taking the child to a health facility or CHW as a first recourse the same or next day after onset of fever.		

## 3.4 Malaria in Pregnancy

In this section, we present survey findings related to prevention of malaria in pregnancy. Specifically, we start with findings on the ideational determinants of the use of antenatal care (ANC) and intermittent preventive treatment of malaria during pregnancy (IPTp) services. We then describe behaviors and intentions related to ANC and IPTp. Variations by sociodemographic characteristics and across zone are highlighted in the results.

### 3.4.1 Ideational Variables Linked with Antenatal Care Attendance and IPTp Use

This subsection presents information on ideational variables that may influence the use of ANC and IPTp. The survey measured the following ideational variables relevant to pregnancy and pregnancy care: knowledge, attitudes, perceived severity of malaria in pregnancy, perceived response-efficacy of IPTp, perceived self-efficacy, descriptive norms relating to IPTp, perceptions of health providers, as well as spousal communication and decision-making about ANC.

Knowledge: Knowledge about ANC and IPTp was assessed based on three questions that focused on the ideal timing of the first ANC visit, the number of times a pregnant woman should receive ANC, and the number of times a woman should receive the SP during pregnancy. The data revealed a low level of knowledge about these recommendations. Overall, 54.46% of the respondents knew that a woman should seek ANC in the first trimester of pregnancy or as soon as she suspects she might be pregnant while 55.78% knew that a woman should go for ANC at least four times during pregnancy and 46.26% knew that a pregnant woman should receive at least three doses of SP. We assessed comprehensive knowledge about ANC/IPTp by combining the three knowledge questions. Less than one quarter (23.73%) of the respondents correctly answered all three questions and are considered as having comprehensive ANC/IPTp-related knowledge. Although generally low across the board, there were significant variations in comprehensive knowledge by socio-demographic and geographic variables as presented on [Table 3.4.1](#). This knowledge indicator was lowest in the Grand Est zone (14.17%) and highest in the Ouest zone (29.95%). In addition, overall, the indicator was higher among women (26.05%) compared to men (20.64%) and in urban (26.01%) than in rural areas (19.05%). People with no education were less likely to be knowledgeable about ANC/IPTp compared to their educated peers. There are also intra-zonal variations by sex (Ouest), age group (Nord and Kasai), wealth quintile (Nord, Ouest and Kasai), education (Nord) and place of residence (Ouest).

Attitudes towards ANC/IPTp: Attitudes towards ANC/IPTp were assessed through five items in the questionnaire. The items included belief about the safety of SP when taken on an empty stomach, belief about early debut of ANC, the perceived safety of SP for the woman and her unborn child, and the perceived importance of going for ANC multiple times during pregnancy. When these items were combined, the data showed that about two-thirds (66.30%) of the study population had positive attitudes towards ANC. Positive attitudes were less widespread in Grand Est compared to the other zones ([Table 3.4.2](#)). Furthermore, the indicator was significantly lower among the younger respondents aged 15 – 24 years (60.72%) compared to their older peers (for example, 70.77% among those aged 45 years and older). Within zones, the prevalence of positive attitudes varied by age group (lower in the youngest age group than in the other age groups; Ouest, Kasai, and Grand Est), and by wealth quintile (variable patterns; Nord, Ouest and Kasai).

Perceived severity of malaria in pregnancy: This construct was assessed through two items: perception that the effects of malaria in pregnancy can be serious for the woman and her unborn child and the belief that pregnant women are more likely to die from malaria than women who are not pregnant. The indicator derived from these two items revealed a widespread understanding that malaria in pregnancy can be severe. Overall, 83.89% of the respondents perceived the severity of malaria in pregnancy. The data revealed that this perception was less widespread in the Grand Est zone (74.95%) compared to the other zones ([Table 3.4.3](#)). Overall, the severity of malaria in pregnancy was more commonly perceived among men (85.32%) compared to women (82.81%) and in rural areas (86.89%) compared to urban areas (82.04%). Young people aged 15 – 24 years (74.78%) were less likely than their older peers (generally above 85%) to perceive the severity of malaria in pregnancy. In the Nord zone, this indicator only varied significantly by age group while in the Ouest zone, there were significant variations by place of residence (higher in rural than in urban areas), age group, wealth quintile and level of education. In the Kasaï zone, the indicator varied significantly by age group and by level of education. In Grand Est, men were more likely than women and older respondents more than young people to report perceived severity of malaria in pregnancy.

Perceived response-efficacy of ANC/IPTp: There is widespread belief in the efficacy of IPTp and ANC as interventions for ensuring positive pregnancy outcomes. Overall, 91.75% believed in the efficacy of ANC while 86.48% believed in the efficacy of IPTp ([Table 3.4.4](#)). The prevalence of perceived response-efficacy of ANC was slightly lower in Grand Est (88.25%) than in any of the other three zones. Similarly, women (90.46%) were less likely than men (93.47%) and urban residents less likely (90.32%) than their rural peers (94.06%) to believe in the response-efficacy of ANC. The variations in this construct by age group was such that young people were less likely to report perceived response-efficacy compared to their older peers. Regarding perceived response-efficacy of IPTp, the prevalence of this construct was highest in the Nord zone (91.60%) and lowest in the Grand Est zone (81.54%). The difference by place of residence was significant (higher in rural than urban areas) as were differences by age group (lower among young people compared to the other age groups). There were also differences by wealth quintile with people in the highest wealth quintile (82.31%) being less likely to report perceived response-efficacy of IPTp than those in the other wealth categories.

Perceived self-efficacy for ANC and IPTp: This construct was measured based on six items that were differently worded for men and women. These items focused on going (or supporting one's spouse to go) for early ANC and the recommended number of ANC visits, going for ANC with spouse, requesting (or supporting spouse to request) SP during ANC visit, and taking (or supporting spouse to take) SP at least three times during pregnancy. The indicator of perceived self-efficacy to take actions related to ANC and IPTp revealed a high level of perceived self-efficacy for men and women. Indeed, 87.97% of women and 92.52% of men perceived the self-efficacy to take relevant actions related to ANC and IPTp ( $p < .001$ ). Variations in this indicator for men and women separately are described on [Table 3.4.5](#). For both sexes, the indicator varied significantly by zone with Grand Est lagging the other zones. As for variations by age group, the data showed that young women were less likely than older women to perceive the self-efficacy to take actions related to ANC and IPTp. The indicator did not vary by age group for men or by any other sociodemographic characteristics for both sexes.

Social norms: Questions to assess three types of social norms were included in the survey tools for men and women. The three social norms measures include: (1) descriptive norm about ANC (that is, the belief that at least half of the pregnant women in their community attend at least four ANC visits); (2) descriptive

norm about IPTp; and (3) injunctive norm about IPTp (that is, the perception that more than half the people in their community would criticize them if they knew that they took IPTp to prevent malaria in pregnancy). The data pertaining to these three measures are presented on [Table 3.4.6](#). About two-thirds (64.04%) of the respondents believed that obtaining at least four ANC consultations was the norm in their community. This belief varied widely by zone: 77.94% in Nord zone, 65.81% in Ouest, 65.76% in Kasaï, and 46.14% in Grand Est. The belief was also more common among women (66.99%) compared to men (60.11%) and in rural (68.32%) than in urban areas (61.39%). In addition, people in the highest wealth quintile were less likely than others to hold this belief. As for the descriptive norm about IPTp, overall, 57.82% believed the use of SP to prevent malaria in pregnancy was a community norm. There were also noticeable differences by zone with the indicator being lower in Kasaï and Grand Est zones. Men were less likely than women to perceive this social norm. The relationship between wealth and the descriptive norm regarding SP was such that the indicator was lower among the people in the lowest and the highest wealth quintiles compared to the other groups. Concerning the injunctive norm about IPTp, 57.40% of the respondents believed that more than half of the people in their community would **not** criticize them for using SP to prevent malaria in pregnancy. This indicator was significantly higher in the Nord zone (74.96%) and lower in Grand Est (43.21%) compared to the other zones. Whereas there was no difference between the sexes, the difference between rural (66.06%) and urban (52.05%) areas was significant. Curiously, the belief was more widespread among people with primary education compared to those with no education or post-primary education. Finally, the people in the highest wealth quintile were less likely to hold this belief than those in the other wealth quintiles.

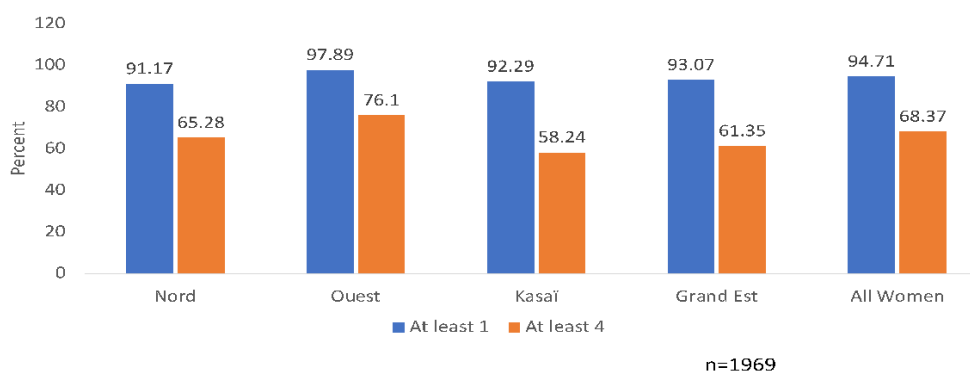
Perceptions about health workers: Perceptions about health workers and their provision of IPTp services were assessed based on four items focusing on (1) the belief that health workers charge for IPTp; (2) the belief that health workers treat their pregnancy care clients with respect; (3) the belief that health workers always offer SP to their pregnant clients; and (4) the belief that health workers refuse to attend to pregnant women who come for service in the first two months of pregnancy. The percentage of people that agreed with each of these statements is presented on [Table 3.4.7](#). The four items were combined to assess the prevalence of positive perceptions about health care workers that provide pregnancy care; the results are also presented on Table 3.4.7. More than one third (36.22%) of the respondents agreed that health workers make their clients pay for SP, varying between 30.64% in Nord zone to 48.99% in Kasaï zone. This belief did not vary by sex but was more common in urban (39.49%) compared to rural (30.93%) areas. Urban respondents were more likely than their rural peers, people in the highest wealth quintile more likely than those in the lower wealth quintiles, and young people less likely than their older peers to hold this belief. Most of the respondents (82.01%) believed that ANC health workers treat their clients with respect. There are variations by zone: from 78.11% in Grand Est to 84.64% in Ouest zone. This perception was also less common among young people compared to their older peers. Regarding the perception that health workers always offered SP to ANC clients, about three quarters (73.50%) of the respondents agreed with the statement. Proportionally more people in the Ouest zone (79.68%) compared to Kasaï (70.51%), Nord (69.93%) and Grand Est (66.07%) zones held this belief. There were also differences by age group and by wealth quintile. The perception was less common among young people compared to the other age groups and in the lowest wealth quintile than in the other wealth quintiles. About one fifth of the respondents believed that health workers would not attend to a pregnant woman during the first two months of pregnancy. This perception that health workers did not favor early debut of pregnancy care was more common in Kasaï zone (23.15%) than in the Grand Est (15.15%) and among people aged 45 years and older (22.31%) compared to young people (16.70%). The perception was

also more common among people with no education (22.38%) or post-primary education (20.56%) than among their peers with primary education (15.54%). When the four items were combined, the data showed that 71.01% of the respondents had positive perceptions about health workers that provide ANC services. The Kasai zone (58.94%) stood out from the other zones with its comparatively low prevalence of positive perceptions about ANC health workers. The difference by age group was also visible, especially when we compare young people to the other age groups. Finally, people with no education (66.52%) were less likely to display positive perceptions about ANC health workers than their peers with primary education (73.12%).

Spousal communication about ANC: Spousal communication was assessed through two related items: (1) ever discussed ANC with spouse measured among all in-union respondents and (2) discussed ANC within the last two years among women who gave birth within the last two years. Over half (56.07%) of in-union men and women reported that they had ever discussed obtaining ANC with their spouse (Table 3.4.8). The differences by zone were such that the indicator was significantly lower in Grand Est (42.72%) and Kasai (51.05%) compared to Nord (58.56%) and Ouest (63.03%) zones. There was also no significant difference between urban (57.98%) and rural areas (53.23%) or between men (55.22%) and women (57.09%). In contrast, young people (51.06%) were less likely to report ever discussing ANC than those aged 25 – 34 years (58.33%) and those in the 35 – 44 years age group (57.69%). There were also some differences by wealth quintile while the people with no education were less likely to have discussed than their peers with primary and post-primary education. Among women who had a child in the last two years, less than half (48.66%) reported that they discussed ANC with their spouse in the last two years. Women from the Grand Est zone were less likely to report this indicator compared to the women from the other zones. There were also differences by age group and level of education.

Participation in decisions about ANC: Men (71.78%) were more likely than women (54.16%) to report that they were typically involved in decisions about when to seek antenatal care (Table 3.4.9). For women, participation in ANC decisions was less common in the Nord and Kasai zones compared to Ouest and Grand Est zones. There were also differences by age group, level of education, wealth quintile, and place of residence.

Figure 3.4.1: Percentage of women that received at least one and at least four ANC visits during their pregnancy in the last two years



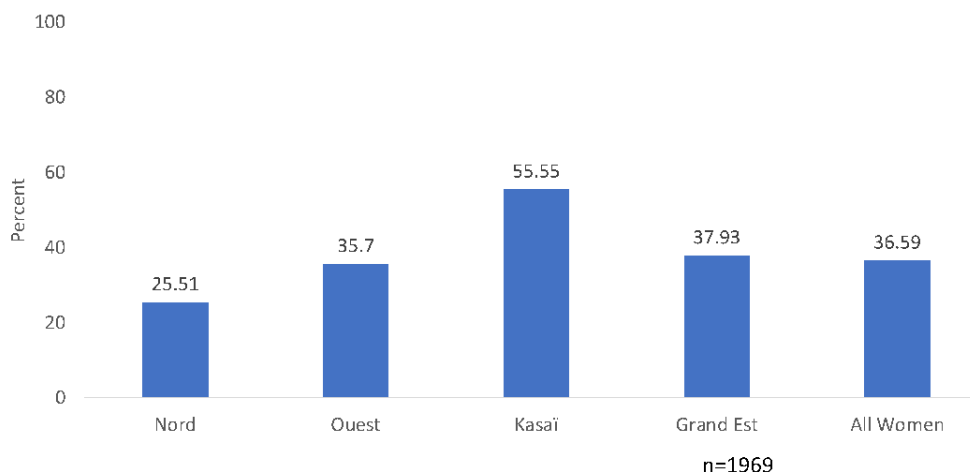
### 3.4.2 ANC Attendance

The majority (94.17%) of the women who had a birth during the last two years obtained at least one ANC consultation. Only about two-thirds of the women obtained the recommended four consultations. Receiving four ANC consultations varied by zone from 58.24% in the Kasai zone to 76.10% in the Ouest zone (Figure 3.4.1).

Receiving the recommended number of ANC consultations also varied by place of residence ([Table 3.4.10](#)) being more common among urban women (74.58%) compared to rural women (60.19%). This outcome was also more prevalent among the women in the highest wealth quintile compared to women in the other wealth quintiles. There was a graduated association with education with the lowest prevalence observed among the women with no education.

Only about one third (36.59%) of the women obtained their first ANC consultation early, that is, in the first trimester of pregnancy. There were variations by zone with this indicator being lower in the Nord zone than any other zone and higher in Kasai than elsewhere (**Figure 3.4.2**). Early initiation of ANC was also more common in urban (39.28%) than in rural (33.04%) areas.

Figure 3.4.2: Percentage of women that received their first ANC consultation during the first trimester of pregnancy



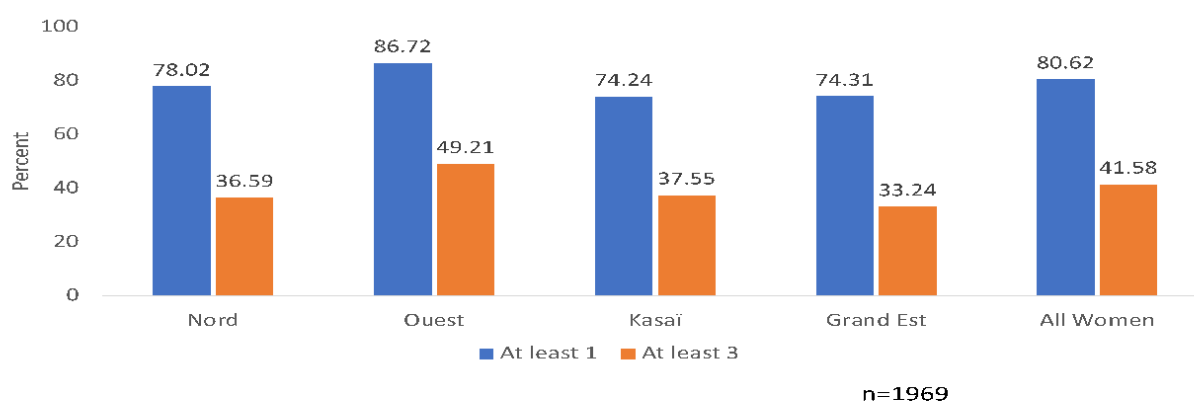
About a quarter of the women who had a child in the last two years reported that their spouse accompanied them to an antenatal care visit. This behavior was significantly less common in the Grand Est (16.76%) compared to the other zones (Nord: 26.78%, Ouest: 27.87%, Kasai: 30.87%). Urban residents (28.28%) were more likely to report spousal presence during ANC compared to their rural peers (21.93%). Similarly, this behavior was more common among women with secondary education or higher (30.05%) compared to those with primary (17.86%) or no education (20.78%).

### 3.4.3 Receipt of SP

The majority (80.62%) of pregnant women received at least one dose of SP during pregnancy but less than half (41.58%) received three or more doses as recommended by the WHO. The percentage that received three or more doses varied significantly by zone, especially when comparing the Ouest with the other zones (Figure 3.4.3). This outcome was also significantly and understandably higher among the women who received the recommended number of ANC consultations and among those who started ANC in the first trimester compared to others ([Table 3.4.11](#)). There were also significant differences by wealth quintile.

Among those who took at least one dose of SP, the majority (93.79%) received the medication from a health facility during an ANC visit while 27.22% received it during another visit to the health facility. Only 15.73% reported that they got the medication from a pharmacy.

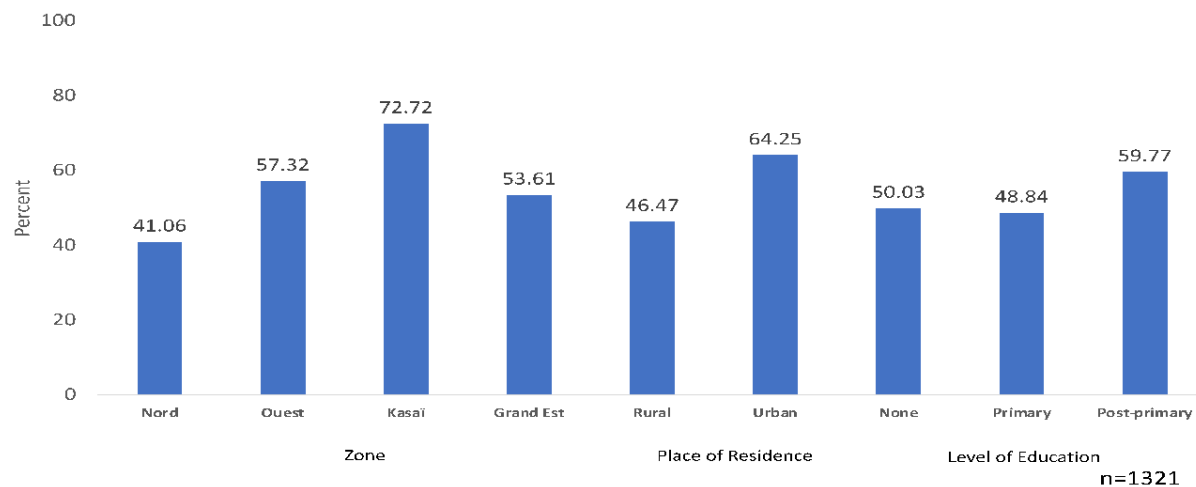
Figure 3.4.3: Percentage of women that received at least one and at least three doses of SP during their pregnancy in the last two years



### 3.4.4 Intentions to Attend ANC and Receive SP

Intentions to receive ANC and take SP during a future pregnancy in the next two years. Among the women who desire a pregnancy in the next two years, 97.20% reported that they would go for ANC while 95.66% said that they would take SP to prevent malaria during pregnancy. The median timing for intended first ANC visit was four months of gestation. Only 55.97% of the women reported the intention to obtain their first ANC consultation during the first trimester. This indicator varied between 41.06% in the Nord zone to 72.72% in the Kasai zone (Figure 3.4.4). There were also significant variations by type of place of residence and level of education.

Figure 3.4.4: Percentage of women who desire to become pregnant in the next two years and who would obtain first ANC consultation in the first trimester of pregnancy, by selected variables, DRC 2021



Results of mixed effects (multilevel) logistic regression models showing the factors associated with the intention for prompt receipt of ANC are presented on [Table 3.4.12](#). The findings showed that overall, the ideational variables that were significantly and positively correlated with intention to start ANC in the first trimester were comprehensive knowledge about ANC and IPTp, the belief that a woman should feel comfortable discussing ANC with her spouse, positive attitudes towards ANC and IPTp, and, to some extent, perceived self-efficacy to obtain IPTp. Specifically, having comprehensive knowledge about ANC and IPTp more than doubled the odds of intending an early start of ANC. The odds were 57% higher for women that believed that a woman should feel comfortable discussing ANC with her spouse compared to their peers who did not hold such a belief. Positive attitudes towards ANC and IPTp were associated with 36% increase in the odds of intention for early debut of ANC while perceiving the self-efficacy to obtain IPTp increased the odds by 90%. Curiously, the odds of early ANC intention were higher by 49% among women who were not sure what the norm in their community was regarding ANC compared to their peers who believed that the norm was for women to attend at least four visits. This association was, however, only marginally significant. In addition, having obtained at least four ANC consultations during the most recent pregnancy increased the odds by 47% while post-primary education increased the odds by 36%. There were significant differences by zone with the odds of intention for early ANC debut being more than five times higher in Kasaï region and 85% higher in Grand Est compared to the Nord region. Finally, there was significant clustering in this outcome within enumeration areas: 17% of the variance in intention is explained by factors operating at the cluster level. In other words, the data indicate the presence of unmeasured variables operating at the community level that influence the intended timing of first ANC visit.

There are commonalities and differences in the factors associated with intention to start ANC early across zones. For example, in the Nord zone, two ideational variables were significantly and positively associated with the outcome: comprehensive knowledge about ANC and IPTp and the injunctive norm about SP (that is, the belief that people in their community would support them if they knew that they took SP to prevent malaria in pregnancy). In the Ouest zone, comprehensive knowledge about ANC and IPTp and positive perceptions about health workers were positively associated with intention with early timing of first ANC

visit whereas injunctive norm was surprisingly negatively associated with the outcome. Exposure to messages on malaria was also positively linked with intention for early ANC. In addition, poor people in this zone were almost three times as likely as their wealthier peers and urban residents were more than three times as likely as their rural peers to desire early start of ANC. The data further showed a clustering of intention for early ANC at the community level in this zone with 19% of the variance in intention is explained by factors operating at the cluster level. In Kasaï, comprehensive knowledge about ANC and IPTp and the belief that a woman should feel comfortable discussing ANC with her spouse were the only ideational variables significantly and positively associated with intention for early ANC. As in the Ouest zone, there was significant clustering of this outcome: a large 33% of the variance in intention for early start of ANC was explained by factors operating at the community level. In the Grand Est zone, women who perceived the self-efficacy to obtain ANC and IPTp were more than five times as likely as the other women to indicate intention for early ANC. Similarly, there was a positive association with comprehensive knowledge about ANC and IPTp; women with this type of knowledge were more than two times as likely to report intention for early ANC compared with their peers without such knowledge. Unlike what we observed for the Ouest and Kasaï zones, the data for Grand Est did not show any significant clustering of early ANC intentions at the community level.

Table 3.4.12: Logistic regression results of Intention to obtain first ANC consultation during the first trimester of next pregnancy

Table 3.4.12: Mixed Effects Logistic regression results of Intention to obtain first ANC consultation during the first trimester of next pregnancy										
CORRELATES <i>AOR: Adjusted Odds Ratio</i> <i>SE: Standard Error</i>	ALL ZONES		NORD		OUEST		KASAÏ		GRAND EST	
	AOR	SE	AOR	SE	AOR	SE	AOR	SE	AOR	SE
IDEATIONAL DETERMINANTS										
Has comprehensive knowledge of ANC/IPTp	2.20** *	0.35	2.41**	0.79	2.54*	0.95	2.05**	0.55	2.65*	1.09
Belief that a woman should feel comfortable discussing ANC with her spouse	1.59*	0.30	--	--	0.87	0.44	2.29*	0.90	1.24	0.44
Has high perceived self-efficacy to obtain IPTp	1.90‡	0.64	--	--	1.44	1.13	0.58	0.55	9.44**	6.98
Perceived response efficacy of ANC	1.89	0.88	--	--	--	--	0.72	0.75	--	--
Has perceived severity of malaria	1.13	0.17	1.26	0.36	0.79	0.29	1.56	0.44	--	--
Injunctive norm about pregnant women taking SP	0.90	0.14	3.34**	1.52	0.33*	0.15	0.93	0.25	--	--
Has favorable attitudes towards ANC/IPTp	1.33‡	0.21	1.29	0.50	--	--	--	--	1.67	0.51
Perceived susceptibility to malaria in pregnancy	--	--	--	--	--	--	--	--	0.55	0.20
Perceived severity to malaria in pregnancy	--	--	--	--	--	--	--	--	0.50	0.23
Descriptive norm supporting 4 ANC consultations	--	--	--	--	--	--	--	--	0.64	0.21
Has favorable attitudes toward health workers regarding IPTp services	0.94	0.15	0.58‡	0.18	3.04*	1.53	1.14	0.31	0.890	0.34
Discussed malaria with spouse or relative/friend	0.79	0.12	1.17	0.36	--	--	--	--	0.49‡	0.19
Number of sources of exposure to malaria-related messages	1.20*	0.11	N/A	N/A	1.12	0.21	0.94	0.14	1.83*	0.57
Norm that all or most women in community attend at least 4 ANC visits										
not norm	1.37	0.34	1.16	0.54	1.27	1.02	0.98	0.37	--	--
don't know	1.48*	0.31	2.97‡	1.87	0.84	0.45	1.57	0.62		
SOCIODEMOGRAPHIC DETERMINANTS										

Received at least 4 ANC consultations	1.46**	0.21	1.72‡	0.53	0.90	0.37	1.37	0.33	1.61	0.49
Respondent age	0.96	0.01	1.01	0.29	--	--	--	--	--	--
Respondent has 3 or more children	0.80	0.13	0.87	0.28	--	--	--	--	--	--
Household in lowest or second lowest wealth quintile	1.30	0.21	0.99	0.29	2.86*	1.51	1.35	0.37	1.17	0.43
Attained post-primary education	1.36*	0.21	1.42	0.41	1.59	0.73	1.64‡	0.44	1.43	0.46
Lives in urban setting	1.26	0.24	0.92	0.29	3.84*	2.05	1.13	0.46	1.59	0.55
Zone (reference=Nord)										
OUEST	1.50	0.42	--	--	--	--	--	--	--	--
KASAï	5.18**	1.28								
GRAND EST	* 1.85*	0.52								
ICC	0.17***		0.29		0.20*		0.33***		0.40	
Number of observations	1,321		269		217		577		258	
Notes: ‡ p<0.1 * p<0.05; ** p<0.01; *** p<0.001. --: no data, not included in model										

### 3.5 Insecticide-Treated Nets (ITN)

Results of the analyses of the ideational variables linked to ITN use are presented in [Table 3.5.1a](#). The Table also presents how these variables vary across socio-demographic groups. Seven ideational variables are examined, including knowledge that bed nets help to prevent malaria, attitudes towards bed nets, belief that there are things a person could do to extend the life of one's bed nets, and perceived response-efficacy of bed nets. Other ideational variables examined include perceived self-efficacy to use bed nets consistently, the perception that the use of bed nets was a community norm, and the perception that people in their community would support their use of bed nets. The questions used to assess each variable are listed on [Table 3.5.1b](#).

Knowledge that bed nets help to prevent malaria: The majority (90.7%) of the men and women interviewed reported the use of bed nets as a way to prevent malaria ([Table 3.5.1a](#)). The data reveal significant differences in this variable by zone (lower in Grand Est compared to the Ouest or Kasai zones), sex (slightly more prevalent among men than for women), type of place of residence (higher in urban than in rural areas), wealth quintile (less prevalent among the people in the lowest wealth quintile compared to others) and level of education (lower among people with no formal education compared to their educated peers).

Attitudes towards bed nets: This ideational variable was assessed through nine questions ([Table 3.5.1b](#)). Attitudes were generally positive towards the use of bed nets: 87.29% of the men and women had a positive attitude towards use of bed nets ([Table 3.5.1a](#)). There were significant differences by zone with positive attitudes being more prevalent in the Nord and Ouest zones compared to the Kasai zone and in the Nord zone compared to the Grand Est. This variable also varied by age group (specifically when we compare the people aged less than 35 years to their older peers) and by level of education (less prevalent among those with no education compared to others).

Perceived response-efficacy of bed nets: Three questions helped to operationalize the concept of perceived response-efficacy of bed nets (see [Table 3.5.1b](#)). About three-quarters (74.62%) of the study population believed in the response-efficacy of bed nets ([Table 3.5.1a](#)). This indicator did not vary significantly by zone, sex, age group, type of place of residence or by wealth quintile. There were, however, significant variations by level of education: people with no formal education (68.03%) were less convinced about the response-efficacy of nets than their peers with formal education (75.84% for primary education and 74.88% for post-primary education).

Perceived self-efficacy to use bed nets consistently: This construct defined as confidence in one's ability to use bed nets) was derived based on four questions ([Table 3.5.1b](#)). The majority (90.42%) of the respondents were confident that they would be able to use bed nets consistently ([Table 3.5.1a](#)). The only variations in this variable were by zone (lower in Grand Est compared to Nord and Kasai) and by age group (lower among young people compared to those 35 years or older).

Descriptive norm about bed nets: This construct refers to the perception that the use of bed nets is a community norm. About two-thirds of the study population believed that the use of bed nets was a norm in their community while 5.74% stated that this practice was not the norm in their community and almost one third said that they did not know ([Table 3.5.1b](#)). Proportionally fewer people in Kasai (53.29%) and Grand Est (51.87%) believed use of bed nets to be a community norm compared to Nord (74.66%) or

Ouest (67.20%) zones. The perception that this practice was not a community norm was more common in Kasai (17.04%) than in any other zone. The proportion that did not know whether the use of bed nets was a community norm or not was significantly higher in the Grand Est zone (44.41%) and lower in the Nord zone (17.44%) compared to the other zones. The perception that the use of bed nets was not a community norm was more common among men (9.44%) compared to women (3.45%). In contrast, proportionally more women (34.52%) than men (24.27%) reported that they did not know whether this practice was the norm in their community or not.

Injunctive norm about bed nets: This variable is defined as the perception that people in their community would criticize or support their use of bed nets. Overall, about one-fifth (19.65%) of the respondents believed that people in their community would criticize them if they knew that they were sleeping under a bed net while 55.94% did not expect any criticism from community members and 24.40% did not know what community reaction would be. There were significant differences in this variable by zone with the belief that community members would criticize their use of bed nets being more common in the Ouest and Kasai zones than in the other two zones. Proportionally more respondents in the Nord zone (73.95%) than in the other zones believed that people in their community would not criticize their use of bed nets. The respondents from Grand Est zone (44.58%) were more likely and those from the Nord (12.57%) were less likely than their peers from the other zones to report that they did not know how the community would react to their use of bed nets. This variable also varied by type of place of residence, wealth quintile and level of education.

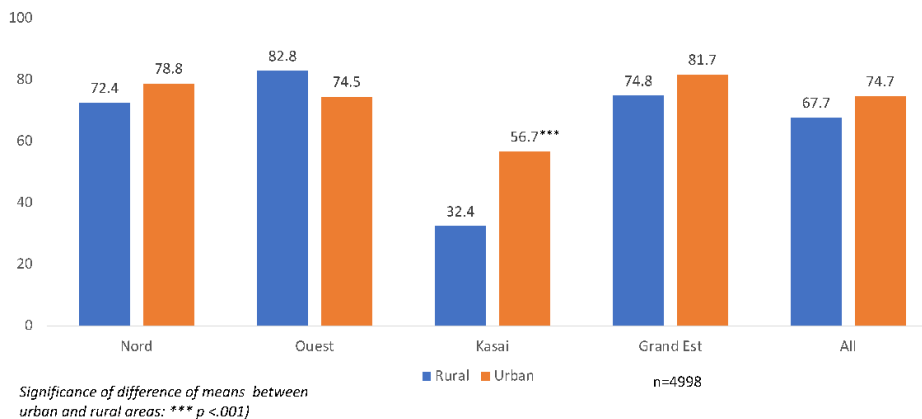
Belief that there are things a person could do to extend the life of one's bed nets: Less than half (44.4%) of the study population believed that a person could extend the life of their bed nets by taking certain actions ([Table 3.5.1a](#)). There were significant variations by zone being less prevalent in the Grand Est zone than in the other zones and more common in the Ouest zone than elsewhere. While there were no differences between men and women or by wealth quintile, this perception was significantly less common among the people with no formal education compared to those with post-primary level of education.

### 3.5.2 ITN Access and Use

#### *Household Possession of ITNs*

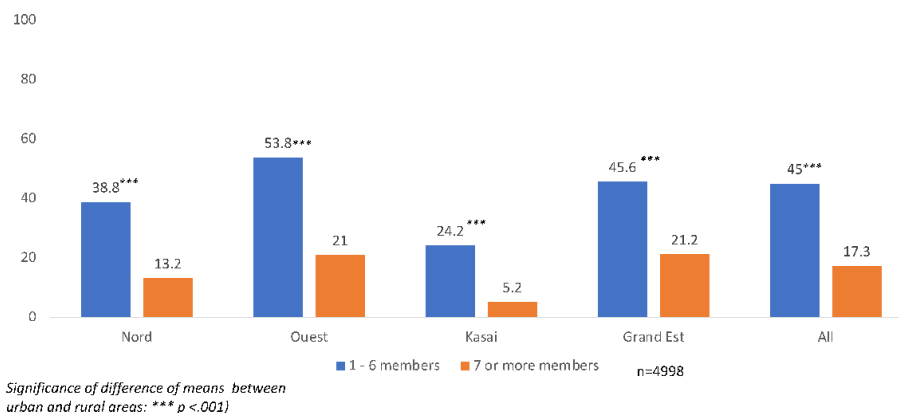
More than two thirds (71.86%) of the households had at least one ITN. Proportionally fewer households in Kasai zone had an ITN compared to the other zones ([Table 3.5.2](#)). In each zone, there were significant variations by place of residence (Figure 3.5.1) Urban-rural differentials in this indicator were more pronounced in the Kasai zone than in the other zones. The data further show that households in the lower wealth quintiles were at a disadvantage with respect to household possession of bed nets ([Table 3.5.2](#)). The average number of bed nets per household was 1.71: 1.90 in the Nord zone, 1.88 in Ouest, 0.72 in Kasai, and 1.86 in Grand Est.

Figure 3.5.1: Percent of households with at least one ITN, by place of residence



Only about one third (36.75%) of the households had enough nets for their members, defined as possessing at least one ITN for every two persons in the household (household net coverage). Possessing enough ITNs was significantly more prevalent in the Ouest zone (45.25%) and in Grand Est zone (37.73%) compared to the Nord (27.75%) or Kasai (20.16%) zones (Table 3.5.2). Rural households were at a considerable disadvantage for net coverage compared to urban households. Possessing enough nets was less common among households in the lower wealth quintiles than among those in the upper wealth quintiles (Table 3.5.2). In each zone, possessing enough ITNs was considerably less common among larger households (7 or more members) compared to smaller households (Figure 3.5.2).

Figure 3.5.2: Percent of households with at least one ITN for two persons, by household size



### Characteristics of available bed nets

Of the 7,089 nets enumerated in the households, 96.83% were insecticide-treated nets (Table 3.5.3). The majority (93.57%) of the nets were white, obtained from a mass distribution campaign (81.53%), and aged

less than 36 months (86.57%). The data showed that bed nets were, on average, older in the Kasai zone (24.90% were 36 months or older) than in the other zones. Compared to the other zones, the nets in the Kasai zone were also less likely to be obtained from a mass distribution campaign, more likely to be obtained from antenatal visits, and less likely to be white.

The majority (85.48%) of available bed nets were used for sleeping on the night before the survey, while 80.91% were used every night of the previous seven days ([Table 3.5.3b](#)). The proportion of available bed nets used for sleeping the night prior to the survey was smaller in the Ouest zone (76.51%) compared to Nord (90.57%), Kasai (89.19%) and Grand Est (87.85%) zones. Similarly, available nets were less likely to have been used every night of the previous night in the Ouest zone compared to the other zones.

#### *Net care practices*

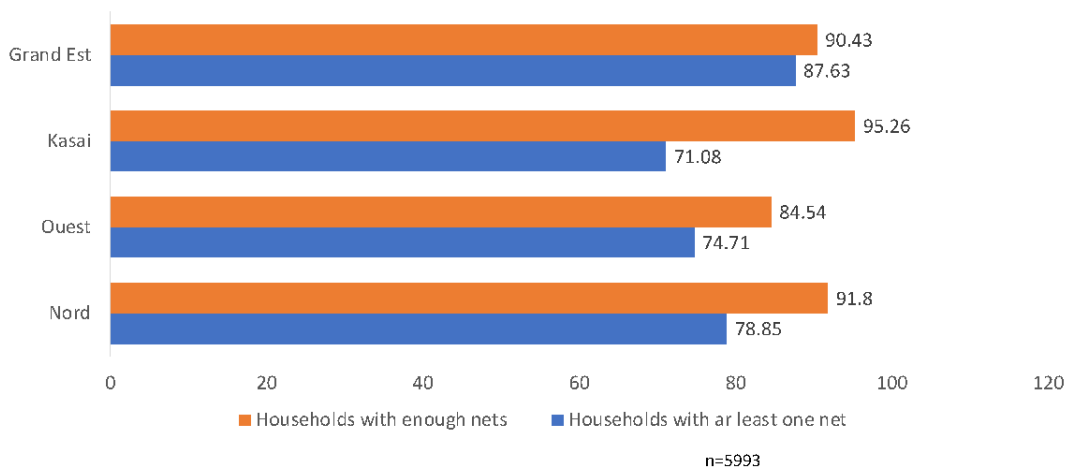
Almost three quarters (71.59%) of available bed nets had ever been washed ([Table 3.5.4](#)). This proportion varied between 54.22% in the Ouest zone to 85.24% in the Nord zone. The majority (85.14%) of the nets were washed with bar soap, as recommended, while 10.31% were washed with detergent. Nets in the Nord (15.87%) and the Ouest (12.83%) were more likely to have been washed with detergent compared with the Kasai (3.89%) and Grand Est (5.78%). Regarding where washed bed nets were left to dry, 58.70% were left to dry outside in the shade (as recommended), while 40.73% were left outside in the sun. Nets were more likely to be left to dry outside in the shade in the Ouest (70.47%) and in the Kasai (72.57%) zones compared to the Nord (50.63%) and the Grand Est (48.26%) zones.

To extend the life bed nets, it is recommended that they should be rolled up or tied over the sleeping space when not in use. Among the nets that were used the previous night, the majority (79.98%) were found simply hanging over the sleeping space while only 15.16% were found rolled up or tied over the sleeping space. A few (3.84%) were found not hanging and not stored away. The practice of folding or tying up nets over the sleeping space when not in use was less common in the Grand Est (8.59%) and Kasai (12.29%) zones compared to the Nord (19.86%) and Ouest (18.37%) zones.

#### *Use of bed nets among household members*

In households with at least one bed net, more than three quarters (78.07%) slept under a bed net on the night preceding the survey ([Table 3.5.5](#)). There were significant differences across zones ([Figure 3.5.3](#)) with household members less likely to sleep under a net in the Kasai zone (71.08%) compared to the Nord (78.84%) or the Grand Est (87.63%). A look at socio-demographic variations within zones reveals differing patterns. For example, young children under five years old appear to be privileged for net use in the Ouest, whereas in the Nord and Kasai zones adults were more likely to use available nets compared to non-adults. In the Grand Est zone, adolescents and older children were the group least likely to use nets. Whereas in the Nord and the Ouest zones use of nets was higher among females than males, there was no difference by sex in Kasai and Grand Est zones. Urban residents were more likely than their rural peers to use nets in the Nord, Kasai and Grand Est zones while there was no significant difference by place of residence in the Ouest zone. There were also zonal variations in the patterns of use by wealth quintile.

Figure 3.5.3: Percent of household members that slept under a bed net on the night before the survey, by household net ownership and zone; DRC 2021



When the analysis is limited to households with enough nets for household members, the data showed that the majority (87.43%) of people in these households slept under a net the previous night ([Table 3.5.6](#)). The use of bed nets given the presence of enough nets was lower in the Ouest zone compared to the other zones (Figure 3.5.3). Furthermore, most of the sociodemographic differences highlighted above did not hold. For example, there were no significant sociodemographic differences in the Nord or Kasai zones. In the Ouest and Grand Est zones, the only significant differences were with respect to age group and wealth quintile.

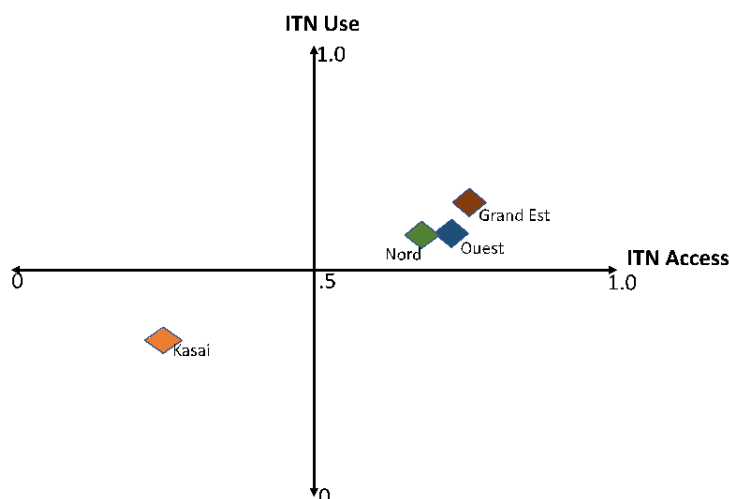
#### *Use-Access Ratio*

The use-access ratio is the ratio of mosquito net utilization to bed net access in the population. The indicator is computed by dividing the net use indicator by the indicator for bed net access. The indicator typically varies between 0.00 and 1.00, which would indicate that everybody who has access (assuming that two people sleep under a net) to a bed net in a household uses the net to which they have access. ITN use:access is greater than 1.00 when there is a tendency in the population for more than two people to sleep under a net. Since the indicator is a ratio, it can be high either because both the use and the access indicators are high or because both indicators are low. It is pertinent to note that the relevant programmatic actions are not identical in both cases. The use:access ratio provides SBC programmers a better measure of net use due to a behavioral problem or to an insufficient number of bed nets. The calculations presented in this report use the methodology proposed by Koenker & Killian, 2014.

Overall, the use-access ratio was 0.88. While this result suggests that most people in the survey zones who have access to a net actually use it, the finding also indicates that there is some room for improvement. The indicator varied across zones: from 0.794 in Kasai to 0.901 in the Grand Est ([Table 3.5.7](#)). By and large, the results indicate that in all the zones, not everyone with access to a bed net sleeps under one, the situation was worse in Kasai than elsewhere. The data further show that while the use and

the access indicators were moderate in the Nord, Ouest and Grand Est zones, both indicators were low in the Kasai (Figure 3.5.4).

Figure 3.5.4: The relation of ITN use to access, by zone; DRC 2021



There were differences between urban and rural areas in all zones. In the Nord and Kasai zones, bed net use:access ratio was higher in urban than in rural areas whereas the reverse was the case in the Ouest zone. There was no urban-rural difference in use:access ratio in Grand Est zone.

#### *Consistent net use*

In this section, we examine consistent use of bed nets (defined as using bed nets every night in the last week) among the women and men that were individually interviewed. We computed this indicator for households with at least one net and for households with enough nets for household members. In households with at least one net, the majority (82.11%) of caregivers reported consistent use of bed nets. The differences by zone were such that consistent use was significantly less common in the Ouest (77.95%) and Kasai (76.12%) zones compared to the Nord (89.95%) and Grand Est (90.25%) zones ([Table 3.5.8](#)). There were no differences by level of education, sex, wealth quintile, and the presence of an under-5 child in the household. In contrast, consistent use was less common among younger individuals (aged 15 – 24 years old) than for the other age groups. Similarly, rural residents (85.38%) were more likely than urban residents (80.33%) to report consistent use.

In households with enough nets, 84.43% of the caregivers reported consistent use of bed nets, a proportion hardly higher than for caregivers in households with at least one net. For this indicator, the data revealed significant differences between the Ouest zone and the other zones, between men (82.16%) and women (86.29%), and between individuals from households with under-5 children (89.49%) compared to others (81.54%).

[Table 3.5.9](#) presents results of a multilevel logistic regression model that assesses the associations between consistent use and sociodemographic, ideational, and household determinants. In addition,

because we suspected that there may be unmeasured variables working at the community level that are associated with the use of bed nets, we also estimated random effects at the EA (cluster) level. Five models were estimated (one for all the zones combined and one for each of the four zones) and the analyses were limited to households with at least one bed net.

For the four zones combined, the results show significant differences in consistent use of bed nets across zones. Specifically, compared to residing in the Nord zone, the odds of consistent use were 59% and 58% lower in the Ouest and Kasaï zones, respectively. In contrast, the odds were 72% higher in the Grand Est zone compared to the Nord zone. Age was the only sociodemographic characteristic significantly associated with consistent use; the relationship was curvilinear with consistent use initially increasing with age and then decreasing from around 39.5 years. The relationship with household poverty status was positive: the odds of consistent use were 25% higher among caregivers in households in the two lower wealth quintiles compared to those in the three upper quintiles. The association with the presence of an under-5 child was strong: caregivers from households with an under-5 child were 59% more likely to report consistent use of bed nets compared to their peers from households without such a child. In addition, universal household net coverage (that is, having at least one bed net for two people) was positively associated with consistent use: respondents from households with enough nets in their households were more than twice as likely to report consistent use as their peers from households without universal household net coverage. The data also revealed a significant positive association with exposure to bed net-related messages in the past 12 months: caregivers who reported exposure to messages on bed nets were 29% more likely to report consistent use compared to their counterparts who did not report exposure.

Many ideational variables were associated with the outcome, including knowledge of use of bed nets as a method of malaria prevention, positive attitude towards bed net use, descriptive norm about care of bed nets, interpersonal communication about malaria, and the belief that there are some actions that a person could take to prolong the life of their nets. Specifically, caregivers who knew that the use of bed nets helps to prevent malaria were 46% more likely than their peers without such knowledge to report consistent use. Positive attitude towards bed nets increased the odds of consistent use by 144% while the descriptive norm about net care increased the odds by 29%, and believing that there were actions that a person could take to prolong the life of their bed nets increased the odds by 51%. The association with interpersonal communication about malaria was such that caregivers who discussed malaria with spouse, friends or relations in the last six months were 29% more likely to report consistent use compared to their peers who did not discuss the subject with others. Finally, the data showed significant clustering of consistent use at the EA level, indicating the presence of factors operating at the cluster level that affects consistent use.

The significant determinants vary across zones. In the Nord zone, the only sociodemographic variable that was significantly associated with consistent use was radio listening and the association was surprisingly negative. Two household variables were significant and positively associated with consistent use: the presence of an under-5 child in the household (OR: 1.50;  $p \leq 0.05$ ) and household universal net coverage (OR: 2.11;  $p \leq 0.001$ ). There were three ideational variables that were positively associated with the outcome: the belief that there were actions that a person could take to prolong the life of their bed nets (OR: 2.06;  $p \leq 0.001$ ), the descriptive norm about net use (OR: 1.64;  $p \leq 0.05$ ), and interpersonal communication about malaria (OR: 1.71;  $p \leq 0.05$ ). In addition, there was a significant clustering of this behavior at the EA level. In the Ouest zone, there was a curvilinear relationship with age with the odds of

consistent use initially increasing and then decreasing starting around the age of 43 years. The association with respondent's sex was marginally significant; women were 45% more likely than men to report consistent use. Exposure to bed net-related messages was positively associated with consistent use (OR: 1.96;  $p \leq 0.001$ ). Two ideational variables were strongly and positively associated with the outcome: positive attitudes towards bed net use (OR: 2.89;  $p \leq 0.001$ ) and the descriptive norm about net care (OR: 1.57;  $p \leq 0.01$ ). The association with perceived severity of malaria was positive (OR: 1.34;  $p \leq 0.1$ ) but only marginally significant. Regarding household and community variables, there was a significant positive association with household bed net coverage (OR: 1.42;  $p \leq 0.05$ ) and the presence of an under-5 child in the household (OR: 1.63;  $p \leq 0.01$ ). There was also a negative association with urban residence (OR: 0.43;  $p \leq 0.05$ ). Furthermore, there was significant clustering of consistent use at the EA level.

In the Kasaï zone, age and television watching habits were the only sociodemographic variables significantly linked with consistent use. The association with age was curvilinear (initially increasing and subsequently decreasing) with an inflection point around 37.6 years. Regular television viewing increased the odds of consistent use by 142% (OR: 2.42;  $p \leq 0.01$ ). The significant ideational determinants included positive attitudes towards net use (OR: 2.74;  $p \leq 0.001$ ), the descriptive norm about net care (OR: 1.75;  $p \leq 0.01$ ), and perceived susceptibility to malaria (OR: 0.54;  $p \leq 0.01$ ). The association with the injunctive norm about consistent use of bed nets was positive but only marginally significant (OR: 1.51;  $p \leq 0.1$ ). At the household level, household bed net universal coverage (OR: 4.12;  $p \leq 0.001$ ), the presence of an under-5 child in the household (OR: 1.69;  $p \leq 0.01$ ), and poverty (OR: 1.94;  $p \leq 0.001$ ) were significant determinants. The data also revealed significant clustering of consistent use at the EA level. In the Grand Est zone, no significant association was observed with any sociodemographic variable. Three ideational variables were positively linked with the outcome: knowledge that bed nets help to prevent malaria (OR: 2.44;  $p \leq 0.01$ ), positive attitudes towards bed net use (OR: 2.64;  $p \leq 0.001$ ), and the belief that there are actions a person could take to prolong the functional life of their nets (OR: 1.63;  $p \leq 0.05$ ). At the household level, the data showed significant positive relationship with household universal net coverage (OR: 1.85;  $p \leq 0.01$ ) and a marginally significant link with the presence of an under-5 child in the household (OR: 1.57;  $p \leq 0.1$ ). As we found in the other three zones, there was significant clustering of this behavior at the EA level.

**Table 3.5.9:** Multilevel Logistic regression results of consistent ITN use<sup>1</sup>, 2021 DRC MBS

CORRELATES <i>AOR: Adjusted Odds Ratio</i> <i>SE: Standard Error</i>	ALL ZONES		NORD		OUEST		KASAÏ		GRAND EST	
	AOR	SE	AOR	SE	AOR	SE	AOR	SE	AOR	SE
<b>IDEATIONAL DETERMINANTS</b>										
Hold favorable attitudes toward nets	2.44** *	0.30	1.49	0.60	2.89***	0.67	2.74** *	0.62	2.64** *	0.72
Believes there are actions one can take to help the mosquito net last longer	1.51** *	0.15	2.06** *	0.42	1.02	0.19	1.45†	0.30	1.63*	0.37
Knowledge that bed nets help prevent malaria	1.46**	0.21	1.26	0.34	1.62	0.49	1.07	0.37	2.43**	0.70
Believe net care is norm in community	1.29**	0.12	0.88	0.17	1.57**	0.26	1.75** *	0.33	0.94	0.72
Discussed malaria with another person in past six months	1.29**	0.13	1.71*	0.37	1.26	0.22	1.34	0.25	0.93	0.25
Exposure to message about net use	1.29*	0.14	1.06	0.24	1.96***	0.36	1.01	0.23	0.74	0.22
Believe net use is norm in community	1.16	0.11	1.64*	0.36	1.23	0.23	0.99	0.19	0.85	0.20
Perceived Severity of Malaria	1.16	0.11	0.82	0.16	1.34†	0.22	1.15	0.22	1.23	0.29
Knowledge that mosquito bite is sole cause of malaria	0.99	0.09	1.02	0.19	0.80	0.13	1.31	0.23	1.08	0.25
Perceived Susceptibility to Malaria	0.91	0.08	0.95	0.20	1.18	0.19	0.54**	0.10	1.01	0.23
Perceive others in community will approve of net use	0.88	0.11	0.55†	0.18	0.84	0.18	1.51†	0.36	0.65	0.24
<b>SOCIODEMOGRAPHIC DETERMINANTS</b>										
Household possessed at least one net for every two members	2.11** *	0.22	2.11** *	0.47	1.42*	0.24	4.12** *	0.93	1.85**	0.44
Household has a child under five years old (RC=No)	1.56** *	0.15	1.50*	0.31	1.63**	0.28	1.69**	0.33	1.57†	0.37
Age in single years	1.13** *	0.03	1.03	0.05	1.13**	0.05	1.25** *	0.06	1.09	0.07

Zone (RC=Nord)										
Ouest	0.39**	0.10	--	--	--	--	--	--	--	--
Kasai	*	0.09	--	--	--	--	--	--	--	--
Grand Est	0.40**	0.44	--	--	--	--	--	--	--	--
	*									
	1.74*									
Household in lowest or second lowest wealth quintile	1.27*	0.14	1.20	0.25	1.07	0.34	1.94**	0.37	0.72	0.21
							*			
Urban Residence (RC=No)	1.14	0.20	1.96	0.82	0.43*	0.15	1.60	0.53	1.03	0.32
Formal Education (RC=None)										
Primary	0.85	0.14	0.93	0.34	0.78	0.40	0.95	0.26	0.85	0.29
Secondary or Higher	1.10	0.18	0.92	0.33	0.79	0.40	1.52	0.45	1.11	0.38
Female (RC=No)	1.02	0.12	0.79	0.20	1.46‡	0.32	0.76	0.18	1.44	0.42
Watches TV regularly (at least once a week)	1.07	0.13	0.75	0.18	1.11	0.23	2.42**	0.74	0.77	0.23
							*			
Listens to the radio regularly (at least once a week)	1.05	0.10	0.67*	0.13	1.18	0.20	1.35	0.27	1.10	0.28
ICC	0.23***		0.33***		0.13***		0.28***		0.09*	
Number of observations	5030		1435		1292		1193		1110	
Notes: ‡ p<0.1 * p<0.05; ** p<0.01; *** p<0.001. --: no data, not included in model										
¹ Analysis is limited to participants in households with at least one net – participants in household with no net are excluded from the analysis.										

## 3.6 Indoor Residual Spraying

WHO recommends the use of indoor residual spraying (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. Historically, IRS has been shown to be an effective method to reduce malaria transmission. Recent research has also introduced the need to measure post-IRS behaviors, as housing modifications such as wall painting after the application of insecticide can reduce its efficacy. If no post-IRS modifications are made, the insecticide typically remains effective for six months. DRC does not currently include IRS as part of its national malaria control strategy. However, other organizations, as well as NMCP, have identified promising potential future IRS sites within the country. Thus, the IRS module was included in the MBS and may very well be included in the next DRC National Malaria Strategy.

### 3.6.1 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 the future potential implementation of IRS campaigns.

#### IRS Awareness

Less than 10% of participants reported awareness of an IRS program in their community (Table 3.6.1). Knowledge of a program was concentrated in urban settings, with urban respondents accounting for 83.34 percent of all individuals aware of the program. Awareness also appeared highly concentrated in the Ouest zone, as Ouest respondents accounted for 75.19 percent of all those with awareness of an IRS program.

Table 3.6.1 Percentage of respondents aware of IRS program awareness, 2021 DRC MBS	
Characteristic	Aware of IRS program in their community
<b>Sex</b>	
Female	8.87
Male	7.56
<b>Age</b>	
15-24 years	6.01
25-34 years	8.48
35-44 years	9.48
45+ years	8.10
<b>Residence</b>	
Urban	3.54
Rural	10.95***
<b>Zone</b>	
Nord	5.06

Ouest	12.96**
Kasai	2.45
Grand Est	3.50
<b>Level of education</b>	
None	4.10
Primary	3.99
Secondary or Higher	9.77***
<b>Total (%)</b>	<b>8.12</b>
<b>Number of Observations</b>	<b>7791</b>
Notes: Significance of difference of means across groups * p < .05; ** p < .01; *** p < .001	

### Attitudes toward IRS:

Individual attitudes toward IRS were only collected from individuals with awareness of an IRS program (n=358). Attitude favorability was assessed through six items in the questionnaire. The items included a belief that people develop skin problems after the application of IRS; a belief that a person can safely touch the wall once the spray has dried; the attitude that people experience problems with bugs after the walls are sprayed; agreement that the benefits of IRS merit moving furniture out of the house during spraying; agreement that the respondent is not bothered to leave possessions out while the house is being sprayed; and agreement that spraying the walls does not cause any health problems for those living in the house. When these items were combined, the data showed that two in three respondents held favorable attitudes towards IRS. Male respondents were significantly more likely to hold favorable attitudes compared to female respondents (88.89%, compared to 44.06%,  $p < 0.001$ ). Respondents under 24 years old (50.08%) held favorable attitudes at a significantly lower rate than other age groups ( $p < 0.05$ ), and Kasai respondents (41.66%) were less likely than respondents in other zones to hold favorable attitudes towards IRS ( $p < 0.01$ ). Education and type of residence did not yield significant differences across zones.

### Perceived Response-Efficacy of IRS

Perceived response-efficacy of IRS was assessed through three items among individuals with awareness of an IRS program. Items included the belief that IRS is an effective way to prevent malaria; the perception that people who live in sprayed houses are less likely than others to get infected with malaria; and the belief that IRS is an effective way to kill mosquitoes. A large majority of respondents (81.38%) perceived IRS as efficacious (Table 3.6.3). Perceived response efficacy varied across zones – Kasai respondents reported significantly lower perceived response efficacy (58.51%) when compared to the Nord (85.00%) and Ouest (82.58%) zones.

### Perceived self-efficacy for IRS

Questions related to perceived self-efficacy of IRS were asked to individuals aware of IRS as a program. About three in four participants (76.20%) reported perceived self-efficacy to take actions related to IRS, which included moving furniture in preparation for spraying, and sleeping in the house the night after it was sprayed (Table 3.6.4). Respondents in the Nord zone (94.40%) reported a higher level of perceived self-efficacy compared to the other zones. Perceived self-efficacy was least prevalent in Kasai zone.

### 3.6.2 Willingness to accept IRS

Willingness to accept IRS is considered a measure of intention to use IRS if available in their community. In this respect, 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, that is, that it is a program that sprays the inside walls of a house with insecticide to help protect households from malaria. Among those aware of IRS, there is widespread willingness (86.92%) to accept it in their community and it is near universal among rural populations ([Table 3.6.5](#)). About 7 in 10 (69.90%) of respondents not previously aware of IRS reported willingness to accept it if it came to their community. There were significant differences by sex and education – within both groups (previously aware and not). Specifically, male respondents were more likely than females to report willingness to accept IRS. Among those aware of the program, the most educated were the least likely to intend to accept IRS. For participants with no previous awareness of IRS, those with no formal education were less likely than others to report willingness to accept IRS if introduced to their community.

Overall, there is widespread acceptance of IRS among those aware of the program, which suggests an efficacious IRS campaign is feasible [19].

Table 3.6.5 Percent of respondents willing to accept IRS, 2021 DRC MBS		
	Among those aware of program	Willing to accept IRS among those unaware of program
<b>Sex</b>		
Female	81.49	68.26
Male	93.11*	72.11*
<b>Age</b>		
15-24 years	77.47	66.04
25-34 years	93.12	68.90
35-44 years	82.83	71.18
45+ years	92.98	74.35
<b>Residence</b>		
Urban	84.88	67.74
Rural	97.14***	73.12
<b>Zone</b>		
Nord	96.12	70.89
Ouest	85.97	72.55
Kasaï	89.46	65.90
Grand Est	81.53	66.08
<b>Level of education</b>		
None	97.51	61.83**
Primary	94.95	71.76
Secondary or Higher	85.49**	70.34
<b>Total (%)</b>	<b>86.92</b>	<b>69.90</b>
<b>Number of Observations</b>	<b>358</b>	<b>7432</b>
Notes: Significance of difference of means across groups * p < .05; ** p < .01; *** p < .001		

### 3.6.3 IRS Coverage

IRS is not currently included in the national malaria control strategy, and thus it is not surprising to learn that IRS coverage is low across the country. Fewer than 100 households reported being approached for IRS in the 12 months prior to the survey. This constitutes less than 1 percent (0.80%) of the surveyed households ([Table 3.6.6](#)). Approached households were primarily located in urban areas of the Ouest zone. Fewer than half (40.60%) of the approached households reported that their households were sprayed. The main reasons for households not being sprayed included reports that the spray team did not come to the house as planned (25.42%), and that no household member was present at the house and thus the spraying could not happen (27.35%). There were also several reports that the household was asked to pay for IRS and did not have the money to do so.

Following spraying, 42 of the 93 sprayed households reported that their walls had been repainted, replastered, or washed. Such modifications may mitigate the efficacy of the insecticide on the walls.

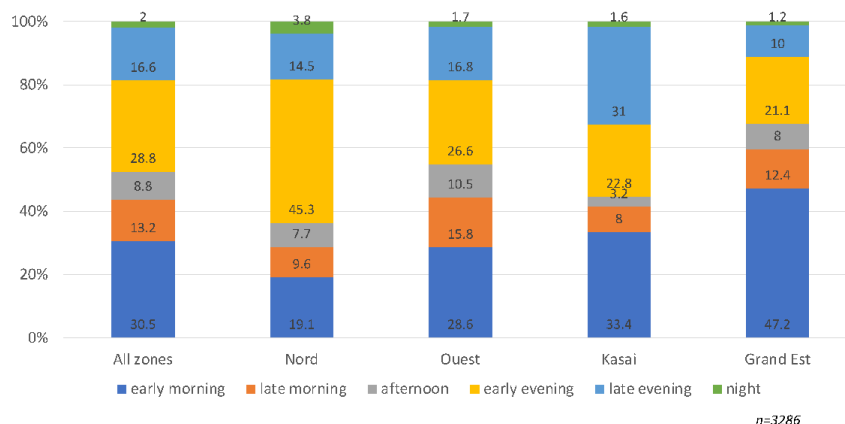
## 3.7 Media Consumption and Message Exposure

### 3.7.1 Radio Listening Habits

Considering that fewer than half of the households owned a radio, it is not surprising that only 47.96% of the men and women interviewed listened to the radio regularly, that is, at least once a week ([Table 3.7.1](#)). This is the proportion of men and women that can potentially be reached by a program diffused through the radio. The percentage that can potentially be reached by radio was lower in Kasaï (37.34%) and Grand Est (40.12%) zones compared to Nord (46.81%) and Ouest (54.79%) zones. There was a pronounced gap in regular radio exposure between men (62.31%) and women (37.20%). The percentage reporting regular radio listening increased steadily with education level, was higher in urban than in rural areas, and was lower among young people compared to their older peers. The sociodemographic variations in potential reach of the radio are relatively similar across zones and generally mirror what the national patterns indicate. The only exception is in the Ouest zone where regular radio listening was more common in rural (62.21%) than in urban (52.73%) areas.

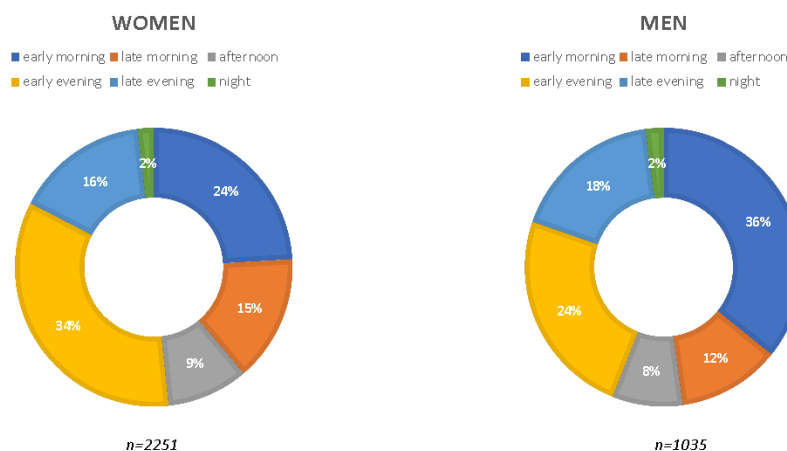
The data showed that lack of a radio in the household was not the only factor limiting the potential reach of the radio: even among the men and women from households with a radio, only about two-thirds (68.16%) reported regularly listening to the radio ([Table 3.7.1](#)). The groups least likely to report regular radio listening even when their household possessed a radio were residents of Grand Est zone (59.32%), women (55.92%), people with no formal education (47.74%), and young people (57.59%).

Figure 3.7.1: Preferred time for listening to the radio, by zone; DRC 2021



Overall, the preferred time for listening to the radio was generally in the early morning (before 8am) or early evening (between 4 pm and 8 pm). In contrast, relatively few people listened to the radio at night (after midnight) or in the afternoon (between 12 noon and 4pm). The data revealed significant differences by zone in the preferred time for listening to the radio. Compared to the other zones, proportionally more people in the Nord region preferred the early evening for listening to the radio (Figure 3.7.1). The late evening was more likely to be preferred in the Kasai zone than elsewhere. Furthermore, almost half of the respondents from the Grand Est zone preferred listening to the radio in the early morning compared to one third or less in the other zones. Overall, there were differences between men and women in the preferred time for listening to the radio (Figure 3.7.2). The most preferred time for women was early evening whereas for men it was early morning.

Figure 3.7.2: Preferred time for listening to the radio, by sex; DRC 2021



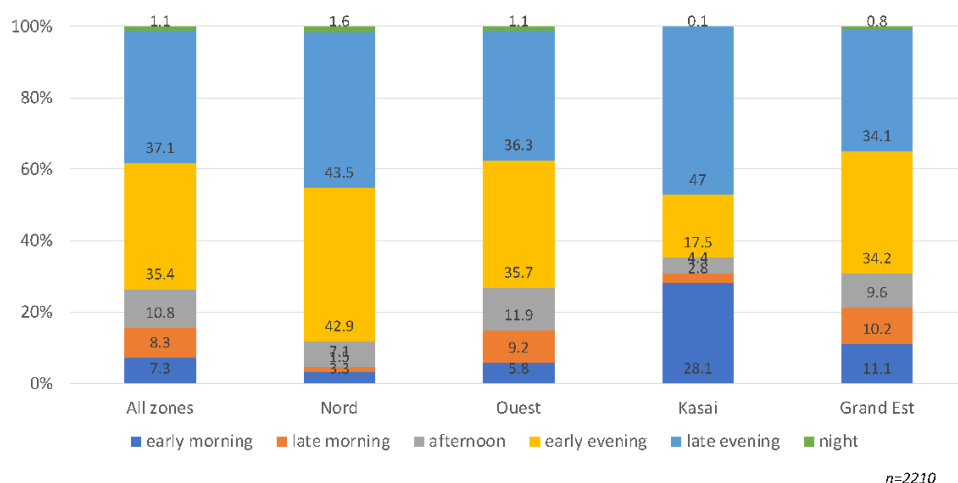
Furthermore, there were differences in preferred times by age group, type of place of residence, and education level ([Table 3.7.2](#)). For example, early morning was more likely to be preferred in urban areas (34.14%) compared to the rural area (23.06%). In contrast, proportionally more people in the rural area (45.32%) than in the urban (20.86%) reported a preference for early evening. The two types of location also differ in terms of preference for the afternoon. Regarding differences by age group, the data showed a less common preference for early morning radio listening among young people compared to the other age groups. The pattern of socio-demographic differences in preferred radio listening times was similar in each of the zones to what we observed in the combined sample ([Tables 3.7.2A – 3.7.2D](#)).

### *Television Viewing Habits*

Overall, only 44.66% of the men and women in the study zones reported watching television regularly, that is, at least once a week ([Table 3.7.3](#)). In other words, if we used the television to disseminate messages, we could expect to reach less than half of the adult population. This indicator of potential reach varied significantly by zone from 13.59% in the Kasai to 67.25% in the Ouest zone. The indicator did not vary significantly by sex or age group but there were clear differences by education level: 12.37% among those with no formal education compared to 24.15% among those with primary education and 54.11% among those with post-primary education. There was also a large gap between urban (64.24%) and rural (13.05%) areas. The sociodemographic differences in television viewing mirrored what we observed at the national level ([Table 3.7.3](#)).

When the analyses are limited to households with televisions, the data revealed that lack of television ownership was the main reason why most non-viewers did not watch television regularly. Among men and women in households with a television, the majority (87.95%) reported regular television viewing. There were nonetheless significant differences by zone: even when the household owned a television, men and women in the Nord (70.78%) and Kasai (71.89%) zones were less likely than their peers from the Ouest (90.95%) and the Grand Est (85.01%) zones to report regular television viewing. There was a slight difference between men (85.60%) and women (89.66%). There were also significant differences by education level (graduated increase with education level), age group (lower in the group aged 45 years or older compared to young people) and place of residence (considerably lower in rural areas).

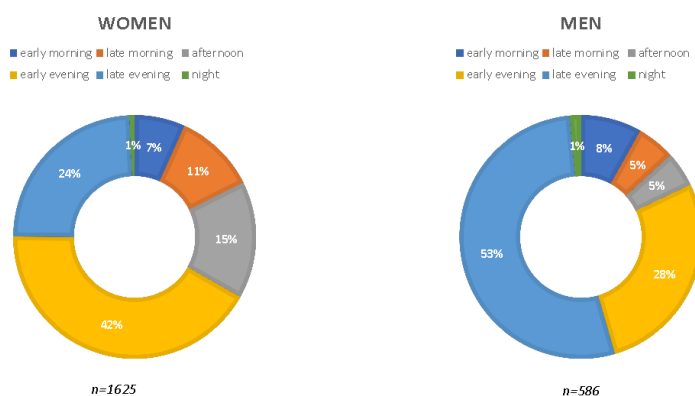
Figure 3.7.3: Preferred time for watching the television, by zone; DRC 2021



As shown in Figure 3.7.3, most respondents preferred to watch television in the early evening (4 pm to 8 pm) or late evening (8 pm to midnight). In contrast, few people watched television in the early morning or during the night. There were significant differences in time preferences across zones. For example, early evening was more likely to be preferred in the Nord zone compared to the other zones. Similarly, the late evening and during the night were more likely to be mentioned in the Kasai zone than in any other zone. There were also significant differences by sex (Figure 3.7.4), type of place of residence, and age group (Table 3.7.4). Women compared to men were more likely to report a preference for late morning and afternoon time slots. Compared to their urban peers, rural residents were more likely to report a preference for early evening and less likely to prefer the morning.

In each zone, preferred times for watching television varied by sex, age group, place of residence, (Tables 3.7.4A – 3.7.4D). For example, in the Nord zone, women (34.03%) were less likely than men (54.55%) to prefer late evening for watching television while men were less likely to prefer early evening. In that same zone, young people were more likely to prefer the afternoon and early evening and less likely to express a preference for late evening compared to the other age groups (Table 3.7.4A). Similarly, in the Ouest zone, preference for late evening was more common among men (53.91%) compared to women (23.02%) while rural residents were more likely than their urban peers to prefer early evening (Table 3.7.4B).

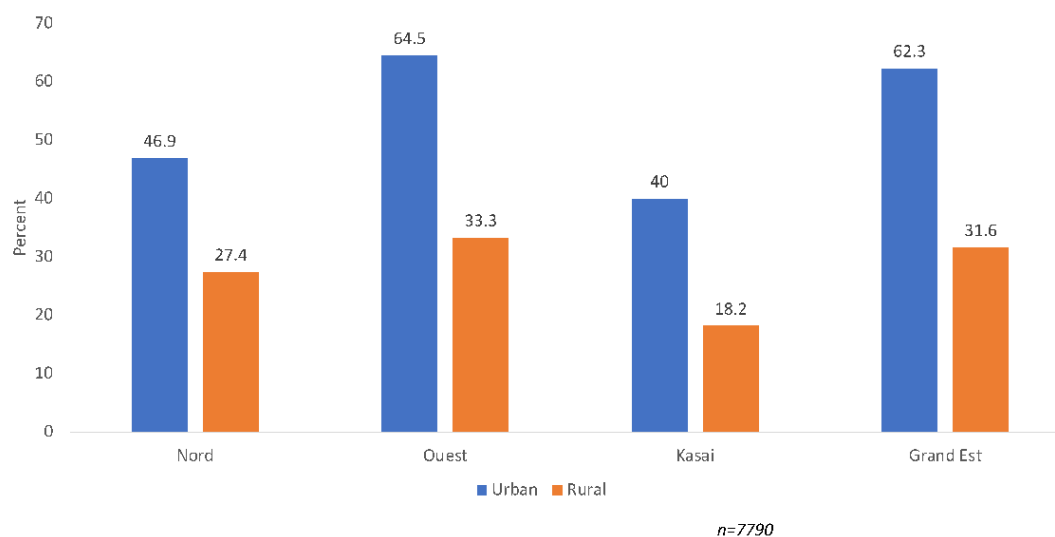
Figure 3.7.4: Preferred time for watching the television, by sex; DRC 2021



#### *Ownership of Mobile Phone and Access to Specific Media*

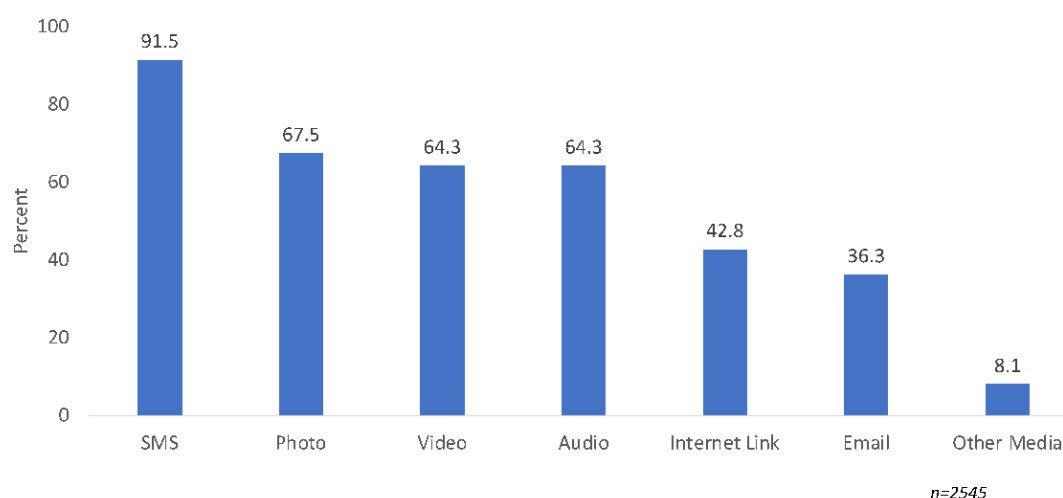
Ownership of mobile phones is not universal among the study population. Fewer than half (47.61%) of the men and women interviewed reported owing a personal mobile phone or tablet. Mobile phone ownership varied significantly by zone: 35.88% in the Nord, 57.60% in the Ouest, 27.25% in the Kasai, and 48.81% in the Grand Est ([Table 3.7.5](#)). Furthermore, in each zone, women were less likely than men and people with no education less likely than their educated peers to report owning a mobile phone. In addition, mobile phone ownership varied by age group in all zones regions with young people being less likely than older age groups to report ownership. There were also significant differences in phone ownership between urban and rural areas in each region.

Figure 3.7.5: Personal mobile phone ownership, by place of residence; DRC 2021



The majority (91.47%) of existing mobile phones could receive SMS or text messages (Figure 3.7.6). About two-thirds of mobile phones could receive photographs, video, or audio. Fewer than half could receive clickable internet links while only a third could receive emails. Mobile phone capability varied by zone, especially with regards to the capability to receive emails and clickable internet links. These two functions were less likely to be present in mobile phones owned in Kasaï and Nord zones compared to Ouest and Grand Est ([Table 3.7.5B](#)).

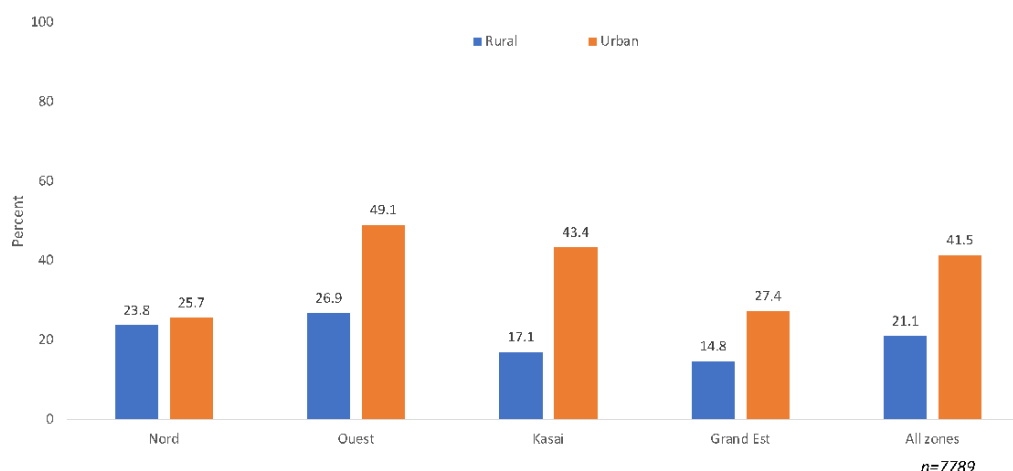
Figure 3.7.6: Percentage men and women whose phone could receive specific media; DRC 2021



### *Exposure to Messages on Malaria*

Only about one third (33.69%) of the survey respondents reported being exposed to a malaria-related message from any source in the past twelve months. There are differences by zone and by place of residence (Figure 3.7.7). Specifically, exposure to malaria-related messages was significantly more common in the Ouest and Kasaï zones compared to the Nord and Grand Est zones. Moreover, in all zones except Nord, exposure was higher in urban than in rural areas. In Ouest and Kasaï zones, exposure increased with increasing education level ([Table 3.7.6](#)). In the Nord zone, exposure was higher for those with post-primary education than those with lower education levels. In the Grand Est, exposure was lower among the people with no education compared with their peers with any education. There were no differences between men and women in the Nord and Grand Est zones while proportionally more men than women were exposed in the Ouest and Kasaï zones. The data only showed significant differences among age groups in the Ouest where young people reported a lower level of exposure than their older peers.

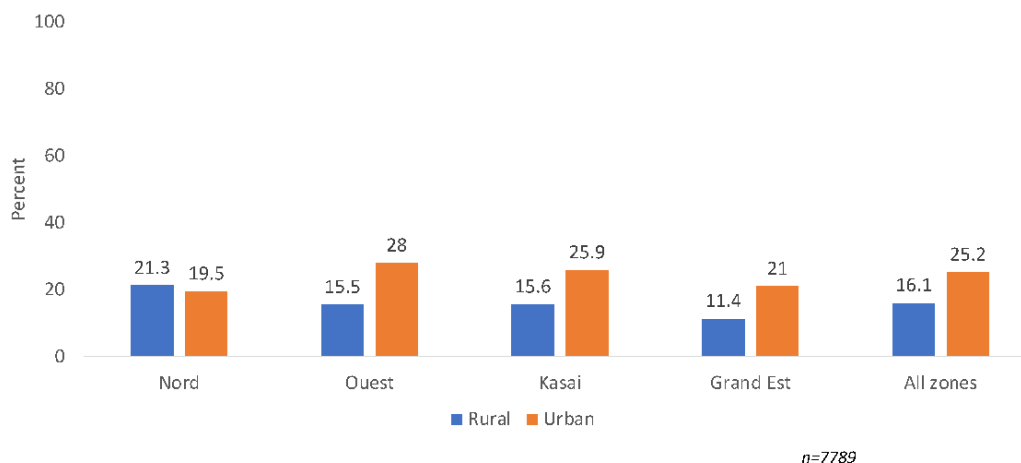
Figure 3.7.7: Percentage of men and women who reported exposure to malaria-related message in last six months, by zone and place of residence; DRC, 2021



About one fifth (21.85%) of the men and women correctly recalled the slogan of the recent NMCP campaign (Je m’engage, zéro cas de palu dans mon ménage). Recall of the slogan varied by zone and by place of residence (Figure 3.7.8). Recall appeared to be lower in the Grand Est zone compared to the Ouest zone. Furthermore, except for the Nord zone, urban residents were more likely than their rural peers to recall the slogan.

Overall, among those who were exposed to malaria messages in the last six months, by far the messages most likely to be recalled were those related to bed nets (88.29%), including the importance of using bed nets, how to install bed nets, where to obtain free bed nets, and how to use bed nets. About one-fifth (20.21%) of the people exposed to malaria messages recalled messages on the importance of facility treatment for fever while about one-sixth recalled messages on ANC (16.66%) or on IPTp (16.96%). Relatively few people recalled exposure to messages on RDT, free ACT treatment, or SMC.

Figure 3.7.8: Percentage of men and women who correctly recalled the slogan for the NMCP malaria prevention campaign, by zone and place of residence; DRC, 2021

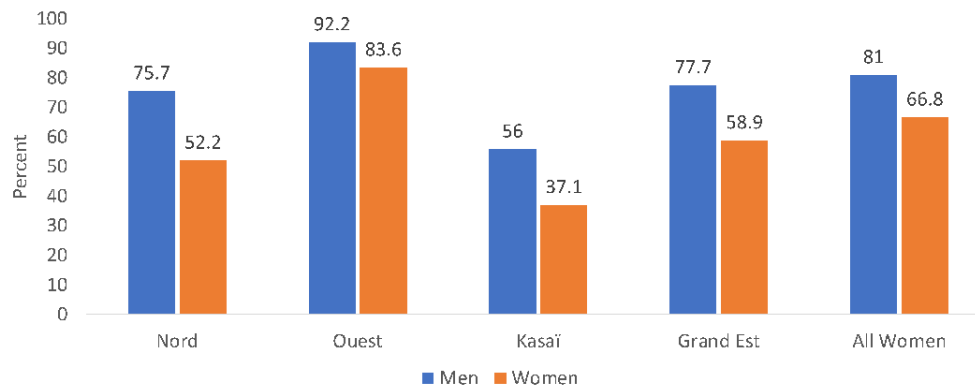


There were some differences in message recall across zones. While bed net-related messages were recalled by the majority of respondents in each of the four zones there were differences across zones in the recall of the other categories of messages. For example, compared to the Nord and Kasai, messages related to ANC, IPTp and facility treatment were less likely to be recalled in the Ovest and Grand Est zones. Moreover, messages about RDTs were more likely to be recalled in the Nord zone than in other zones.

#### *Potential Reach through a Combination of Media*

Given the proportions of the study population that are exposed to the radio, television or that owned a personal telephone or tablet, the data indicate that about seven tenths of the population (72.94%) can be reached by a strategy that combines radio, television, and basic mobile technology. The potential reach of such a comprehensive strategy varied by zone, sex and urban residence. As the data presented in Figure 3.7.9 show, potential reach is higher in the Ovest zone than in the other zones. In each zone, the combined strategy is likely to reach more men than women. In addition, in each zone, potential reach is lower in rural than in urban areas. The proportion of rural residents that can potentially be reached is 56.68% in Nord zone, 71.55% in Ovest zone, 32.26% in Kasai zone, and 46.89% in Grand Est. In contrast, 73.39% of urban residents in Nord zone, 91.69% in Ovest zone, 65.08% in Kasai zone, and 84.69% in Grand Est can potentially be reached through a combined strategy.

Figure 3.7.9: Percentage of men and women that could potentially be reached through a combination of radio, television and basic telephone technology, by sex



n=7807

## 4 Conclusions & Recommendations

### 4.1. Cross-Cutting Ideational Determinants

#### 4.1.1 Summary of Findings

- **Knowledge** of different aspects of malaria showed variable results: More than eight in ten respondents cited fever as the main symptom of malaria, with Kasai respondents being more likely to correctly identify it than other zones. Fewer than half of respondents, however, correctly identified a mosquito bite as the sole cause of malaria. Respondents in the Kasai zone were less likely to correctly report this knowledge than those in the Ouest zone.
- Almost 6 in 10 respondents **perceived susceptibility** to malaria, referring to their perception of their risk of acquiring malaria. Men were more likely to report perceived susceptibility. More than 70% of Kasai respondents reported a perceived susceptibility, reporting so significantly more commonly than other zones. These findings align with case prevalence data from previous studies – the Kasai zone, for instance, encompasses provinces that have recently experienced the highest prevalence rates in the country. By contrast, the Ouest Zone, which includes Kinshasa, has experienced low case prevalence rates relative to the rest of the country. Rural residents were significantly more likely than urban residents to report perceived susceptibility.
- Fewer than 4 in 10 respondents **perceived the severity** of malaria. Kasai residents were significantly less likely to hold a perceived severity of malaria than residents in other zones. There were differences by place of residence in the Ouest zone, respondents living in urban areas were more likely than their rural counterparts to have a perceived severity of malaria. Men in the Nord and Kasai zones were more likely than women to perceive severity.
- **Spousal communication** about malaria in the past six months is low, at about 31 percent. Married men were more likely than married women to report that they discussed malaria with their spouse in the previous six months, and Grand Est participants were less likely to report spousal communication when compared to the other zones.
- Three in four participants hold a favorable general **perception toward health workers**, indicating that there is a broad belief that health workers in general treat their patients with respect. In the Nord zone, women are more likely than men to hold these perceptions, but no significant interzonal differences were found.
- Analysis yielded near universal support for **egalitarian gender norms** regarding malaria behaviors.

### 4.2. Case Management

#### 4.2.1 Summary of Findings

- **Knowledge** about recommended timing to seek care was only moderately high: only about half of respondents reported that care should be sought immediately or on the same day as the onset of fever. More than 85% of respondents believed that drawing blood for a malaria test was the best way to know if someone had malaria, and fewer than half (48.66%) indicated that they knew ACT is an effective treatment for malaria. Both knowledge indicators varied by zone. Knowledge of ACT as an effective treatment for malaria was more widespread among men, urban residents, and individuals with a secondary education or higher compared to women, rural residents, and individuals with primary or lower level of education, respectively.
- Positive **attitudes** toward care seeking and treatment were reported by two-thirds of respondents; these attitudes were less common in Kasai zone than in the other zones.

- Six in ten respondents believed that malaria **testing was efficacious** as a diagnostic method. There were significant differences between urban and rural areas. About half of respondents perceived the **response-efficacy of malaria treatment**. For both of these efficacy belief indicators, Kasai lagged behind the other zones.
- About half of the respondents believed that prompt care seeking for children with fever was the **norm** in their community. This perception drastically varied significantly by zone (Nord: 73.64%; Grand Est: 44.03%). Similar rates supported a community norm that children in the community who are taken to a health facility are tested for malaria. Injunctive norm about prompt care seeking (the belief that people in their community would support their decision to promptly take their child with fever to a facility) was reported by about half of the respondents. These three social norms indicators were lower in Kasai and Grand Est zones compared to Nord and Ouest zones, and the injunctive norm was significantly lower in urban compared to rural areas.
- Whereas the majority of the respondents agreed that health facilities had **available malaria diagnostic test kits** and medication to manage malaria cases in children, more than three quarters of respondents also believed that they would be **charged by facility workers to test or treat** their febrile children.
- **Participation in decisions about a child's case management** was significantly more likely to be reported by men compared to women. Fewer than half of women reported involvement in the decision on whether to take a febrile child to the facility, purchase medicine for said child, or about what to do if they themselves are sick. The data showed that women from the Kasai zones were more likely to be marginalized in decisions regarding child case management compared to their peers in other zones.
- **Care was promptly sought** (i.e., the same or next day after onset of fever) for 49 percent of children under five with a fever in the 2 weeks preceding the survey, with no significant differences based on zone. When considering whether care was sought at a health facility and promptly (i.e., appropriate care), this was the case for about four in ten children. Appropriate care was significantly more likely for children in the Nord zone when compared to the other zones and was less likely for children 36-59 months old when compared to other children under five.
- **Malaria testing** in febrile children taken to a facility varied significantly by zone. While over 70 percent of Ouest and Kasai children under five with fever at a health facility were tested for malaria, only 50 percent of Grand Est children were tested. About 9 in 10 children who were tested received a positive result, with no significant differences based on respondents' sociodemographic characteristics. Fewer than half of children with confirmed malaria received ACT. Receiving ACT and receiving ACT promptly was more likely to occur in the Nord zone than in other zones. Receiving ACT was less likely for children whose mothers did not complete primary school.
- Results of the logistic regression model reveal several ideational variables positively associated with seeking care for a febrile child promptly and in a health facility, including knowledge that care should be sought immediately or on the same day as the onset of fever in a child, spousal communication, and the perception that health facility workers treat patients with respect. The perception that facility workers charge parents for treatment resulted in 33% reduced odds of the child receiving appropriate care. Appropriate care was less likely to occur in the Kasai zone when compared with the Nord zone. Finally, children with fever who were 36 months or older experienced 43% reduced odds of being promptly taken to a health facility or a CHW for care compared to children under 12 months.

#### 4.2.2 SBC Program & Policy Recommendations

- **Prompt care-seeking in a health facility or from a CHW for children with fever remains unacceptably low** and appropriate efforts are needed to promote this behavior in all zones of the country. To increase this appropriate care-seeking behavior, interventions designed to strengthen knowledge about the ideal timing of care-seeking and spousal communication about malaria are relevant overall. Interventions should also strengthen interpersonal communication skills of health workers and inform the population that they can expect respectful treatment from health workers. Efforts to promote this behavior are particularly relevant in Kasai zone.
- **The perception that parents are charged for malaria treatment for children under five was a barrier to prompt care-seeking** for children with fever in a health facility or from a CHW. It is important for NMCP and its partners to look into the accuracy of this concern about care-related charges, clarify what is expected to be paid for and what should be free, and clearly communicate the information to clients. A visible sign at the health facility that shows the cost of services may help to inform clients and keep health providers accountable.
- **Prompt care-seeking in a health facility or from a CHW was less common for children two years or older** compared to younger children. It is possible that parents' perception of the severity of malaria in their child depends on the age of the child. It is possible that by the time a child reaches his/her second birthday, the parents have successfully managed multiple episodes of fever in the child, and may not consider a fever to be cause for alarm. Considering that malaria is potentially serious for under-five children irrespective of their age or prior experience with malaria, messages that stress the importance of prompt care-seeking in a health facility or from a CHW for all children with fever irrespective of their age are relevant.
- **Many children taken to a health facility were reportedly not tested for malaria.** While caretakers' responses may have been affected by memory lapse, the low level of diagnostic testing points to possible supply side problems, including testing kit stock-out, provider attitudes, and provider training. There is a need to identify and promptly address supply side factors that hinder systematic diagnostic testing of children with fever.

### 4.3. Malaria in Pregnancy

#### 4.3.1 Summary of Findings

The following are the key findings from the survey:

- **Knowledge** about recommended ANC and IPTp practices was generally low: only about half of the respondents knew that a woman should start ANC in the first trimester of pregnancy or as soon as she suspects she might be pregnant; knowledge about the recommended number of ANC visits was displayed by a little over half of the respondents while fewer than half knew that a pregnant woman should receive at least three doses of SP during pregnancy. Knowledge about ANC and IPTp varied significantly across zones and was lower in the Grand Est and higher in the Ouest compared to the other zones. There were also differences by sex, education, and place of residence.
- Positive **attitudes** towards ANC and IPTp were only moderately common and less prevalent in the Grand Est compared to the other zones.
- The **severity of malaria in pregnancy** was generally widely perceived in the study population although less so in the Grand Est than elsewhere.

- Most of the respondents believed **ANC and IPTp to be effective interventions** for ensuring safe pregnancy. Similarly, the majority of the respondents were **confident in their ability to obtain or support their female partners to obtain adequate ANC and IPTp** services. For both of these efficacy belief indicators, Grand Est lagged behind the other zones.
- About two thirds of the respondents believed that attending at least four ANC visits was the **norm** in their community while slightly over half believed that obtaining at least three SP doses during pregnancy was the norm in their community. The injunctive norm about SP (the belief that people in their community would support their decision to obtain SP during pregnancy) was reported by about half of the respondents. These three social norms indicators were lower in Kasai and Grand Est zones compared to Nord and Ouest zones.
- Whereas the majority of the respondents agreed that **health service providers usually treat pregnant women with respect**, a little over one third believed that providers **made pregnant women pay for SP**. The belief that pregnant women are charged for SP was more common in Kasai than elsewhere.
- Only about half of the respondents reported that they had **ever discussed ANC attendance** with their spouse. This indicator was significantly lower in Kasai and Grand Est zones compared to Nord and Ouest zones.
- **Participation in decisions about ANC attendance** was significantly more likely to be reported by men compared to women. The data showed that women from the Nord and Kasai zones were more likely to be marginalized in decisions regarding ANC attendance compared to their peers from the Ouest and Grand Est zones.
- About nine-tenths of the women who were pregnant during the last two years **attended ANC** at least once but only two-thirds of the women attended four ANC visits as recommended by health authorities in DRC. Women in Kasai and Grand Est zones were less likely than those from Ouest zone to have received the recommended number of ANC visits. Receiving the recommended number of ANC visits was also more common in urban than in rural areas and among post-primary educated women compared to their illiterate or primary educated peers. Furthermore, the first ANC visit took place in the first trimester for only about one third of the women. Receiving the first ANC in the first trimester of pregnancy was less common in the Nord zone and higher in Kasai zone compared to the other zones.
- Four out of every five women received **at least one dose of SP** during pregnancy but only two out of five received the recommended three doses.
- While practically all women who desire another child in the next two years **intended to attend ANC**, only about half indicated that they would attend their first ANC during the first trimester of pregnancy. Intention for early ANC attendance was more prevalent in the Ouest and less prevalent in the Nord compared to the other zones. Urban women were also more likely than their rural peers to express intention for early ANC attendance.
- Results of the multilevel logistic regression model reveal that overall, the **ideational variables associated with intention for early ANC** included comprehensive knowledge about ANC and IPTp, the belief that women should feel comfortable discussing ANC attendance with their spouse, positive attitudes towards ANC and IPTp, and perceived self-efficacy for obtaining IPTp. The results further revealed the significant ideational variables varied by zone.
  - In the **Nord zone**, comprehensive knowledge about ANC and IPTp and the injunctive norm about IPTp were the ideational variables positively associated with intention for early ANC attendance.
  - In the **Ouest zone**, comprehensive knowledge about ANC and IPTp, and positive perceptions about health service providers were the ideational variables positively linked with early ANC attendance intention. In this zone, there was a positive relationship with exposure to malaria

messages, poverty, and urban residence. Furthermore, the data indicate a significant clustering of intentions at the community level.

- In **Kasaï**, comprehensive knowledge about ANC and IPTp, and the belief that a woman should feel comfortable discussing ANC attendance with her spouse were significantly and positively associated with intention for early ANC attendance. The data for this zone also showed a large and significant clustering of intention at the community level.
- In **Grand Est**, perceived self-efficacy to obtain IPTp and comprehensive knowledge about ANC and IPTp were positively associated with intention to obtain ANC early in pregnancy.

#### 4.3.2 SBC Program & Policy Recommendations

Considering these findings, the MBS team offer the following recommendations:

- Across zones, it is important to continue to **promote the recommended number of ANC visits and SP doses**. In this regard, psychological, logistic and structural barriers to obtaining adequate pregnancy care will need to be identified and addressed. Note that a comprehensive strategy that targets both the supply and demand sides is needed. The recommendations presented below are expected to contribute to such a comprehensive strategy.
- **Efforts to improve basic knowledge about ANC and IPTp**, including timing of first ANC visit, and recommended numbers of ANC visits and doses of SP are relevant in all zones. Such efforts are particularly relevant in Grand Est zone and among rural and illiterate women.
  - In the **Nord zone**, in addition to strengthening comprehensive knowledge about ANC and IPTp, efforts designed to **improve perceived social approval of early ANC attendance** are relevant. In this respect, it is important to present early attendance as normative in the community. This can be done by showing a satisfied user who models the desired behavior, talks about the benefits she and her family derives from the behavior, and encourages other women to adopt the behavior.
  - In the **Ouest zone**, as mentioned above, knowledge about ANC and IPTp needs to be strengthened. In addition, it is important to **promote positive perceptions about health service providers**. Substantively, it is pertinent to emphasize the fact that providers treat their clients with respect, correct the perception that women are made to pay for services, and address the erroneous belief that health workers will not attend to women who come for ANC early in their pregnancy. Correcting these negative perceptions will require efforts to improve provider behavior as well as interventions to make the intended population aware of improvement in service delivery. In this zone, wealthier households and rural residents may be considered priority audience groups.
  - In **Kasaï**, in addition to strengthening knowledge about ANC and IPTp, efforts should target **promoting spousal communication about ANC attendance**. Specifically, interventions designed to position spousal communication about ANC as a community norm and coach couples how to communicate about this behavior are relevant.
  - Interventions designed to strengthen the perceived self-efficacy to obtain IPTp are particularly relevant in the Grand Est zone. Such interventions should be theory-based and use multiple media to address the four mechanisms identified in literature [20] through which self-efficacy can be learned and strengthened. These mechanisms include (1) enactive learning, that is, strengthening successful performance of the behavior by identifying and addressing psychological, logistic, and structural barriers to early ANC attendance; (2) vicarious learning, that is, modeling early ANC attendance as a behavior that an ordinary woman in the community engages in; (3) exhortative learning, that is, using persuasive arguments to convince the audience of the benefits of early ANC attendance and encourage

- them to take action; and (4) emotive learning, that is, correcting misconceptions and perceived negative consequences of early ANC attendance.
- The clustering of intention for early ANC attendance at the EA level indicates the presence of unmeasured variables operating at the community level that affects intention for early ANC attendance. While the data do not allow us to identify these unmeasured variables, it is reasonable to assume that they are related to community compositional, contextual, and normative factors. One way to address these shared attributes is through community level interventions, including community mobilization activities that target community leaders and groups to promote address barriers to early ANC attendance. Another relevant set of interventions are those that target the service delivery system to identify and address inadequacies.

## 4.4. ITN

### 4.4.1 Summary of Findings

- **Knowledge about bed nets as a way to prevent malaria is widespread** in all the zones of the study although there were some slight variations by zone, sex, education, place of residence and wealth quintile.
- In general, **attitudes were positive towards use of bed nets** with, overall, about nine out of every ten respondents demonstrating a positive attitude towards use of bed nets. All the same, positive attitudes were less prevalent in Kasai zone compared to the Nord and Ouest zones, and among primary educated respondents compared to those with no formal education.
- **Perceived response-efficacy of ITNs was relatively high** with about three-quarters of the study population demonstrating belief in the effectiveness of ITNs. This indicator was lower among people with no education compared to their educated peers.
- **Perceived self-efficacy for consistent use of bed nets was high across board** while less than two thirds of the study population believed consistent use of bed nets to be the norm in their community. The belief that consistent use of bed nets was a community norm was less common in Kasai and Grand Est zones compared to Nord and Ouest zones. Respondents from the Grand Est zone (44.41%) were more likely than those from the other zones to report that they did not know whether or not consistent use of bed nets was a community norm.
- Overall, **four out of every five respondents perceived social support for consistent use** of bed nets. This indicator was less common in the Ouest zone compared to Nord and Kasai zones and in urban than in rural areas.
- **There were gaps in bed net ownership in all study zones.** Whereas under three quarters of the households own at least one bed net, only about one third owned enough nets for household members assuming that two people share a bed net. This indicator of universal household net coverage was significantly lower in the Kasai compared to the other zones, for rural than urban households, among poorer households compared to wealthier households, and in larger (7 members or more) compared to smaller households.
- Net characteristics: **Almost all the 7,089 bed nets enumerated in the study zones were ITNs and white.** The majority of the bed nets were obtained from a mass distribution campaign and aged less than three years old. The data showed that bed nets were, on

average, older in Kasai than in the other zones. Furthermore, compared to what we observed in the other zones, the bed nets in Kasai zone were less likely to come from a mass distribution campaign, more likely to have been obtained during an ANC visit, and less likely to be white.

- **More than four out of every five available bed nets were used for sleeping on the night preceding the survey.** All the same, the proportion of available nets used for sleeping on the night preceding the survey or consistently in the last week was lower in the Ouest zone compared to the other zones.
- **There is significant room for improvement in the way the population cares for their bed nets.** Whereas most of the nets that have already been washed were washed with mild soap as recommended, a significant proportion of these nets were left to dry in the sun instead of outside in the shade as recommended. Leaving nets to dry in the sun was a more common practice in the Nord and Grand Est zones (about half of the nets were dried in this manner) compared to the Ouest and Kasai zones. About four of five nets that were used for sleeping the previous night were found simply hanging loosely over the bed during the survey; not rolled up or tied up as recommended. The practice of rolling or tying up nets that were hung when not in use was rare in Grand Est and Kasai zones.
- **In households with at least one net, about four-fifths of household members slept under a net on the night preceding the survey.** In households with universal bed net coverage almost nine-tenths of household members used a net on the night before the survey. The data showed that when a household does not have enough nets, adults and children under five years old tend to be prioritized over children aged 5 – 17 years. In addition, in the Nord and Ouest zone, women tended to be prioritized over men in net allocation.
- **Overall, the use:access ratio was 0.88 indicating that whereas most people with access to a bed net actually use it, there is room for improvement.** The indicator was lower in Kasai than in the other zones. A closer look at the two components of the indicator – use and access measures - reveals different patterns in Kasai than in the other zones. Specifically, both measures were very low in Kasai whereas they were moderate in the other zones. The level of the use and access measures has implications for the strategies required per zone.
- The data indicate that **consistent use of bed nets is common** among the men and women interviewed in the survey. In households with at least one net, about four fifths of the men and women reported consistent use of nets. This indicator varied significantly by zone with lower rates in Kasai and Ouest zones compared to the Nord and Grand Est zones.
- The variables associated with consistent use of bed nets varied by zone:
  - In the **Nord zone**, the belief that there were actions that a person could take to extend the life of their bed nets, interpersonal communication about malaria in the last six months, and the belief that consistent use of bed nets is a community norm were the ideational variables significantly associated with consistent use. In addition, there was a positive association with household universal bed net coverage and the presence of a child under five years old in the household. The association with regular radio listenership was negative.
  - In the **Ouest zone**, favorable attitudes towards bed nets and the belief that consistent use of bed nets is a community norm were the ideational variables significantly associated with consistent use, Furthermore, exposure to malaria-

related messages, household universal net coverage, the presence of a child under five years old in the household, and age were positively correlated with the behavior. In contrast, there is a negative association with urban residence. The data also revealed significant clustering of consistent use of bed nets at the community level.

- Similar to the Ouest zone, **in Kasaï**, favorable attitudes towards bed nets and the belief that consistent use of bed nets is a community norm were the ideational variables significantly associated with consistent use. There was a marginally significant positive correlation with perceived social approval of use of bed nets and the belief that there were actions that a person could take to extend the life of their bed nets. The relationship with perceived susceptibility to malaria was curiously negative. In addition, household universal net coverage, the presence of a child under five years old in the household, age, regular television viewing, and poverty level were positively correlated with the behavior. Furthermore, the data showed that consistent use of bed nets clustered significantly at the community level.
- In the **Grand Est**, the variables strongly and positively associated with consistent use include favorable attitudes towards bed nets, knowledge about bed nets as a way to prevent malaria, and the belief that there were actions that a person could take to extend the life of their bed nets. In addition, household universal net coverage and, to some limited extent, the presence of a child under five years old in the household were significant correlates. As observed in the other zones, there was clustering of the behavior at the community level.

#### 4.4.2 SBC Program & Policy Recommendations

The policy and programmatic implications of the foregoing findings include the following:

- **The observed gaps in bed net ownership and universal household net coverage in all study zones necessitate efforts to increase net ownership in all zones**, particularly in the Kasaï zone. This may be achieved not only through household mass bed net distribution campaigns, but also through other channels, including ANC and child immunization services and schools. It is also important for the national program to consider the feasibility of social marketing of bed nets. In this respect, a study on the intended population's willingness to pay may be useful. Findings from this study will inform decisions about sale price of bed nets in the social marketing program. The finding that large families are less likely to possess enough bed nets underscores the need to revisit bed net distribution criteria. Instead of allocating a fixed number of bed nets to each household, it is important to take household size into consideration when distributing bed nets. Efforts to increase net ownership are particularly relevant for Kasaï zone, rural areas, and poorer households.
- The findings that **bed nets in Kasaï zone were less likely to come from a mass distribution campaign**, more likely to be obtained during an ANC visit, and on average older than in the other zones indicate that this zone is overdue for an appropriately organized mass distribution campaign.
- **There is a need for efforts that target the promotion of appropriate net care practices**, including how to handle hung nets when not in use, what product to use for washing nets, and where to dry nets after washing. This need is particularly dire in Grand Est and Kasaï zones.

- Although the **use:access ratio was moderate to high in all study zones, a closer look at the component indicators (population use and population access) reveals significant gaps** in all zones. In Kasai, given that both indicators are low, efforts should target increasing access to bed nets (through the strategies discussed above) as well as promoting consistent and year-round use of available nets by all household members. In the other zones, efforts designed to improve net ownership remain relevant. In addition, it is important to continue to promote consistent and year-round use of available nets as well as emphasize correct net care practices.
- **Efforts to promote consistent use of bed nets should pay attention to the ideational and other variables that were found to be significantly associated with this outcome** in this study. In the **Nord** zone, it is important to increase understanding about actions that a person could take to extend the life of their bed nets, promote interpersonal communication about malaria, and position consistent use of bed nets as a community norm. To position consistent bed net use as a community norm, programs may model an ordinary household where all members sleep under bed nets every night and year-round. In this respect, it is important to emphasize the ease and benefits of consistent use of bed nets and link the practice with prevention of malaria. The positive association with the presence of a child under the age of five years is interesting but it is important to promote the use of bed nets for all household members irrespective of their age.
  - In the **Ouest** zone, efforts to promote favorable attitudes towards bed nets and position consistent use of bed nets as a community norm are relevant. With regards to attitudes, messages that emphasize the ease of using bed nets, the utility of bed nets, and need for bed nets irrespective of the season are relevant. It is equally important to continue to emphasize the need for the use of bed nets for everyone, irrespective of age. Given the negative association of urban residence with consistent use, programs may consider urban areas as a special target for the promotion of consistent use of bed nets. In this respect, it is important to identify and address specific barriers to consistent use in urban areas. The observed significant clustering of consistent use of bed nets at the community level underscores the need for community mobilization activities that target community leadership and groups and that are designed to address shared barriers to consistent use of bed nets.
  - In **Kasai**, a comprehensive approach to promoting consistent use of bed nets may target attitudes towards bed nets, position consistent use of bed nets as a community norm, emphasize social approval of use of bed nets, and increase understanding about actions that a person could take to extend the life of their bed nets. In this zone, richer household appear to be a special target for messages and activities designed to promote consistent use of bed nets. Furthermore, the finding that consistent use of bed nets clustered significantly at the community level indicate that community mobilization activities that target community leadership and groups and that are designed to address shared barriers to consistent use of bed are relevant.
  - In the **Grand Est**, strategies to improve consistent use of bed nets may target attitudes towards bed nets, knowledge about bed nets as a way to prevent malaria, and the belief that there were actions that a person could take to extend the life of their bed nets. It is also important for messages to emphasize the need for year-round use of bed nets irrespective of age and season. Finally, as in the other zones, community mobilization activities that target community leadership and groups and that are designed to address shared barriers to consistent use of bed are relevant.

## 4.5 IRS

### 4.5.1 Summary of Findings

- Fewer than one in ten respondents reported they were **aware of an IRS program** in their community. The awareness that was reported focused in urban settings, particularly within the Ouest zone.
- More than 80% of respondents aware of an IRS program **perceived IRS as efficacious**, with significant differences by zone. Kasai zone was less likely to report perceived response efficacy of IRS when compared to the other zones.
- **Perceived self-efficacy to take actions related to IRS** were reported by about three-quarters of the population. These actions included moving furniture in preparation for spraying and sleeping in the house the night after it is sprayed.
- Among those aware of IRS, there is widespread **willingness to accept** it in their community and is near universal among rural populations. About 7 in 10 of respondents not previously aware of IRS reported willingness to accept it if it came to their community. Men were more likely to be willing to accept IRS in their community than women.

### 4.5.2 SBC Program & Policy Recommendations

- There appears to be a **high level of willingness to accept IRS, especially among those who are aware of what the program entails**. For better results, such a roll-out should be accompanied by efforts to increase awareness about the program, promote its effectiveness, emphasize its safety and ease of implementation, and strengthen the self-efficacy of community members to prepare their houses for the visit of IRS agents. In this respect, the testimonies of early adopters, emphasizing the benefits and ease of IRS may help to ensure a successful rollout.

## 4.6 Media Consumption & Exposure

### 4.6.1 Summary of Findings

- **Radio and television ownership** is limited in the study zones. In many households with radio, many people, especially women, do not listen to the radio regularly. The proportion of the population that can potentially be reached through the radio is less than half. Potential radio reach is lower in Kasai zone than elsewhere. In all zones, considerably fewer women than men can be potentially reached through this medium. Also, with the exception of the Ouest zone, potential reach is lower among rural than urban residents.
- For those who listen to the radio, the **most popular listening time slots** varied by zone. In the Nord, Ouest and Grand Est zones, radio programs have the potential to reach more people if they are broadcast in early morning before 8am or early evening, between 4 pm and 8pm. In the Kasai zone, the time to broadcast on the radio to maximize reach is either early morning or late evening (between 8pm and 12 midnight). Early morning programs would potentially reach about half of the population in the Grand Est zone while early evening radio programs would reach more than two-fifths of listeners in the Nord zone. Only by broadcasting in both early morning and early evening in the Ouest and Kasai can radio programs expect to reach at least half of the population.
- Most people in households with a television **watched television regularly** although there were a number of people whose households did not own a television but that reported regular television viewing, probably because they watched television at a neighbor's house. All the same because of the very low ownership of television in the study zones, the potential reach of the television is relatively low; just a little over four in ten individuals can be reached through

television programs. Potential reach of the television is higher in the Ouest zone (about two-thirds of the population can be reached) than elsewhere. Very few people can be reached through the television in Kasai and Nord zones.

- In Nord, Ouest, and Grand Est zones, the **popular time slots for watching television** programs are early and late evening. In Kasai zones, the most popular slots are early morning and late evening.
- Fewer than half of the men and women interviewed reportedly **owned a personal telephone or tablet**. Personal telephone ownership is more common in Ouest and Grand Est compared to Nord and Kasai. Men were more likely to own a telephone or tablet compared to women. Women in Kasai zone were particularly at a disadvantage in terms of telephone ownership. By and large, the groups least likely to own a personal telephone were women, young adults, illiterate men and women in Kasai and Nord zones.
- Most of the available telephones or tablets were capable of receiving SMS while about two-thirds can receive photographs, videos or audio files. About two-fifths could activate an embedded link to a website while about one third were capable of receiving emails.
- The most technologically advanced telephones or tablets are found in the Ouest. Compared to the other zones, devices in the Nord and Kasai were less likely to be capable of accessing an internet link and receiving emails.
- A strategy that combines radio, television and mobile technology has the potential to reach about seven tenths of the population, with variations by zone sex, and place of residence. The potential reach of such a combined strategy is lower in the Kasai zone than in the other zones. The combined strategy is also likely to reach proportionally fewer women than men, and a smaller proportion of rural than urban residents in each zone.
- **Only about one third of the men and women were reportedly exposed to a malaria message in the last one year.** Exposure was lower in the Grand Est and Nord zones compared to Ouest zone. In general, rural residents were less likely to be exposed compared to their urban peers.

#### 4.6.2 SBC Program and Policy Recommendations

- Given the limited level of ownership of radio and television in the study population, neither of these media alone has the potential to reach the majority of the intended population. **A strategy that combines the radio with television and mobile technology is indicated for all the study zones.** The data showed that combining the three media has the potential to reach about seven-tenths of the population, with a higher proportion in the Ouest zone but a much smaller proportion in Kasai zone. To increase the reach of effective interventions, **it is important to include community mobilization activities** that target community groups. Using facility-based and community health workers to disseminate scientifically sound information on malaria prevention and treatment as well as share persuasive messages to encourage appropriate malaria-related behaviors is also relevant. Such a strategy is particularly relevant in Kasai zone, in rural areas and for women.

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## Annex A: Data Tables

This annex provides all data tables for the 2021 DRC MBS that were not included in the main body of the report. A brief description of the purpose of each table is provided. Data presented in these tables are often disaggregated by study zone and/or respondent or household sociodemographic characteristics.

Data tables pertaining to the specific subsections can be found by utilizing the table of contents at the beginning of this report or the links below:

[A.3.1 Sample Characteristics](#)

[A.3.2 Cross-Cutting Ideational Determinants](#)

[A.3.3 Malaria Case Management for Children Under Five Years Old](#)

[A.3.4 Malaria in Pregnancy](#)

[A.3.5 Insecticide-Treated Net Use](#)

[A.3.6 Indoor Residual Spraying](#)

[A.3.7 Media Consumption and Message Exposure](#)

### A.3.1 Sample Characteristics

This subsection of the Annex provides all data tables related to sample characteristics that are not included in the main body of the report. The following tables have been referenced in the main body of the report, and readers will find a description of results relevant to the table in the corresponding section of the report.

**Table 3.1.2: Ownership of assets and wealth quintile**

**Table 3.1.2** describes the distribution of household ownership of assets. This table also presents the proportion of wealth quintiles, disaggregated by zone.

<b>Table 3.1.2: Ownership of Assets and Wealth Quintile, 2021 DRC MBS</b>					
<b>Percent of households with...</b>	<b>Nord</b>	<b>Ouest</b>	<b>Kasaï</b>	<b>Grand Est</b>	<b>Total</b>
Radio	41.17	54.02	31.41	48.88	47.26
Television	13.75	60.59	8.48	35.91	38.99
Refrigerator	0.80	23.43	1.17	11.21	13.34
Internet Access	6.59	11.76	2.05	13.67	9.82
Watch	37.31	59.00	25.12	43.69	46.76
Simple mobile phone	65.02	76.00	55.81	73.45	70.50
Smart Phone	6.96	39.47	5.18	25.62	25.45
Bicycle	37.29	10.88	38.19	19.35	21.59
Motorcycle	21.02	9.12	12.96	10.33	12.17
Car	0.35	4.07	0.80	2.47	2.56
Computer	2.51	11.29	3.45	5.29	7.22
<b>Wealth Quintile</b>					
Lowest	24.50	5.90	26.46	8.87	20.05
Second	22.83	7.11	26.35	11.19	19.99
Third	22.97	9.47	25.10	18.74	19.99
Fourth	21.39	19.88	16.92	25.87	20.01
Highest	8.31	57.64	5.16	35.32	19.97
<b>Number of Observations</b>	<b>1080</b>	<b>1035</b>	<b>1943</b>	<b>940</b>	<b>4998</b>

**Table 3.1.3: Characteristics of household members**

**Table 3.1.3** describes the sociodemographic characteristics of household members in each zone. These include member sex, residence, age distribution and distribution of household ownership of assets. This table lists the distribution of these characteristics for all household members listed during the household questionnaire and does not necessarily reflect only the characteristics of individuals interviewed. The data presented in this table is disaggregated by zone.

<b>Table 3.1.3: Characteristics of household members, 2021 DRC MBS</b>					
<b>Characteristic</b>	<b>Nord</b>	<b>Ouest</b>	<b>Kasaï</b>	<b>Grand Est</b>	<b>All zones</b>
<b>Sex</b>					
Female	53.73	55.25	51.03	51.39	53.80
Male	46.27	44.75	48.97	48.61	46.20
<b>Residence</b>					
Rural	58.95	28.27	63.47	56.75	53.98
Urban	41.06	71.73	36.53	43.25	46.02
<b>Age Distribution</b>					
0-4 years	14.25	11.78	14.87	16.43	13.44
5-17 years	41.06	30.40	27.59	37.58	33.45
18+ years	44.69	59.82	57.54	45.99	53.11
Average age in years	19.42	23.34	22.27	20.69	22.07
<b>Number of Observations</b>	<b>6821</b>	<b>5288</b>	<b>9220</b>	<b>5244</b>	<b>26573</b>

**Table 3.1.4: Sociodemographic characteristics of respondents**

**Table 3.1.4** describes the distribution of respondents by sociodemographic characteristics, including participant sex, age group, and level of education.

<b>Table 3.1.4: Percent distribution of respondents by selected sociodemographic characteristics, sex and zone, DRC 2021</b>					
<b>Characteristic</b>	<b>Nord</b>	<b>Ouest</b>	<b>Kasaï</b>	<b>Grand Est</b>	<b>All Zones</b>
<b>Women</b>					
<b>Age</b>					
15-24 years	40.68	33.82	36.97	35.69	35.94
25-34 years	31.62	31.06	28.54	31.54	30.97
35-44 years	20.15	26.99	24.46	22.57	24.42
45+ years	7.53	8.13	10.03	10.20	8.66
<b>Level of education</b>					
None	11.45	3.97	19.64	18.65	10.33
Primary	33.63	21.37	36.90	21.85	25.76
Secondary	51.28	62.93	40.57	50.69	55.44
Higher than secondary	3.63	11.73	2.89	8.80	8.47
<b>Number of observations</b>	<b>1486</b>	<b>1191</b>	<b>2217</b>	<b>1106</b>	<b>6030</b>
<b>Men</b>					
<b>Age</b>					
15-24 years	9.01	2.34	9.50	11.48	6.51
25-34 years	28.93	22.48	26.90	30.74	26.04
35-44 years	34.55	35.81	31.23	35.94	34.96
45+ years	27.51	39.37	32.37	21.84	32.49
<b>Level of education</b>					
None	0.00	0.00	0.00	0.00	0.00
Primary	18.67	11.48	19.83	19.53	15.57
Secondary	66.55	54.41	65.69	58.29	58.95
Higher than secondary	14.78	34.11	14.48	22.18	25.48
<b>Number of observations</b>	<b>379</b>	<b>378</b>	<b>685</b>	<b>338</b>	<b>1780</b>

### A.3.2 Cross-Cutting Ideational Determinants

This subsection of the Annex provides all data tables related to cross-cutting ideational determinants. These include knowledge of malaria, perceived susceptibility and severity of malaria, gender norms related to malaria, perceptions regarding health workers and malaria, and interpersonal communication related to malaria. The tables herein summarize the prevalence of ideational determinants and may be duplicative of tables in the main body of the report.

**Table 3.2.1: Questions to assess cross-cutting ideational variables**

**Table 3.2.1** Questions used to assess cross-cutting ideational variables, 2021 DRC MBS

Indicator	Question(s) used to measure indicator	Notes
Knowledge that the main symptom of malaria is fever	What signs or symptoms would lead you to think that a person has malaria?	Multiple responses were possible in this question. “Knowledge” was determined if the response indicated sleeping fever as a symptom of malaria.
Knowledge that mosquitoes are the sole cause of malaria	What causes malaria?	Multiple responses were possible in this question. “Knowledge” was determined if the response indicated only mosquito bites as the cause of malaria.
Knowledge of at least one malaria prevention method	What are the things that people can do to stop them from getting malaria?	Multiple responses were possible in this question. “Knowledge” was determined if the response indicated sleeping under an ITN, taking preventive medication, or having their house sprayed..
Perceived susceptibility to malaria	<p>I am going to read a series of statements or questions to you and I would like you to tell me if you <b>agree or disagree</b> with the statement:</p> <ul style="list-style-type: none"> <li>A. People in this community only catch malaria during the rainy season.</li> <li>B. Almost every year, a person in this community catches severe malaria.</li> <li>C. When your child has a fever, you're almost always afraid it's malaria.</li> <li>D. During the rainy season, you are afraid almost every day that a member of your family will suffer from malaria.</li> </ul>	<p>This is a composite score based on responses. The “correct” response in terms of perceived susceptibility for each question is listed below:</p> <ul style="list-style-type: none"> <li>A. Disagree</li> <li>B. Agree</li> <li>C. Agree</li> <li>D. Agree</li> </ul>
Perceived severity of malaria	<p>I am going to read a series of statements or questions to you and I would like you to tell me if you <b>agree or disagree</b> with the statement:</p> <ul style="list-style-type: none"> <li>A. You are not afraid of malaria, because you believe it can be treated easily.</li> <li>B. Only weak children can die of malaria.</li> <li>C. Each case of malaria can potentially lead to death.</li> </ul>	<p>This is a composite score based on responses. The “correct” response in terms of perceived severity for each question is listed below:</p> <ul style="list-style-type: none"> <li>A. Disagree</li> <li>B. Disagree</li> <li>C. Agree</li> <li>D. Disagree</li> </ul>

	D. When someone you know has malaria, you usually expect them to recover completely within a few days.	
Interpersonal communication about malaria	<p>A. In the last six months, did you talk about malaria with your spouse or partner?</p> <p>B. In the last six months, did you talk about malaria with your friends or relations?</p>	A “yes” response to each question indicates interpersonal communication
Gender norms related to malaria	<p>I am going to read a series of statements or questions to you and I would like you to tell me if you <b>agree or disagree</b> with the statement:</p> <p>A. When there are not have enough nets, it is more important that female children sleep under the available nets rather than male children.</p> <p>B. When there are not have enough nets, it is more important that male children sleep under the available nets rather than female children.</p> <p>C. When there is not enough money, it is more important that male children with fever get medicine rather than female children.</p> <p>D. When there is not enough money, it is more important that female children with fever get medicine rather than male children.</p>	<p>This is a composite score based on responses. The “correct” response in terms of egalitarian gender norms for each question is listed below:</p> <p>A. Disagree</p> <p>B. Disagree</p> <p>C. Disagree</p> <p>D. Disagree</p>

**Table 3.2.2: Correct Knowledge of malaria**

**Table 3.2.2** (next page) summarizes respondents' level of knowledge of malaria. This includes the proportion of respondents who identified fever as the main symptom of malaria, who reported that malaria is caused by a mosquito bite; and who reported at least one major malaria prevention measure such as sleeping under a treated bed net every night. These data are presented according to respondent background characteristics and are disaggregated by zone.

**Table 3.2.2 Knowledge of Malaria Cause, Prevention and Symptoms, 2021 DRC MBS**

	Nord			Ouest			Kasaï			Grand Est			All Zones		
Characteristic	Know fever is a symptom of malaria	Know malaria is caused by mosquito bite alone	Know at least one malaria major prevention measure	Know fever is a symptom of malaria	Know malaria is caused by mosquito bite alone	Know at least one malaria major prevention measure	Know fever is a symptom of malaria	Know malaria is caused by mosquito bite alone	Know at least one malaria major prevention measure	Know fever is a symptom of malaria	Know malaria is caused by mosquito bite alone	Know at least one malaria major prevention measure	Know fever is a symptom of malaria	Know malaria is caused by mosquito bite alone	Know at least one malaria major prevention measure
<b>Sex</b>															
Female	80.44	46.07	88.29	82.38	54.57*	93.50	93.69	42.26***	94.23	80.88	43.76	87.59	83.04	49.20***	91.34
Male	85.10	40.71	94.57**	89.87** *	48.07	94.19	92.37	31.83	96.15	87.93**	40.61	90.53	88.93** *	42.86	93.75**
<b>Age</b>															
15-24 years	80.50	48.03	88.88	78.06*	52.61	92.58	90.46	42.24	95.57	79.13*	43.22	87.24	80.50**	48.09	90.94
25-34 years	81.37	42.90	91.00	85.50	49.20	95.29	91.94	39.66	95.98	84.54	43.90	89.74	85.24	45.55	93.26
25-44 years	84.28	40.94	91.86	88.03	54.46	93.45	95.35	37.21	94.21	86.42	40.88	90.59	87.95	47.24	92.69
45+ years	84.31	43.29	92.45	89.25	50.64	93.49	94.63	28.78**	94.70	86.24	40.63	86.64	88.70	44.74	92.34
<b>Residence</b>															
Urban	80.72	40.28	91.41	87.81	51.16	94.01	92.61	37.07	97.10*	84.83	43.72	90.87	85.00	47.12	93.36*
Rural	83.61	46.65	90.44	84.93	54.24	92.98	93.41	37.60	93.72	82.99	40.80	86.57	86.50	45.43	90.79
<b>Education</b>															
None	84.64	32.70*	80.30*	88.56	49.69	95.71	95.18	27.40*	93.01	76.12	38.47	83.30	84.62	36.75**	87.12
Primary	79.71	50.78	89.86	76.62	62.40	86.30	91.80	42.72	92.89	79.74	43.66	85.68	80.60	52.43	88.18
Secondary+	83.15	42.42	92.59	87.31	49.56	95.31	93.31	37.28	96.57*	86.47	42.62	90.97	87.04	45.71	94.13***
<b>Wealth</b>															
Lowest	78.33	50.36	87.76	84.61	59.10	94.77	93.54	32.50	92.69	88.26	35.78	80.00	85.50	44.53	87.46
Second	82.01	42.74	89.53	88.57	54.23	93.90	93.03	43.10	93.94	82.39	41.02	88.37	86.48	45.14	91.49
Middle	82.05	42.56	91.95	90.35	47.77	93.23	94.57	38.45	96.70	80.00	39.84	84.96	86.30	42.44	91.56
Fourth	85.25	39.41	91.57	80.14	54.82	92.78	90.95	34.57	98.15	83.67	44.51	92.59	83.23	46.89	93.05
Highest	86.38	45.47	96.87**	86.31	50.69	94.85	90.49	36.86	95.92	85.66	44.06	90.49	86.25	48.92	94.09
<b>All (%)</b>	<b>82.35</b>	<b>43.87</b>	<b>90.87</b>	<b>85.55</b>	<b>51.82*</b>	<b>93.79</b>	<b>93.07** *</b>	<b>37.38</b>	<b>95.13</b>	<b>83.98</b>	<b>42.37</b>	<b>88.88</b>	<b>85.57</b>	<b>46.48</b>	<b>92.38</b>

Number of Observations	1865	1569	2929	1442	7805
Notes: Significance of difference of means across groups * p < .05; ** p < .01; *** p < .001					

**Table 3.2.3: Perceived susceptibility to malaria**

**Table 3.2.3** summarizes the distribution of perceived susceptibility to malaria, based on composite scores from responses to specific statements. Results are presented by participant sociodemographic characteristics and are disaggregated by study zone.

<b>Table 3.2.3: Percent of respondents with perceived susceptibility to malaria, 2021 DRC MBS</b>					
<b>Sociodemographic Characteristic</b>	<b>Nord</b>	<b>Ouest</b>	<b>Kasaï</b>	<b>Grand Est</b>	<b>All Zones</b>
<b>Sex</b>					
Female	66.06	49.27	72.85	52.79	56.15
Male	67.81	55.72*	73.93	57.66	60.89**
<b>Age</b>					
15-24 years	64.96	46.43	70.13	52.24	55.10
25-34 years	66.24	53.11	72.15	53.98	58.32
25-44 years	70.13	53.28	74.26	57.21	59.56
45+ years	65.46	54.08	77.57	57.06	59.66
<b>Residence</b>					
Urban	62.61	50.70	72.15	49.25	53.90
Rural	70.01	56.70	74.22	61.55	65.13***
<b>Education</b>					
None	69.29	68.57*	69.60	51.27	62.58
Primary	56.45	48.92	75.06	63.55	58.16
Secondary+	71.09	51.96	73.82	53.39	57.83
<b>Wealth</b>					
Lowest	73.38	50.40	75.16	72.09*	69.38
Second	64.70	66.10*	68.89	59.40	65.22
Middle	65.20	62.66	75.17	58.17	64.86
Fourth	64.82	44.57	75.06	53.34	54.20
Highest	65.12	51.47	72.44	49.25	51.99***
<b>Total (%)</b>	<b>66.78</b>	<b>52.00</b>	<b>73.36*</b>	<b>54.93</b>	<b>58.18</b>
<b>Number of Observations</b>	<b>1865</b>	<b>1569</b>	<b>2929</b>	<b>1442</b>	<b>7805</b>
Notes: Significance of difference of means across groups * p < .05; ** p < .01; *** p < .001					

**Table 3.2.4: Perceived severity of malaria**

**Table 3.2.4** presents the distribution of participants' perceived severity of malaria. One's level of perceived severity is based on a composite score generated from four attitudinal questions (see Table 3.2.1).

<b>Table 3.2.4: Perceived severity of malaria</b>					
<b>Sociodemographic Characteristics</b>	<b>Nord</b>	<b>Ouest</b>	<b>Kasaï</b>	<b>Grand Est</b>	<b>All Zones</b>
<b>Sex</b>					
Female	35.87	42.31	25.75	40.25	38.63
Male	41.69*	39.77	30.95**	39.34	38.80
<b>Age</b>					
15-24 years	31.87	40.32	27.16	35.82	35.64
25-34 years	38.10	44.64	27.00	44.21	41.03
35-44 years	39.83	39.69	27.44	38.72	38.02
45+ years	47.23	39.95	32.00	39.65	39.96
<b>Residence</b>					
Urban	39.90	37.79	33.13	40.03	38.08
Rural	36.99	53.71*	24.65	39.63	39.72
<b>Education</b>					
None	41.50	57.73	17.19**	32.32	35.57
Primary	37.86	48.83	*	39.05	40.47
Secondary+	38.35	39.01*	27.18 31.27	42.35	38.74
<b>Wealth</b>					
Lowest	46.21	50.85	31.38	39.59	41.72
Second	36.86	53.24	24.29	32.35	36.46
Middle	36.18	55.08	25.14	37.33	39.20
Fourth	33.14	44.23	30.43	46.92	41.16
Highest	40.66	36.37	40.05	38.48	37.04
<b>Total (%)</b>	<b>38.26</b>	<b>41.23</b>	<b>28.18*</b>	<b>39.85</b>	<b>38.70</b>
<b>Number of Observations</b>	<b>1865</b>	<b>1569</b>	<b>2929</b>	<b>1442</b>	<b>7805</b>
Notes: Significance of difference of means across groups * p < .05; ** p < .01; *** p < .001					

**Table 3.2.5: Interpersonal communication regarding malaria**

**Table 3.2.5** (next page) presents data regarding participants' reporting of interpersonal communication regarding malaria in the six months prior to data collection. This includes reports of talking about malaria with one's spouse or one's friend/family member. Results are presented by participant sociodemographic characteristics and are disaggregated by study zone.

**Table 3.2.5: Percent of respondents who reported interpersonal communication regarding malaria, 2021 DRC MBS**

Characteristic	Nord		Ouest		Kasaï		Grand Est		All Zones	
	Talked about malaria with spouse in the previous six months	Talked about malaria with friend/family member in the previous six months	Talked about malaria with spouse in the previous six months	Talked about malaria with friend/family member in the previous six months	Talked about malaria with spouse in the previous six months	Talked about malaria with friend/family member in the previous six months	Talked about malaria with spouse in the previous six months	Talked about malaria with friend/family member in the previous six months	Talked about malaria with spouse in the previous six months	Talked about malaria with friend/family member in the previous six months
<b>Sex</b>										
Female	25.09	25.55	34.04	27.41	37.28	30.55	18.29	11.72	29.14	24.21
Male	31.82*	24.04	38.35	30.76	38.40	34.99*	18.01	11.52	32.85**	26.04
<b>Age</b>										
15-24 years	21.66	22.01	30.32	21.59	35.43	28.44	16.67	9.36	25.08	19.88**
25-34 years	28.30	27.87	28.83	24.79	38.37	35.47	18.80	14.75	27.59	24.47
25-44 years	32.63	26.41	37.52	32.07	38.01	29.71	15.91	8.67	32.22	26.02
45+ years	29.17	21.95	45.25	36.31	38.95	37.66	22.68	14.45	38.15*	30.52
<b>Residence</b>										
Urban	26.87	25.01	38.19	30.72*	47.84***	42.29**	18.51	12.40	33.78*	27.64**
Rural	29.86	24.88	30.91	21.98	30.79	25.73	17.73	10.74	27.24	20.71
<b>Education</b>										
None	20.43	23.10	20.03	16.58	18.87***	18.29	13.56	9.60	17.39	15.83
Primary	19.14	19.79	25.95	22.57	37.04	28.99	16.62	9.43	24.23	20.36
Secondary+	33.47**	27.48	39.32**	30.64*	42.97	38.31**	19.11	12.59	34.66***	27.41***
<b>Wealth</b>										
Lowest	23.85	20.28	15.15	18.49	28.52	25.17*	16.03	15.89	22.36	20.70
Second	26.37	21.57	26.47	19.52	33.97	28.27	19.01	10.35	27.24	20.96
Middle	25.37	24.87	28.60	20.33	42.37	34.63	19.48	10.56	28.30	22.18
Fourth	35.12	28.69	34.15	34.97*	44.72	40.21	16.80	10.78	30.86	28.14
Highest	38.25	35.00	41.47*	29.85	65.97***	59.37	18.67	12.14	36.92*	27.05*
<b>Total (%)</b>	<b>28.60</b>	<b>24.93</b>	<b>36.44</b>	<b>28.82</b>	<b>37.89</b>	<b>32.63</b>	<b>18.15***</b>	<b>11.63***</b>	<b>31.15</b>	<b>24.99</b>
<b>Number of Observations</b>	<b>1331</b>	<b>1862</b>	<b>1089</b>	<b>1565</b>	<b>2301</b>	<b>2925</b>	<b>1120</b>	<b>1439</b>	<b>5841</b>	<b>7791</b>

Notes: Significance of difference of means across groups \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

**Table 3.2.6: Perceptions regarding health workers**

**Table 3.2.6** presents distribution of participants' perceptions of facility-based and community-based health workers.

<b>Table 3.2.6: Percent of respondents with favorable perceptions toward Health Workers, 2021 DRC MBS</b>					
<b>Characteristic</b>	<b>Nord</b>	<b>Ouest</b>	<b>Kasaï</b>	<b>Grand Est</b>	<b>All Zones</b>
<b>Sex</b>					
Female	77.95*	76.47	74.27	74.90	76.18
Male	71.88	73.13	71.08	76.92	73.42
<b>Age</b>					
15-24 years	76.63	76.53	76.30	75.59	76.31
25-34 years	75.99	76.00	70.23	74.59	74.97
25-44 years	76.82	75.46	73.62	73.23	75.01
45+ years	70.11	71.84	70.94	83.31*	73.37
<b>Residence</b>					
Urban	76.10	76.47	74.77	76.54	73.22
Rural	74.64	69.94	71.35	74.91	76.09
<b>Education</b>					
None	73.17	87.11	72.97	70.75	74.79
Primary	75.27	78.90	70.86	77.87	76.43
Secondary+	75.95	73.77	74.22	75.36	74.51
<b>Wealth</b>					
Lowest	73.86	75.85	66.63	62.47	70.37
Second	72.53	65.78	76.58	68.15	71.33
Middle	75.18	66.93	74.41	77.90	73.50
Fourth	78.80	74.19	74.48	75.93	75.61
Highest	79.01	77.37	70.89	79.81	77.83*
<b>Favorable perceptions of health workers (%)</b>	<b>75.46</b>	<b>75.06</b>	<b>72.78</b>	<b>75.79</b>	<b>74.99</b>
<b>Number of Observations</b>	<b>1865</b>	<b>1569</b>	<b>2929</b>	<b>1442</b>	<b>7805</b>
Notes: Significance of difference of means across groups * p < .05; ** p < .01; *** p < .001					

**Table 3.2.7: Gender norms related to malaria**

**Table 3.2.7** presents distribution of participants' perceived gender norms related to malaria. One's reported gender norms are based on their agreement to several statements. Results are presented by participant characteristics and are disaggregated by study zone.

<b>Table 3.2.7: Gender norms related to malaria</b>						
Percent of respondents with perceived gender norms related to malaria, by zone, 2021 DRC MBS						
	Hold gender equitable attitudes related to malaria	Agree that when there are not enough nets, it is <b>more important that female</b> children sleep under the available nets rather than male children.	Agree that when there are not enough nets, it is <b>more important that male</b> children sleep under the available nets rather than female children.	Agree that when there is not enough money, it is <b>more important that male</b> children with fever get medicine rather than female children.	Agree that when there is not enough money, it is <b>more important that female</b> children with fever get medicine rather than male children.	Agree that a pregnant woman should feel comfortable asking her husband/spouse to go to the health facility for a prenatal consultation.
<b>Zone</b>						
Nord	96.88	10.99	3.72	3.34	4.92	74.25
Ouest	94.01	10.14	5.48	5.17	5.60	74.93
Kasai	89.67	11.06	9.49**	10.00***	11.02***	80.12*
Grand Est	94.91	7.81	2.40	2.49	3.34	71.79
<b>Sex</b>						
Female	93.75	10.71	4.88	4.76	5.67	72.71
Male	94.78	8.90	5.20	5.05	5.74	77.59*

<b>Age</b>						
15-24 years	92.12	10.59	4.40	4.01*	6.17	67.70*
25-34 years	95.41	9.57	4.60	5.23	4.83	75.48
25-44 years	94.47	10.11	6.03*	5.04	5.84	77.02
45+ years	95.01	9.39	4.87	5.18	6.23	79.14
<b>Residence</b>						
Urban	92.75	11.03*	6.27*	6.09*	6.67*	72.34
Rural	96.54**	8.15	2.99	2.93	4.12	78.78**
<b>Education</b>						
None	94.70	8.55	4.51	4.94	5.53	75.33
Primary	94.24	10.79	5.05	4.85	5.65	75.37
Secondary+	93.49	9.39	5.69	4.76	6.03	72.50
<b>All respondents</b>	<b>94.19</b>	<b>9.93</b>	<b>5.02</b>	<b>4.88</b>	<b>5.70</b>	<b>74.80</b>
<b>Number of Observations</b>	<b>7796</b>	<b>7796</b>	<b>7796</b>	<b>7796</b>	<b>7796</b>	<b>7796</b>

### A.3.3 Malaria Case Management for Children Under Five Years Old

This subsection of the Annex provides all data tables related to malaria care seeking and treatment, particularly for children under 5 years old. The following tables include data related to care seeking and treatment behavior as well as several ideational factors including knowledge, attitudes, perceived response efficacy, perceived self-efficacy, gender norms and perceived community norms. The tables may have been duplicated in the main body of the report.

Table 3.3.1 Questions used to assess case management ideational variables, 2021 DRC MBS

Indicator	Question(s) used to measure indicator	Notes
Knowledge that ACT is an effective treatment for malaria	What medicines can be used to effectively treat malaria?	Questions has multiple possible responses. Knowledge is determined if the response includes ACT.
Knowledge that care seeking for children with fever should begin the same day or next day after fever onset.	How soon after a child develops fever should you take a child under five years old to get advice or treatment for the fever? Should you do it as soon as the child's fever is detected, the same or next day as the child's fever begins, or two or more days after the fever begins?	Knowledge is determined if the response is immediately or the same or next day.
Knowledge that a blood test is the best way to learn if someone has malaria	What is the best way to know if someone has malaria?	Knowledge is determined if the response includes a blood test for malaria.
Knowledge that the best source of malaria treatment is a health facility.	In your community, where is the best place to go if you think you have malaria?	Knowledge is determined if the response is a health facility
Comprehensive knowledge of malaria care-seeking and treatment		This is a composite score based on responses to the four previous knowledge questions. If the respondents has correct knowledge in all four questions (i.e. that ACT is effective; that care-seeking should begin same or next day; that blood test is best way to diagnose malaria; and that health facility is the best first recourse), then knowledge is considered comprehensive.
Favorable attitude toward care-seeking for children for fever and treatment of malaria	<p>I am going to read a series of statements or questions to you and I would like you to tell me if you <b>agree or disagree</b> with the statement:</p> <ul style="list-style-type: none"> <li>A. The health provider is always the best person to talk to when you think your child may have malaria</li> <li>B. One does not need to continue taking all the medicine doses against malaria if they no longer feel sick</li> <li>C. if they think his/her child has malaria, a parent should first ask for an injection from the health provider or community health worker</li> </ul>	<p>This is a composite score based on responses. The "correct" response in terms of favorable attitudes for each question is listed below:</p> <ul style="list-style-type: none"> <li>A. Agree</li> <li>B. Disagree</li> <li>C. Disagree</li> <li>D. Agree</li> <li>E. Agree</li> </ul>

	<p>D. I prefer that my child receive the medicine to treat malaria by injection rather than swallow it</p> <p>E. A person should only take malaria medicine if a health provider says that his/her fever really is caused by malaria</p> <p>F. 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</p> <p>G. When my child has a fever, it is better to start by giving him any malaria medicine I have at home.</p> <p>H. It is important to take all the antimalaria pills prescribed to ensure a complete recovery</p> <p>I. When my child has a fever, I do not go directly to the health facility, I first go elsewhere to buy him/her medicine</p>	<p>F. Disagree</p> <p>G. Disagree</p> <p>H. Agree</p> <p>I. Disagree</p>
Perceived response-efficacy of malaria testing	<p>I am going to read a series of statements or questions to you and I would like you to tell me if you <b>agree or disagree</b> with the statement:</p> <p>E. A blood test for malaria is the only way to know if someone really has malaria or not</p> <p>F. A person should still take malaria medicine even if the malaria test result says that the fever is not due to malaria</p> <p>G. Parents can diagnose malaria by a person's symptoms just as well as a blood test for malaria</p>	<p>This is a composite score based on responses. The "correct" response in terms of perceived response efficacy (testing) for each question is listed below:</p> <p>E. Agree</p> <p>F. Disagree</p> <p>G. Disagree</p>
Perceived response-efficacy of malaria treatment	<p>I am going to read a series of statements or questions to you and I would like you to tell me if you <b>agree or disagree</b> with the statement:</p> <p>E. An injection to treat malaria is more effective than the malaria medicine taken by mouth</p> <p>F. The malaria drugs obtained from the health facility are effective in treating malaria</p> <p>G. The malaria medicines that you buy in the market are as good as the ones distributed at the health facility</p>	<p>This is a composite score based on responses. The "correct" response in terms of perceived response efficacy (treatment) for each question is listed below:</p> <p>E. Agree</p> <p>F. Agree</p> <p>G. Disagree</p>
Perceived self-efficacy to seek care and treatment for their child with fever/malaria at a health facility.	<p>I am going to read a series of statements to you and I would like you to tell me if you <b>could or could not</b> do the action described:</p> <p>A. Find the money to take your child to the health facility at the first sign of malaria.</p> <p>B. Get permission from your husband or other family member to take your child to the health facility/health provider when your child has fever.</p>	<p>This is a composite score based on responses. The "correct" response in terms of perceived self-efficacy for each question is listed below:</p> <p>A. Could</p> <p>B. Could</p> <p>C. Could</p> <p>D. Could</p>

	<ul style="list-style-type: none"> <li>C. Take your child to the health facility the same day or next day s/he develops a fever</li> <li>D. Request a blood test at the health facility when you think your child might have malaria</li> <li>E. Make sure your child takes the full dose of medicine that s/he is prescribed for malaria</li> <li>F. Find the money to pay for the medication the health provider recommends to treat malaria</li> </ul>	<ul style="list-style-type: none"> <li>E. Could</li> <li>F. Could</li> </ul>
Descriptive norm that caregivers in community take their children to a health provider promptly	<p>Generally, how many people in your community take their children to a health provider on the same day or day after they develop a fever? Would you say...</p> <ul style="list-style-type: none"> <li>A. All caregivers</li> <li>B. Most caregivers</li> <li>C. Half of the caregivers</li> <li>D. Fewer than half of the caregivers</li> <li>E. Nobody</li> </ul>	A descriptive norm supporting care seeking was concluded if the response was either A, B, or C.
Descriptive norm that children with fever in community are tested for malaria	<p>Generally, how many children in your community (entourage) taken to a health facility with fever get tested for malaria? Would you say...</p> <ul style="list-style-type: none"> <li>A. All children</li> <li>B. Most children</li> <li>C. Half of the children</li> <li>D. Fewer than half of the children</li> <li>E. Nobody</li> </ul>	A descriptive norm supporting testing f children was concluded if the response was either A, B, or C.
Injunctive norm that caregivers in community take their children to a health provider promptly	<p>Generally, among all the people in your community, how many people would call you names if they know that you take your children to a health provider on the same day or day after they develop a fever? Would you say...</p> <ul style="list-style-type: none"> <li>A. All people</li> <li>B. Most people</li> <li>C. Half of the people</li> <li>D. Fewer than half of the people</li> <li>E. Nobody</li> </ul>	An injunctive norm approving of care seeking was concluded if the response was either D or E. All other responses yielded an unsupportive injunctive norm of care seeking.
Decision-making about going to the health facility when their child has a fever	<p>In your household, who usually makes decisions to go to the health facility when your child has malaria? Would you say ...</p> <ul style="list-style-type: none"> <li>A. You</li> <li>B. Your spouse</li> <li>C. You and your spouse</li> <li>D. Your mother</li> <li>E. Your grandmother</li> <li>F. Someone else</li> </ul>	

Decision-making about purchasing medicine when their child has a fever.	<p>In your household, who usually makes decisions to purchase medicine when your child is sick with fever? Would you say ...</p> <ul style="list-style-type: none"> <li>A. You</li> <li>B. Your spouse</li> <li>C. You and your spouse</li> <li>D. Your mother</li> <li>E. Your grandmother</li> <li>F. Someone else</li> </ul>	
Positive perceptions towards health facilities in relation to malaria case management	<p>I am going to read a series of statements or questions to you and I would like you to tell me if you <b>agree or disagree</b> with the statement:</p> <ul style="list-style-type: none"> <li>A. Health facilities always have the medication to treat malaria.</li> <li>B. Health facilities in this community always have the blood test kit to tell if a person has malaria.</li> </ul>	<p>This is a composite score based on responses. The “correct” response in terms of positive perceptions for each question is listed below:</p> <ul style="list-style-type: none"> <li>A. Agree</li> <li>B. Agree</li> </ul>
Positive perceptions towards community-based health workers’ provision of malaria case management	<p>I am going to read a series of statements or questions to you and I would like you to tell me if you <b>agree or disagree</b> with the statement:</p> <ul style="list-style-type: none"> <li>A. Community health workers always have the medication to treat malaria.</li> <li>B. Community health workers in this community always have the blood test kit to tell if a person has malaria.</li> <li>C. Community health workers in this community know how to treat malaria in children.</li> <li>D. Community health workers in your community make parents pay for the medication to treat malaria in children less than five years old.</li> <li>E. Community health workers in your community make parents of children less than five years old pay for the blood test to see if the child has malaria.</li> </ul>	<p>This is a composite score based on responses. The “correct” response in terms of positive perceptions for each question is listed below:</p> <ul style="list-style-type: none"> <li>A. Agree</li> <li>B. Agree</li> <li>C. Agree</li> <li>D. Disagree</li> <li>E. Disagree</li> </ul>
Positive perceptions towards facility-based health workers’ provision of malaria case management	<p>I am going to read a series of statements or questions to you and I would like you to tell me if you <b>agree or disagree</b> with the statement:</p> <ul style="list-style-type: none"> <li>A. Health providers at the health facilities in this community know about how to treat malaria in children.</li> <li>B. Health providers at the health facility in your community make parents pay for the medication to treat malaria in children less than five years old.</li> <li>C. 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.</li> </ul>	<p>This is a composite score based on responses. The “correct” response in terms of positive perceptions for each question is listed below:</p> <ul style="list-style-type: none"> <li>A. Agree</li> <li>B. Disagree</li> <li>C. Disagree</li> </ul>

**Table 3.3.2: Knowledge of malaria care seeking and treatment**

**Table 3.3.2** presents respondent knowledge regarding malaria care-seeking and treatment.

<b>Table 3.3.2 Knowledge of malaria care seeking and treatment, 2021 DRC MBS</b>				
<b>Sociodemographic Characteristic</b>	Knowledge that ACT is an effective treatment for malaria	Knowledge that care should be sought next day or earlier after onset of fever	Knowledge that drawing blood for a malaria test is the best way to know if someone has malaria	Knowledge that a facility is the best place to treat malaria
<b>Sex</b>				
Female	45.40***	84.16**	84.53*	97.81
Male	52.98	87.63	86.88	97.74
<b>Age</b>				
15-24 years	44.37*	79.79***	80.94**	97.73
25-34 years	49.73	87.34	87.05	98.04
35-44 years	49.58	87.12	85.19	97.77
45+ years	50.91	87.95	89.43	98.06
<b>Residence</b>				
Urban	44.52**	85.66	86.36	97.76
Rural	55.38	85.63	84.20	97.82
<b>Zone</b>				
Nord	63.28	88.94	86.25	98.23
Ouest	39.14**	85.86	90.13	97.76
Kasaï	57.60	88.42	86.51	97.93
Grand Est	51.26	80.44*	73.87***	97.32
<b>Level of education</b>				
None	39.98	82.22	73.23***	94.19*
Primary	43.10	84.08	81.70	97.88
Secondary or Higher	51.06**	86.41	87.90	98.12
<b>Wealth quintile</b>				
Lowest	50.22	88.26	81.63	97.06
Second	51.87	83.30	84.77	97.85
Middle	56.59	84.26	84.01	97.96
Fourth	52.29	84.06	84.14	98.22
Highest	41.99*	87.06	88.31	97.67
<b>Total (%)</b>	<b>48.66</b>	<b>85.65</b>	<b>85.54</b>	<b>97.78</b>
<b>Number of Observations</b>	<b>7805</b>	<b>7715</b>	<b>7789</b>	<b>7805</b>
Notes: Significance of difference of means across groups * p < .05; ** p < .01; *** p < .001				

**Table 3.3.3: Attitudes towards malaria care-seeking and treatment**

**Table 3.3.3** presents the distribution of favorable attitudes toward malaria care-seeking and treatment. Attitude favorability is calculated based on a participant's agreement or disagreement to several statements related to care-seeking and treatment.

<b>Table 3.3.3: Attitudes towards malaria care-seeking and treatment, 2021 DRC MBS</b>					
<b>Sociodemographic Characteristics</b>	Have favorable attitudes toward malaria care-seeking and treatment <sup>2</sup>	<b>Percent who agree with each statement</b>			
		The health provider is always the best person to talk to when you think your child may have malaria	One does not need to continue taking all the medicine doses against malaria if they no longer feel sick	if they think his/her child has malaria, a parent should first ask for an injection from the health provider or community health worker	I prefer that my child receive the medicine to treat malaria by injection rather than swallow it
<b>Sex</b>					
Female	67.50	88.81	41.80	46.93**	50.56
Male	67.43	91.63***	43.04	51.34	51.53
<b>Age</b>					
15-24 years	66.26	85.24***	42.39	45.49*	47.75*
25-34 years	67.97	90.31	41.15	49.45	52.94
35-44 years	66.12	92.16	42.46	51.46	54.26
45+ years	70.25	92.18	43.86	47.93	46.94
<b>Zone</b>					
Nord	61.46	92.91	45.81	58.19	69.09***
Ouest	70.72	88.63	37.58***	48.26	47.93
Kasaï	53.95***	92.48	55.19	60.04	56.46
Grand Est	73.98	88.98	41.98	34.53***	37.83
<b>Residence</b>					
Urban	67.46	87.90	41.05	47.85	48.31
Rural	67.49	93.44***	44.41	50.38	55.30*
<b>Level of Education</b>					
None	57.98**	89.06	48.44	50.19	56.28
Primary	68.91	92.18	44.08	51.72	55.57
Secondary or Higher	68.31	89.55	41.07*	47.68	49.00**

<b>Wealth Quintile</b>					
Lowest	67.14	92.48	42.78	50.42	55.80
Second	62.12	92.47	46.85	55.67	60.15
Middle	65.29	92.74	44.37	53.12	57.15
Fourth	68.17	91.12	44.40	48.64	50.07
Highest	69.83	86.79**	38.78*	44.44**	44.51
<b>Total (%)</b>	<b>67.47</b>	<b>90.02</b>	<b>42.33</b>	<b>48.82</b>	<b>50.98</b>
2 Represents composite variable that was created based on scoring responses to each statement in other columns. Notes: Significance of difference of means across groups * p < .05; ** p < .01; *** p < .001					

**Table 3.3.3 (cont): Attitudes towards malaria care-seeking and treatment (continued), 2021 DRC MBS**

Sociodemographic Characteristic	Percent who agree with each statement				
	A person should only take malaria medicine if a health provider says that his/her fever really is caused by malaria	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	When my child has a fever, it is better to start by giving him any malaria medicine I have at home.	It is important to take all the antimalaria pills prescribed to ensure a complete recovery	When my child has a fever, I do not go directly to the health facility, I first go elsewhere to buy him/her medicine
<b>Sex</b>					
Female	79.56	41.81	53.52	85.72	59.86
Male	82.57*	46.63**	51.20	87.86	58.56
<b>Age</b>					
15-24 years	77.97	43.32	49.81	83.32*	53.50**
25-34 years	80.32	43.24	51.49	86.62	60.26
35-44 years	82.85	44.26	54.83	87.47	61.73
45+ years	82.15	44.95	53.92	89.49	61.26
<b>Zone</b>					
Nord	82.00	41.25	60.96	88.61	62.12
Ouest	79.80	43.12	48.43	85.89	59.42
Kasaï	87.34**	59.45***	64.03*	90.36	62.04
Grand Est	78.18	38.42	46.95	84.23	54.74*
<b>Residence</b>					
Urban	79.00	43.62	50.22	84.87	61.52
Rural	83.84*	44.29	56.25	89.51**	57.93
<b>Level of Education</b>					
None	78.95	48.87*	61.76	84.16	69.97
Primary	82.71	42.23	59.36	87.91	61.49
Secondary or Higher	80.60	43.67	49.39***	86.49	57.59**
<b>Wealth Quintile</b>					
Lowest	82.16	42.82	58.54	88.59	59.62
Second	82.32	48.35	60.68	88.83	62.24
Middle	82.83	42.05	56.69	90.24	64.09

Fourth	81.75	42.55	55.60	86.46	63.07
Highest	78.69	44.18	44.74***	83.97	54.28**
<b>Total (%)</b>	<b>80.85</b>	<b>43.88</b>	<b>52.52</b>	<b>86.64</b>	<b>59.30</b>
Notes: Significance of difference of means across groups * p < .05; ** p < .01; *** p < .001					

**Table 3.3.4: Perceived response efficacy of malaria testing and treatment**

<b>Table 3.3.4: Percent of respondents with response-efficacy of malaria testing and treatment, 2021 DRC MBS</b>										
<b>Sociodemographic Characteristic</b>	<b>High perceived response efficacy of malaria testing</b>					<b>High perceived response efficacy of malaria treatment</b>				
	Nord	Ouest	Kasaï	Grand Est	All zones	Nord	Ouest	Kasaï	Grand Est	All zones
<b>Sex</b>										
Female	58.20	63.80	45.98	67.00	61.21	56.94	59.62	45.73	50.26	55.51
Male	59.17	59.53	47.91	71.26	60.34	52.99	60.35	45.65	52.68	55.31
<b>Age</b>										
15-24 years	58.55	66.04	44.24	65.57	61.33	55.53	59.92	43.78	50.81	54.74
25-34 years	56.84	62.48	43.24	69.12	60.45	55.16	60.70	44.92	46.79	54.50
35-44 years	58.61	62.50	51.25	68.07	61.59	53.05	56.97	44.24	53.96	54.12
45 + years	62.08	56.75	49.02	75.30	59.65	59.04	63.18	50.94	56.50	56.70
<b>Residence</b>										
Urban	59.75	58.73	41.70	72.49	59.88	57.53	58.42	47.18	55.45	56.79
Rural	57.71	73.83*	50.58*	64.68	62.39	53.61	65.36	44.63	46.53	53.21
<b>Level of education</b>										
None	47.29	66.50	42.85	47.52	49.90***	58.92	65.93	38.79	39.37	48.42*
Primary	56.00	63.86	49.80	62.79	59.30	57.91	66.68	47.07	45.82	57.01
Secondary or Higher	61.13	61.75	46.30	75.32**	62.67	53.94	58.58	46.76	56.16	56.08
<b>Wealth quintile</b>										
Lowest	54.65	76.11	50.65	69.49	59.79	51.71	71.13	48.65	39.22	52.56
Second	57.86	65.27	45.65	57.79	56.29	56.20	60.78	42.19	44.84	51.58
Middle	62.83	67.00	44.60	63.88	60.46	57.83	70.23	42.35	45.09	54.86
Fourth	58.31	60.86	50.23	66.54	60.65	56.79	61.84	49.42	53.63	57.41
Highest	59.43	60.24	33.33	75.94**	62.88	51.68	56.90	53.02	57.44	56.71
<b>Total (%)</b>	<b>58.60</b>	<b>61.99</b>	<b>46.88***</b>	<b>68.88</b>	<b>60.84</b>	<b>55.32</b>	<b>59.92</b>	<b>45.69**</b>	<b>51.32</b>	<b>55.43</b>
<b>Number of Observations</b>	<b>1865</b>	<b>1569</b>	<b>2929</b>	<b>1442</b>	<b>7805</b>	<b>1865</b>	<b>1569</b>	<b>2929</b>	<b>1442</b>	<b>7805</b>
Notes: Significance of difference of means across groups * p < .05; ** p < .01; *** p < .001 <sup>1</sup> Calculated based on composite scores of several statements.										

**Table 3.3.5: Perceived self-efficacy for malaria testing and treatment**

**Table 3.3.5** presents the distribution of perceived self-efficacy regarding malaria testing. Perceived self-efficacy is calculated based on a participant's agreement or disagreement to several statements related to testing and treatment [\(See Table 3.3.1\)](#).

<b>Table 3.3.5: Percent of respondents with perceived self-efficacy for malaria testing and treatment by zone, 2021 DRC MBS</b>					
<b>Sociodemographic Characteristic</b>	<b>Nord</b>	<b>Ouest</b>	<b>Kasaï</b>	<b>Grand Est</b>	<b>All Zones</b>
<b>Sex</b>					
Female	87.98	96.78	93.39	84.63	92.15
Male	94.22** *	96.74	94.94	93.01***	95.23***
<b>Age</b>					
15-24 years	86.22	95.97	90.27*	80.33**	89.49***
25-34 years	89.65	97.62	95.88	89.13	93.88
35-44 years	95.14	96.82	95.51	92.81	95.55
45 + years	92.27	96.36	94.37	91.36	94.58
<b>Residence</b>					
Urban	89.12	96.81	95.34	87.95	94.04
Rural	91.64	96.59	93.24	88.74	92.54
<b>Level of education</b>					
None	85.75	95.48	91.49	80.25*	86.82***
Primary	86.00	97.03	95.08	89.50	92.47
Secondary or Higher	92.86	96.73	94.56	89.22	94.38
<b>Wealth quintile</b>					
Lowest	86.30	96.96	94.22	87.13	90.76*
Second	88.17	96.82	94.26	84.92	91.20
Middle	95.75	98.46	93.46	88.49	94.24
Fourth	90.63	95.08	93.52	87.21	92.01
Highest	92.57	97.02	98.25*	90.21	95.48
<b>Total (%)</b>	<b>90.54</b>	<b>96.77*</b> *	<b>94.11</b>	<b>88.32</b>	<b>93.47</b>
<b>Number of Observations</b>	<b>1865</b>	<b>1569</b>	<b>2929</b>	<b>1442</b>	<b>7805</b>
Notes: Significance of difference of means across groups * p < .05; ** p < .01; *** p < .001					

**Table 3.3.6: Perceived community norms regarding malaria testing and treatment**

**Table 3.3.6** presents the perceived community norms regarding malaria testing and treatment. Perceived community norms were assessed based on responses to questions asking about the proportion of community members who promptly take their own children to a health provider and/or approve of the respondent taking this action.

<b>Table 3.3.6: Percent of respondents with perceived community norms regarding malaria testing and treatment by zone, 2021 DRC MBS</b>			
<b>Sociodemographic Characteristic</b>	Most people in the community take their children to a health provider on the same day or day after they develop a fever	Most children in the community taken to a health facility with fever get tested for malaria	Most people in the community would not critique respondent for taking their child to a health provider on the same day or day after they develop a fever
<b>Zone</b>			
Nord	73.64	67.16	75.64***
Ouest	60.58	60.50	58.05
Kasaï	61.29	64.32	56.70
Grand Est	44.03***	42.62***	45.79
<b>Sex</b>			
Female	60.65	59.20	58.30
Male	58.50	57.68	59.23
<b>Age</b>			
15-24 years	57.84	56.73	58.08
25-34 years	61.14	60.22	60.68
35-44 years	60.24	58.66	57.33
45 + years	59.12	58.06	58.53
<b>Residence</b>			
Urban	58.05	56.01	54.11
Rural	62.53	62.65	66.11**
<b>Level of education</b>			
None	58.21	56.49	48.96*
Primary	62.75	60.49	67.33
Secondary+	59.24	58.39	57.41
<b>Wealth quintile</b>			
Lowest	60.91	61.63	65.61
Second	64.01	64.46	63.58
Middle	63.20	62.08	62.35
Fourth	62.31	59.50	63.49
Highest	55.18	53.75	51.01**
<b>Total (%)</b>	<b>59.73</b>	<b>58.55</b>	<b>58.70</b>

<b>Number of Observations</b>	<b>7788</b>	<b>7788</b>	<b>7788</b>
Notes: Significance of difference of means across groups * p < .05; ** p < .01; *** p < .001			

**Table 3.3.7a: Perceptions of health facilities regarding malaria care-seeking and treatment**

**Table 3.3.7a** describes respondents' perceptions of health facilities, particularly considering malaria care-seeking and treatment. Favorable perceptions were assessed based on participants' responses to a series of questions (See Table 3.3.1).

<b>Table 3.3.7a: Percent of respondents with favorable perceptions towards health facilities regarding case management, 2021 DRC MBS</b>					
<b>Sociodemographic Characteristic</b>	<b>Nord</b>	<b>Ouest</b>	<b>Kasaï</b>	<b>Grand Est</b>	<b>All Zones</b>
<b>Sex</b>					
Female	73.75	71.33	68.81	67.37	70.70
Male	74.31	72.44	67.92	61.99	69.92
<b>Age</b>					
15-24 years	76.27	75.93	68.80	65.19	72.66
25-34 years	72.66	71.02	65.01	63.96	69.03
35-44 years	77.18	69.09	70.19	64.19	69.62
45 + years	67.19	72.72	70.09	68.30	70.73
<b>Residence</b>					
Urban	71.10	68.80	67.83	64.36	68.23
Rural	76.21	82.64 *	68.80	65.74	73.84
<b>Level of education</b>					
None	65.93	83.01	66.87	63.52	68.39
Primary	75.94	67.82	72.40	69.20	70.89
Secondary+	74.02	72.35	67.67	63.84	70.52
<b>Wealth quintile</b>					
Lowest	72.69	84.06	68.91	65.97	72.69
Second	74.97	80.94	65.59	69.11	72.84
Middle	75.81	86.22	66.48	64.93	74.01
Fourth	73.19	75.65	71.82	63.73	71.72
Highest	71.80	66.67	78.78*	64.51	66.67
<b>Total (%)</b>	<b>73.98</b>	<b>71.80</b>	<b>68.40</b>	<b>65.00</b>	<b>70.37</b>
<b>Number of Observations</b>	<b>1865</b>	<b>1569</b>	<b>2929</b>	<b>1442</b>	<b>7805</b>
Notes: Significance of difference of means across groups * p < .05; ** p < .01; *** p < .001					

**Table 3.3.7b: Perceptions of health workers regarding malaria care-seeking and treatment**

<b>Table 3.3.7b Perceptions towards health workers regarding malaria care-seeking and treatment, 2021 DRC MBS</b>										
<b>Sociodemographic Characteristic</b>	<b>Health Facility Workers</b>					<b>Community Health Workers</b>				
	Nord	Ouest	Kasaï	Grand Est	All Zones	Nord	Ouest	Kasaï	Grand Est	All Zones
<b>Sex</b>										
Female	13.64	20.93	22.42	17.25	18.91	46.81	54.49	47.85	33.28	46.03
Male	15.50	20.09	20.35	14.77	18.16	44.86	53.35	47.62	30.03	47.84
<b>Age</b>										
15-24 years	16.34	20.21	24.87	15.81	18.96	48.98	53.55	46.94	34.08	47.28
25-34 years	14.96	16.94	20.13	19.65	17.54	45.00	52.21	47.32	30.03	45.16
35-44 years	12.22	22.72	20.82	13.08	18.70	45.93	57.10	48.43	29.78	48.53
45 + years	13.54	22.51	20.08	15.37	19.53	42.85	52.32	48.32	35.78	47.46
<b>Residence</b>										
Urban	15.92	19.11	24.71	17.40	18.85	45.52	56.26	54.77*	33.25	50.52
Rural	13.23	25.86	19.13	14.73	18.15	46.38	45.88	42.72	30.23	41.45*
<b>Level of education</b>										
None	12.14	17.15	19.94	15.77	16.17	42.79	62.63	51.78	33.93	45.22
Primary	11.09	24.86	20.03	15.36	18.73	41.75	48.26	40.49**	35.02	42.68
Secondary+	15.87	19.85	22.71	16.88	18.88	48.10	55.24	50.77	30.01	48.67
<b>Wealth quintile</b>										
Lowest	13.00	27.12	18.99	13.32	17.46	31.95*	45.15	38.32*	18.94**	34.31
Second	12.26	17.47	26.75	19.47	18.50	51.07	37.72	51.06	35.40	45.37
Middle	14.47	14.84	22.22	14.89	16.25	52.53	45.02	51.39	34.35	45.90
Fourth	14.46	31.99	15.91*	14.24	22.18	46.70	51.99	49.76	35.10	46.39
Highest	22.56*	17.66	21.71	17.82	17.98	48.22	58.25	54.54	30.34	52.19
<b>Total (%)</b>	<b>14.40</b>	<b>20.57</b>	<b>21.45</b>	<b>16.16</b>	<b>18.58</b>	<b>46.01</b>	<b>54.01</b>	<b>47.74</b>	<b>31.85**</b>	<b>47.06</b>
<b>Number of Observations</b>	<b>1865</b>	<b>1569</b>	<b>2929</b>	<b>1442</b>	<b>7805</b>	<b>1865</b>	<b>1569</b>	<b>2929</b>	<b>1442</b>	<b>7805</b>
Notes: Significance of difference of means across groups * p < .05; ** p < .01; *** p < .001										

**Table 3.3.8a: Decision-making for malaria care and treatment**

**Table 3.3.8a** presents the distribution of decision-making regarding malaria care and treatment. **Table 3.3.8b (next page)** presents decision-making results in each study zone.

<b>Table 3.3.8a: Decision-making for malaria care and treatment, 2021 DRC MBS</b>		
<b>Percent of respondents involved in decision</b>	<b>Decision to go to health facility when child is sick with fever</b>	<b>Decision to purchase medicine when child is sick with fever</b>
<b>Zone</b>		
Nord	62.49	62.92
Ouest	64.92	64.43
Kasai	57.51	58.80
Grand Est	64.59	66.50
<b>Sex</b>		
Female	46.14	44.00
Male	77.89***	88.05***
<b>Age</b>		
15-24 years	47.55***	46.82***
25-34 years	57.84	59.05
35-44 years	69.08	68.59
45 + years	72.01	73.55
<b>Residence</b>		
Urban	64.60	64.80
Rural	61.52	62.36
<b>Level of education</b>		
None	44.81	45.10
Primary	56.05	54.54
Secondary+	66.74***	67.71***
<b>Wealth quintile</b>		
Lowest	59.70	59.06
Second	60.89	62.64
Middle	63.28	63.70
Fourth	62.93	64.09
Highest	65.74	65.72
<b>Total (%)</b>	<b>63.36</b>	<b>63.82</b>
<b>N</b>	<b>5838</b>	<b>5838</b>
Notes: Significance of difference of means across groups * p < .05; ** p < .01; *** p < .001		

**Table 3.3.8b: Decision-making for malaria care and treatment by zone, 2021 DRC MBS**

Percent of respondents involved in decision making regarding malaria care-seeking and treatment	Nord		Ouest		Kasai		Grand Est	
	Decision to go to health facility when child is sick with fever	Decision to purchase medicine when child is sick with fever	Decision to go to health facility when child is sick with fever	Decision to purchase medicine when child is sick with fever	Decision to go to health facility when child is sick with fever	Decision to purchase medicine when child is sick with fever	Decision to go to health facility when child is sick with fever	Decision to purchase medicine when child is sick with fever
<b>Sex</b>								
Female	41.06	38.09	47.89	45.08	38.64	39.65	51.68	49.70
Male	82.06***	85.60***	78.55***	79.91***	72.93***	74.46***	76.15***	81.53***
<b>Age</b>								
15-24 years	47.68***	47.03***	49.82	47.83	42.91	44.29	48.01**	47.20***
25-34 years	58.93	58.96	54.94	56.21	54.05	55.55	64.16	66.10
35-44 years	66.68	68.02	72.66	69.30	58.98	60.46	68.82	72.27
45 + years	75.99	76.66	70.15	72.08	71.06**	71.78**	75.06	76.84
<b>Residence</b>								
Urban	63.99	64.81	66.20	64.72	57.23	59.93	63.93	67.44
Rural	61.39	61.54	60.87	63.51	57.70	58.00	65.34	65.44
<b>Level of education</b>								
None	41.81	40.45	38.33*	35.26*	38.68	40.43	53.44	55.39
Primary	50.20	50.56	58.38	56.22	51.56	51.56	62.55	58.74
Secondary+	68.86***	69.50***	67.06	66.98	62.63**	63.96***	66.39	70.12*
<b>Wealth quintile</b>								
Lowest	59.39	60.79	57.80	55.77	60.37	61.00	61.24	55.61
Second	65.09	65.63	60.20	60.46	55.86	59.52	61.96	64.98

Middle	60.39	60.36	64.66	64.48	55.95	56.33	70.97	72.51
Fourth	63.41	62.50	66.34	68.96	58.14	58.07	59.31	60.32
Highest	66.85	69.12	65.67	64.17	56.44	58.18	66.50	70.88
Total (%)	62.49	62.92	64.92	64.43	57.51	58.80	64.59	66.50
Number of Observations	1330		1087		2299		1122	
Notes: Significance of difference of means across groups * p < .05; ** p < .01; *** p < .001								

**Table 3.3.10: Testing, diagnosis and treatment of children under five years with fever**

**Table 3.3.10** presents the percentage of children under 5 who had confirmed cases of malaria in the 2 weeks preceding the survey. This table also describes the percentage of these children receiving ACT and promptly (same or next day) receiving ACT.

<b>Table 3.3.10: Diagnosis and treatment of children under 5 years with fever, 2021 DRC MBS</b>				
	Percent tested for malaria	Percent with confirmed malaria by test	Percent with confirmed malaria who received ACT	Percent with confirmed malaria who received ACT promptly
<b>Zone</b>				
Nord	68.67	83.23	58.10**	51.43***
Ouest	72.74	93.01	35.00	17.50
Kasaï	71.34	94.51	44.74	29.60
Grand Est	50.45**	77.08	31.58	23.68
<b>Age of child</b>				
0-2 years	67.46	87.36	46.34	35.37*
2-4 years	68.30	90.33	41.57	28.09
4-5 years	67.86	90.26	45.90	31.97
<b>Residence</b>				
Urban	68.87	88.97	42.73	30.40
Rural	67.04	88.66	48.64	35.81
<b>Mother's education</b>				
None	73.95	79.14	29.27**	24.39
Primary	66.65	91.65	43.15	32.19
Secondary+	67.75	88.35	50.00	34.57
<b>Wealth quintile</b>				
Lowest	58.62	90.22	39.24	30.38
Second	67.40	90.13	50.00	36.11
Middle	66.39	84.01	50.00	37.80
Fourth	66.30	92.94	38.46	25.64
Highest	72.59	87.57	48.44	32.81
<b>Total</b>	<b>67.80</b>	<b>88.79</b>	<b>45.07</b>	<b>32.53</b>
<b>Number of Observations</b>	<b>626</b>	<b>433</b>	<b>375</b>	<b>375</b>
Notes: Significance of difference of means across groups * p < .05; ** p < .01; *** p < .001				

### A.3.4 Malaria in Pregnancy

This subsection of the Annex provides all data tables related to media consumption and exposure to malaria messages. The following tables may have been duplicated or referenced in the main body of the report.

**Table 3.4.1: Knowledge of Intermittent Presumptive Treatment in Pregnancy (IPTp)**

**Table 3.4.1** presents the percent of respondents with comprehensive knowledge about ANC/IPTp. Comprehensive knowledge is defined as those who are aware and have specific knowledge of IPTp. Participants reported knowledge related to the appropriate time to first seek pre natal care, the number of recommended check-ups during one pregnancy, and the number of times during pregnancy a woman should receive medicine to keep her from getting malaria.

<b>Table 3.4.1: Comprehensive Knowledge about ANC/IPTp</b>					
Percent of respondents with comprehensive knowledge about ANC/IPTp, by zone and by sociodemographic characteristics					
<b>Sociodemographic characteristics</b>	<b>Nord</b>	<b>Ouest</b>	<b>Kasaï</b>	<b>Grand Est</b>	<b>All Zones</b>
<b>Sex</b>					
Female	17.27	33.17**	23.08	15.09	26.05***
Male	22.00	25.56	20.36	12.99	20.64
<b>Age</b>					
15 – 24 years	16.74**	28.39	14.85***	9.45**	19.70***
25 – 35 years	20.06	30.71	24.81	15.05	24.30
35 – 44 years	25.06	30.44	23.22	14.61	25.39
45 years and older	17.65	29.79	24.02	19.24	25.27
<b>Residence</b>					
Rural	19.04	20.40***	22.76	14.75	19.05***
Urban	21.38	32.59	20.47	13.67	26.01
<b>Level of education</b>					
None	12.43**	22.92	21.04	14.97	17.25**
Primary	17.31	28.36	24.33	18.89	23.05
Secondary or higher	21.90	30.63	21.04	13.04	24.72
<b>Wealth quintile</b>					
Lowest	17.60	26.03	23.77	12.74	20.26
Second	14.85**	15.55***	19.04*	12.31	15.69***
Middle	22.38	18.94	21.24	16.95	19.92
Fourth	21.78	25.26	20.06	16.24	21.71
Highest	28.35	34.75	35.34	12.22	30.00
<b>All Respondents</b>	<b>20.06</b>	<b>29.95</b>	<b>21.81</b>	<b>14.17</b>	<b>23.73</b>
<b>Number of observations</b>	<b>1865</b>	<b>1569</b>	<b>2929</b>	<b>1442</b>	<b>7805</b>
<i>Notes: Significance of difference of means across groups: * <math>p &lt; 0.05</math>; ** <math>p &lt; 0.01</math>; *** <math>p &lt; 0.001</math></i>					

**Table 3.4.2: Attitudes towards IPTp**

**Table 3.4.2** presents the distribution of favorable attitudes toward IPTp. Attitude favorability is calculated based on a participant's agreement or disagreement to several statements related to IPTp. The data is presented according to respondent and household sociodemographic characteristics in each zone.

<b>Table 3.4.2: Attitudes<sup>1</sup> towards IPTp</b>					
Percent of respondents with favorable attitudes towards IPTp by zone and by sociodemographic variables, DRC 2021					
<b>Sociodemographic Characteristics</b>	<b>Nord</b>	<b>Ouest</b>	<b>Kasaï</b>	<b>Grand Est</b>	<b>All Zones</b>
Sex					
Female	66.68	72.17	71.84	51.59	66.84
Male	70.38	68.36	74.86	49.30	65.58
Age					
15 – 24 years	67.37	63.98*	64.09***	45.85**	60.72***
25 – 35 years	67.45	72.67	75.17	49.60	66.73
35 – 44 years	69.10	71.91	75.06	50.50	67.44
45 years and older	69.59	72.23	79.00	60.48	70.77
Residence					
Rural	69.43	75.79	72.63	51.93	67.35
Urban	66.60	69.11	74.12	49.43	65.65
Level of education					
None	63.64	71.68	72.45	59.43	65.57
Primary	66.32	70.17	74.12	49.84	65.84
Secondary or higher	69.23	70.62	72.63	49.64	66.54
Wealth quintile					
Lowest	60.73**	74.86*	69.92*	48.40	64.20*
Second	68.21	78.14	73.64	50.76	68.91
Middle	69.48	78.50	72.61	55.98	69.22
Fourth	72.65	71.93	75.92	50.60	67.11
Highest	71.62	67.90	83.20	48.33	64.44
<b>All Respondents</b>	<b>68.20</b>	<b>70.56</b>	<b>73.25</b>	<b>50.59</b>	<b>66.30</b>
<b>Number of observations</b>	<b>1865</b>	<b>1569</b>	<b>2929</b>	<b>1442</b>	<b>7805</b>
<i>Notes: Significance of difference of means across groups: * <math>p &lt; 0.05</math>; ** <math>p &lt; 0.01</math>; *** <math>p &lt; 0.001</math></i> <sup>1</sup> Derived from five items in the questionnaire: belief about the safety of SP when taken on an empty stomach, belief about starting ANC early, the perceived safety of SP for the woman, perceived safety of SP for the unborn child, and the perceived importance of going for ANC multiple times during pregnancy					

**Table 3.4.3: Perceived severity of malaria in pregnancy**

**Table 3.4.3** describes the percent of respondents who hold perceptions that malaria during pregnancy is severe. Perceived severity is calculated based on the respondents' agreement or disagreement with certain statements. Data are presented by study zone and disaggregated by participant age, sex, and level of education, as well as household residence type and wealth.

<b>Table 3.4.3: Percent of respondents with perceived severity<sup>1</sup> of malaria in pregnancy, 2021 DRC MBS</b>					
<b>Sociodemographic Characteristic</b>	<b>Nord</b>	<b>Ouest</b>	<b>Kasaï</b>	<b>Grand Est</b>	<b>All Zones</b>
<b>Sex</b>					
Female	87.06	84.39	87.15	72.49	82.82
Male	88.57	86.10	89.50	78.09*	85.32*
<b>Age</b>					
15-24 years	81.61**	76.34***	78.91***	62.39**	74.78***
25-34 years	88.79	87.85	89.04	77.01	85.74
35-44 years	91.03	87.67	90.85	81.52	87.38
45+ years	90.66	86.34	94.68	78.95	86.94
<b>Residence</b>					
Urban	84.42	83.15***	87.42	74.02	82.04
Rural	90.19	92.19	88.84	76.03	86.89**
<b>Level of education</b>					
None	88.84	92.79	91.66	64.39	81.19
Primary	87.30	86.66	89.71	79.04	85.82
Secondary/Higher	87.65	84.63	86.41	75.48**	83.58
<b>Wealth quintile</b>					
Lowest	87.02	87.94	89.09	73.64	85.75
Second	86.19	94.59	84.83	73.23	85.52
Middle	88.96	97.59	89.84	73.87	87.76
Fourth	89.06	87.35	88.76	78.12	85.52
Highest	86.12	81.43***	92.11	74.11	80.37
<b>All respondents (%)</b>	<b>87.68</b>	<b>85.11</b>	<b>88.25</b>	<b>74.95***</b>	<b>83.89</b>
<b>Number of Observations</b>	<b>1862</b>	<b>1565</b>	<b>2923</b>	<b>1441</b>	<b>7791</b>
Notes: Significance of difference of means across groups: * p<0.05; ** p<0.01; *** p<0.001					
<sup>1</sup> Assessed through two items: perception that the effects of malaria in pregnancy can be serious for the woman and her unborn child and the belief that pregnant women are more likely to die from malaria than women who are not pregnant.					

**Table 3.4.4: Perceived response efficacy of ANC/IPTp**

**Table 3.4.4** presents the distribution of perceived response-efficacy regarding ANC and IPTp. Perceived response-efficacy is calculated based on a participant's agreement or disagreement to several statements related to ANC and IPTp.

Table 3.4.4: Perceived response efficacy of ANC and IPTp, 2021 DRC MBS		
	Perceived response efficacy of ANC	Perceived response efficacy of IPTp
<b>Zone</b>		
Nord	94.05	91.60*
Ouest	92.41	86.65
Kasaï	91.56	86.21
Grand Est	88.25	81.54
<b>Sex</b>		
Female	90.46	85.75
Male	93.47***	87.46
<b>Age</b>		
15-24 years	85.19***	79.26***
25-34 years	92.08	88.28
35-44 years	94.18	89.37
45+ years	95.59	88.21
<b>Residence</b>		
Urban	90.32	84.27
Rural	94.06*	90.07**
<b>Level of education</b>		
None	89.40	81.14
Primary	94.07	89.59*
Secondary/Higher	91.30	86.06
<b>Wealth quintile</b>		
Lowest	92.78	88.31
Second	93.34	88.77
Middle	94.27	89.35
Fourth	92.25	89.70
Highest	89.63	82.31*
<b>All respondents (%)</b>	<b>91.75</b>	<b>86.48</b>
<b>Number of Observations</b>	<b>7790</b>	<b>7790</b>
Notes: Significance of difference of means across groups: * p<0.05; ** p<0.01; *** p<0.001		

**Table 3.4.5: Perceived self-efficacy for IPTp**

**Table 3.4.5** presents the distribution of perceived self-efficacy to take actions related to ANC and IPTp. Perceived self-efficacy is calculated based on a participant's agreement or disagreement to several statements related to IPTp care seeking and treatment, which were worded differently for men and women.

<b>Table 3.4.5: Percentage reporting perceived self-efficacy for ANC/IPTp, by sex, 2021 DRC MBS</b>		
Men and women who reported perceived self-efficacy <sup>1</sup> take actions/support actions related to ANC and IPTp.		
	<b>Women</b>	<b>Men</b>
<b>Zone</b>		
Nord	88.66***	92.68*
Ouest	90.67	93.17
Kasai	93.10	95.49
Grand Est	77.98	89.00
<b>Age</b>		
15-24 years	83.01**	87.42
25-34 years	91.51	92.18
35-44 years	89.43	92.46
45+ years	91.77	93.86
<b>Residence</b>		
Urban	87.51	91.87
Rural	88.75	93.51
<b>Level of education</b>		
None	85.50	N/A
Primary	88.20	89.71
Secondary/Higher	88.28	93.39
<b>Wealth quintile</b>		
Lowest	88.50	93.85
Second	89.28	91.76
Middle	88.46	94.58
Fourth	86.87	92.84
Highest	87.80	91.28
<b>All respondents (%)</b>	<b>87.97</b>	<b>92.52***</b>
<b>Number of Observations</b>	<b>6027</b>	<b>1778</b>
Notes: Significance of difference of means across groups: * p<0.05; ** p<0.01; *** p<0.001 <sup>1</sup> This construct was measured based on six items that were differently worded for men and women: level of confidence in one's capability to go (or support one's spouse to go) for early ANC, obtain the recommended number of ANC visits, go for ANC with spouse, request (or support spouse to request) SP during ANC visit, and take (or support spouse to take) SP at least three times during pregnancy.		

**Table 3.4.6: Perceived community norms regarding ANC/IPTp**

**Table 3.4.6** presents perceived community norms regarding ANC/IPTp, which were assessed based on participants' responses about the proportion of pregnant women in their community who 1) go to antenatal care at least four times; and 2) take medicine to prevent malaria. Participants also reported whether they believe others in the community approve of women taking these actions.

Table 3.4.6: Percent of respondents with perceived community norms regarding ANC/IPTp, 2021 DRC MBS			
Sociodemographic Characteristic	Believe most women in community go to antenatal care at least four times when they are pregnant (Descriptive Norm)	Believe most women in community take medicine to prevent malaria when they are pregnant (Descriptive Norm)	Believe most people in community approve of pregnant women taking the medicine to prevent malaria (Injunctive Norm)
Zone			
Nord	77.94	67.20	74.96***
Ouest	65.81	63.00	56.78
Kasaï	65.76	57.88	56.44
Grand Est	46.14***	37.38***	43.21
Sex			
Female	66.99***	61.47***	58.05
Male	60.11	52.96	56.53
Age			
15-24 years	60.98	55.11	56.93
25-34 years	64.41	58.35	59.87
35-44 years	66.04	59.53	55.52
45+ years	64.18	57.72	57.09
Residence			
Urban	61.39	55.65	52.05
Rural	68.32*	61.33	66.06***
Level of education			
None	66.05	59.64	51.06
Primary	67.35	58.40	66.72
Secondary/Higher	63.24	57.71	55.57
Wealth quintile			
Lowest	66.37	55.90	65.13
Second	70.67	63.84	64.82
Middle	68.35	62.79	60.05
Fourth	65.37	60.83	62.99
Highest	58.71***	52.78**	48.64***
Total (%)	64.04	57.82	57.40
Number of Observations	7790		
Notes: Significance of difference of means across groups: * p<0.05; ** p<0.01; *** p<0.001			

**Table 3.4.7: Perceptions of health workers regarding ANC/IPTp services**

**Table 3.4.7** summarizes the percept of respondents who hold favorable perceptions of community health workers regarding malaria in pregnancy, based on respondents' agreement with several statements.

<b>Table 3.4.7: Perceptions of health workers regarding IPTp services, 2021 DRC MBS</b>					
<b>Sociodemographic Characteristics</b>	Positive perceptions of health workers with regards to the provision of ANC/IPTp services	Perception that health workers make their clients pay for SP	Perception that prenatal health providers in community generally treat pregnant women with respect	Perception that health facility workers in community always offer medicine to prevent malaria to pregnant women	Perception that if a woman goes to the health facility during the first two months of her pregnancy, the providers will send her away
<b>Zone</b>					
Nord	71.18	30.64	81.21	68.93	19.23
Ouest	74.59	35.84	84.64	79.68	20.91
Kasaï	58.94**	48.99***	79.87	70.51	23.15
Grand Est	70.17	34.33	78.11	66.07	15.15
<b>Sex</b>					
Female	71.28	35.52	82.72	73.77	19.10
Male	70.66	37.14	81.05	73.38	20.43
<b>Age</b>					
15-24 years	66.63*	32.43*	76.33***	66.89***	16.70
25-34 years	73.03	36.45	83.85	76.05	19.46
35-44 years	72.90	37.44	84.59	77.06	20.55
45+ years	70.44	38.66	82.23	72.84	22.31
<b>Residence</b>					
Urban	69.50	39.49**	80.63	73.48	20.57
Rural	73.46	30.93	84.23	73.80	18.22
<b>Level of education</b>					
None	66.52	39.28	82.04	72.67	22.38
Primary	73.12	33.69	83.20	74.08	15.54**
Secondary/Higher	71.01	36.66	81.82	73.66	20.56

<b>Wealth quintile</b>					
Lowest	68.62	33.23	80.86	66.92	18.38
Second	71.57	32.12	82.54	72.81	19.02
Middle	71.91	36.30	85.38	76.52	19.18
Fourth	73.09	32.68	81.64	76.12	18.93
Highest	70.05	40.29*	80.98	73.29	20.86
<b>Total (%)</b>	<b>71.01</b>	<b>36.22</b>	<b>82.01</b>	<b>73.60</b>	<b>19.67</b>
<b>Number of Observations</b>	<b>7807</b>	<b>7790</b>	<b>7790</b>	<b>7790</b>	<b>7790</b>
Notes: Significance of difference of means across groups: * p<0.05; ** p<0.01; *** p<0.001					

**Table 3.4.8: Spousal communication regarding antenatal care**

**Table 3.4.8** describes spousal communication regarding antenatal care. Specifically, this table summarizes the distribution of respondents who reported ever discussing ANC with their spouse/partner, as well as communication among women who had a child in the past 2 years.

<b>Table 3.4.8: Spousal communication regarding antenatal care, 2021 DRC MBS</b>		
	Ever discussed ANC with spouse	Ever discussed ANC with spouse in prior 2 years among women who had a child in last 2 years
<b>Zone</b>		
Nord	58.56	52.54
Ouest	63.03	53.56
Kasaï	51.05	45.23
Grand Est	42.72*	38.72
<b>Sex</b>		
Female	55.22	48.66
Male	57.09	N/A
<b>Age</b>		
15-24 years	51.06	52.83
25-34 years	58.33	49.16
35-44 years	57.69	41.64
45+ years	53.51	51.56
<b>Residence</b>		
Urban	57.98	49.44
Rural	53.23	47.63
<b>Level of education</b>		
None	39.23***	31.96*
Primary	56.70	49.67
Secondary/Higher	57.99	50.96
<b>Wealth quintile</b>		
Lowest	54.16	48.73
Second	49.94	45.40
Middle	55.02	48.38
Fourth	60.19**	45.62
Highest	57.07	51.89
<b>Total (%)</b>	<b>56.07</b>	<b>48.66</b>
<b>Number of Observations</b>	<b>5842</b>	<b>1720</b>
Notes: Significance of difference of means across groups: * p<0.05; ** p<0.01; *** p<0.001		

**Table 3.4.9: Decision-making regarding antenatal care**

**Table 3.4.9** summarizes the distribution of respondents involved in decision-making concerning antenatal care. Results are presented by zone and disaggregated by respondent sex, age, level of education, household residence type, and household wealth quintile.

<b>Table 3.4.9: Percent of respondents who report participation in decision to obtain ANC, 2021 DRC MBS</b>		
Men and women who reported participation in decision to obtain ANC		
	<b>Women</b>	<b>Men</b>
<b>Zone</b>		
Nord	43.32	80.13
Ouest	59.63	74.95
Kasaï	43.15	69.60
Grand Est	59.64	59.18*
<b>Age</b>		
15-24 years	46.76**	59.68
25-34 years	55.01	69.11
35-44 years	57.97	74.88
45+ years	54.95	72.99
<b>Residence</b>		
Urban	60.62***	70.45
Rural	44.86	73.80
<b>Level of education</b>		
None	50.40	N/A
Primary	48.53	72.25
Secondary/Higher	57.73	71.70
<b>Wealth quintile</b>		
Lowest	42.19	69.09
Second	44.24	74.93
Middle	46.74	76.72
Fourth	55.36	71.70
Highest	64.88***	69.37
<b>All respondents (%)</b>	<b>54.16</b>	<b>71.78***</b>
<b>Number of Observations</b>	<b>4070</b>	<b>1772</b>
Notes: Significance of difference of means across groups: * p<0.05; ** p<0.01; *** p<0.001		

**Table 3.4.10: Antenatal care consultation**

**Table 3.4.10** describes ANC care consultation among women. All respondents for this table were women with a live birth in the past two years. Data presented includes the percentage of women who reported attending at least one ANC visit and attending at least four ANC visits.

<b>Table 3.4.10: Percent of respondents who report receipt of ANC consultation, 2021 DRC MBS</b>		
	<b>Received at least one ANC consultation</b>	<b>Received at least four ANC consultations</b>
<b>Zone</b>		
Nord	91.17	65.28
Ouest	97.89**	76.10*
Kasaï	92.29	58.24
Grand Est	93.07	61.35
<b>Age</b>		
15-24 years	94.20	66.24
25-34 years	95.80	71.29
35-49 years	93.19	65.57
<b>Residence</b>		
Urban	96.02*	74.58***
Rural	92.97	60.19
<b>Level of education</b>		
None	87.25*	51.92
Primary	93.30	62.72
Secondary/Higher	96.65	73.95***
<b>Wealth quintile</b>		
Lowest	90.65	57.58
Second	93.55	63.30
Middle	94.67	60.02
Fourth	95.03	63.25
Highest	96.80	82.28***
<b>All respondents (%)</b>	<b>94.71</b>	<b>68.38</b>
<b>Number of Observations</b>	<b>1969</b>	<b>1969</b>
Notes: Significance of difference of means across groups: * p<0.05; ** p<0.01; *** p<0.001		

**Table 3.4.11: Receipt of intermittent preventive treatment (SP) by women during pregnancy**

**Table 3.4.11** summarizes receipt of SP during pregnancy among women who have given birth in the 2 years preceding the survey.

<b>Table 3.4.11 Receipt of SP by women during pregnancy, 2021 DRC MBS</b>		
	<b>Received at least one dose of SP</b>	<b>Received at least 3 doses of SP</b>
<b>Zone</b>		
Nord	78.01	36.59
Ouest	86.72*	49.21*
Kasaï	74.24	37.55
Grand Est	74.31	33.24
<b>Residence</b>		
Urban	81.42	43.84
Rural	79.55	38.59
<b>Received at least 4 ANC</b>		
Yes	83.01**	45.34***
No	75.44	33.44
<b>Received first ANC during first trimester of pregnancy</b>		
Yes	83.90*	49.44***
No	78.72	37.04
<b>Age</b>		
15-24 years	78.89	43.85
25-34 years	81.03	39.73
35-49 years	82.49	41.91
<b>Level of education</b>		
None	72.39*	37.82
Primary	80.05	38.27
Secondary/Higher	82.27	43.86
<b>Wealth quintile</b>		
Lowest	75.09	40.83
Second	78.60	31.75
Middle	77.99	37.24
Fourth	83.78	38.24
Highest	83.09	49.91***
<b>All respondents (%)</b>	<b>80.62</b>	<b>41.58</b>
<b>Number of Observations</b>	<b>1969</b>	<b>1969</b>
Notes: Significance of difference of means across groups: * p<0.05; ** p<0.01; *** p<0.001		

### A.3.5 Insecticide-Treated Net Use

This subsection of the Annex provides all data tables related to ITN use. This includes data related to respondent knowledge of malaria prevention using ITNs; attitudes toward ITNs in general; attitudes toward ITN care and repair; perceived response efficacy and perceived self-efficacy of ITNs; respondents' perceived community norms and gender norms regarding ITNs; household possession, access, and use of ITNs; ITN characteristics; ITN care and repurposing behavior; and sleep patterns, including seasonality of outdoor sleeping. The following tables or and figures may have been duplicated or referenced in the main body of the report.

### Table 3.5.1a: Summary of Ideational Variables Linked with ITN use

**Table 3.5.1a** presents results of the analyses of the ideational variables linked to ITN use. The Table also presents how these variables vary across socio-demographic groups. Seven ideational variables are examined, including knowledge that bed nets help to prevent malaria, attitudes towards bed nets, belief that there are things a person could do to extend the life of one's bed nets, and perceived response-efficacy of bed nets. Other examined variables include perceived self-efficacy to use bed nets consistently, the descriptive norm and injunctive norm of net use.

**Table 3.5.1a: Percent of respondents with specific ideational variable, by respondent sociodemographic characteristics, 2021 DRC MBS**

Characteristic	Knowledge that bed nets help prevent malaria	Favorable attitudes towards bed net use	Believe that there are things one can do to prolong bed net life	Has perceived response-efficacy of ITNs	Reported perceived self-efficacy to consistently use ITNs	Perceived norm that others consistently use bed nets – descriptive norm	Perceived norm that others approve of use of bed nets – injunctive norm
<b>Zone</b>							
Nord	89.63	90.65	42.95	73.95	91.88	74.66	86.52
Ouest	92.41	88.14	51.58	75.45	90.61	67.20	74.78**
Kasai	91.94	82.39	42.66	69.16	93.87	53.29	77.26
Grand Est	87.05	85.28	30.34*	76.73	86.51	51.88	89.19
<b>Sex</b>							
Female	89.88	86.61	46.22	73.84	90.07	63.42	79.67
Male	91.79*	88.18	41.88	75.66	90.87	63.96	81.25
<b>Age</b>							
15-24 years	89.75	85.25	43.46	71.77	87.77	62.93	81.41
25-34 years	91.30	85.65	43.28	74.79	90.24	63.88	80.32
35-44 years	91.71	88.82	45.11	75.96	92.13	63.17	80.51
45+ years	89.41	89.96	45.95	75.84	91.32	64.95	78.84
<b>Residence</b>							
Urban	92.03**	85.97	47.39	74.05	90.02	62.03	76.33
Rural	88.55	89.43	39.45	75.56	91.06	66.28	86.86***
<b>Level of education</b>							
None	85.02	81.62	34.13	68.03*	88.60	59.59	76.80
Primary	86.11	92.59***	41.69	75.84	91.68	65.24	82.54
Secondary/Higher	92.59***	86.41	46.28	74.88	90.37	63.81	80.03
<b>Wealth quintile</b>							
Lowest	83.84	91.02	43.66	73.87	90.59	61.98	87.75
Second	90.00	87.81	41.67	75.00	91.91	65.07	83.54
Middle	89.88	86.55	35.10	73.42	91.22	66.34	81.26
Fourth	92.23	88.98	46.97	75.51	91.27	68.35	81.83
Highest	92.46	85.42	47.82	74.73	89.10	60.08	75.97

<b>Total (%)</b>	<b>90.70</b>	<b>87.29</b>	<b>44.36</b>	<b>74.62</b>	<b>90.42</b>	<b>63.65</b>	<b>80.35</b>
<b>N</b>	<b>7802</b>	<b>7807</b>	<b>7795</b>	<b>7807</b>		<b>7794</b>	<b>7793</b>
Notes: Significance of difference of means across groups: * p<0.05; ** p<0.01; *** p<0.001							

**Table 3.5.1b: Questions Used to Assess Ideational Variables within ITN Module**

**Table 3.5.1b (next page)** lists the survey questions used to assess multiple ideational variables included in Table 3.5.1a. These include knowledge that bed nets help to prevent malaria; attitudes towards bed nets; the perception that there are things a person could do to extend the life of one's bed nets; perceived response efficacy of bed nets; perceived self-efficacy to consistently use bed nets; the descriptive community norm of bed net use; and the injunctive community norm of bed net use.

**Table 3.5.1b** Questions used to assess ideational variables within the ITN module, 2021 DRC MBS

Indicator	Question(s) used to measure indicator	Notes
Knowledge that bed nets help prevent malaria	What are the things that people can do to stop them from getting malaria?	Multiple responses were possible in this question. “Knowledge” was determined if the response indicated sleeping under an ITN.
Favorable attitudes toward bed nets	<p>I am going to read a series of statements or questions to you and I would like you to tell me if you <b>agree or disagree</b> with the statement:</p> <ul style="list-style-type: none"> <li>A. It is easier to get a good night’s sleep when I sleep under a mosquito net.</li> <li>B. It is not easy to sleep under a net because every night you have to unfold it and cover the sleeping space.</li> <li>C. I do not like sleeping under a mosquito net when the weather is too warm.</li> <li>D. Sleeping under a net is an inconvenience for a couple that wants to make children.</li> <li>E. The smell of the insecticide makes it uncomfortable for me to sleep under a mosquito net.</li> <li>F. Mosquito nets are generally easy to use for sleeping.</li> <li>G. Insecticide-treated nets do not pose a risk to one’s health.</li> <li>H. Mosquito nets are very useful.</li> <li>I. More expensive mosquito nets are more effective than cheaper or free mosquito nets.</li> </ul>	<p>This is a composite score based on responses. The “correct” response in terms of positive attitudes for each question is listed below:</p> <ul style="list-style-type: none"> <li>A. Agree</li> <li>B. Disagree</li> <li>C. Disagree</li> <li>D. Disagree</li> <li>E. Disagree</li> <li>F. Agree</li> <li>G. Agree</li> <li>H. Agree</li> <li>I. Disagree</li> <li>J. Agree</li> </ul>
Perception that there are things a person could do to extend the life of a net	<p>Do you agree or disagree with the following statement?</p> <ul style="list-style-type: none"> <li>A. There are actions I can take to help my mosquito net last long</li> </ul>	If response is “agree”, then respondent holds perception.
Perceived response-efficacy of bed nets	<p>I am going to read a series of statements or questions to you and I would like you to tell me if you <b>agree or disagree</b> with the statement:</p> <ul style="list-style-type: none"> <li>A. Mosquito nets prevent mosquito bites only when used on a bed instead of over a mat or the floor.</li> <li>B. The chances of getting malaria are the same whether or not one sleeps under a mosquito net.</li> <li>C. Sleeping under a mosquito net every night is a good way to avoid getting malaria.</li> </ul>	<p>This is a composite score based on responses. The “correct” response in terms of perceived response-efficacy for each question is listed below:</p> <ul style="list-style-type: none"> <li>A. Disagree</li> <li>B. Disagree</li> <li>C. Agree</li> </ul>
Perceived self-efficacy to consistently sleep under bed nets	I am going to ask you about a series of actions you could take and I would like you to tell me if you think you <b>could or could not</b> do each action successfully.	This is a composite score based on responses. The “correct” response in terms of perceived

	<p>A. Sleep under a mosquito net for the entire night when there are lots of mosquitoes.</p> <p>B. Sleep under a mosquito net for the entire night when there are few mosquitoes.</p> <p>C. Sleep under a mosquito net every night of the year.</p> <p>D. Get all of your children to sleep under a mosquito net every night of the year.</p>	<p>self-efficacy for each question is listed below:</p> <p>A. Could</p> <p>B. Could</p> <p>C. Could</p> <p>D. Could</p>
Descriptive community norm of bed net use	<p>Generally, among the people in your community who have nets, how many sleep under them every night? Would you say...</p> <p>F. All people</p> <p>G. Most people</p> <p>H. Half of the people</p> <p>I. Fewer than half of the people</p> <p>J. Nobody</p> <p>K. Don't Know</p>	<p>A descriptive norm supporting net use was concluded if the response was either A, B, or C.</p>
Injunctive community norm of bed net use	<p>Generally, among all the people in your community, how many people criticize you if they know that you sleep under a net every night? Would you say ...</p> <p>A. All people</p> <p>B. Most people</p> <p>C. Half of the people</p> <p>D. Fewer than half of the people</p> <p>E. Nobody</p> <p>F. Don't Know</p>	<p>An injunctive norm approving of net use was concluded if the response was either D or E. All other responses yielded an unsupportive injunctive norm of net use.</p>

**Table 3.5.2: Household Possession of ITNs**

**Table 3.5.2** presents distribution of household possession of ITNs. This includes the proportion of households with at least one ITN as well as households with adequate access to ITNs, which refers to 1 ITN per every 2 household members.

<b>Table 3.5.2 Household possession of ITNs, 2021 DRC MBS</b>		
<b>Characteristic</b>	<b>Household has at least 1 ITN</b>	<b>Household has at least 1 ITN for every person that spent previous night in household</b>
<b>Zone</b>		
Nord	75.18	27.75
Ouest	76.54	45.25
Kasai	42.66***	20.16***
Grand Est	78.48	37.74
<b>Residence</b>		
Urban	74.68	41.35**
Rural	67.71	29.97
<b>Wealth quintile</b>		
Lowest	58.32	20.57
Second	63.96*	27.56
Middle	70.93	31.49
Fourth	76.48	42.89
Highest	77.46	44.85***
<b>Household has 7+ members</b>		
No	71.54	45.00
Yes	72.60	17.31***
<b>Total (%)</b>	<b>71.86</b>	<b>36.75</b>
<b>Number of Observations</b>	<b>4998</b>	<b>4997</b>
Notes: Significance of difference of means across groups: * p<0.05; ** p<0.01; *** p<0.001		

**Table 3.5.3a: Characteristics of bed nets within households**

**Table 3.5.3a** summarizes bed net characteristics, including the proportion of nets that are ITNs, as well as the source, age and color of nets. Results are presented in each study zone.

<b>Table 3.5.3a</b> Characteristics of Household Mosquito Nets, 2021 DRC MBS (n=7089)					
<b>Net Characteristic</b>	<b>Nord</b>	<b>Ouest</b>	<b>Kasai</b>	<b>Grand Est</b>	<b>All Zones</b>
<b>Net is an ITN</b>					
Yes	98.97	92.81	99.45	97.33	96.83
No	1.03	7.29	0.55	2.77	3.17
<b>Source of Net</b>					
Mass distribution	86.88	80.32	77.68	79.85	81.53
ANC visit	4.46	4.34	10.34	7.66	6.28
Immunization visit	0.46	0.76	3.99	0.91	1.30
Shop/store	5.89	9.62	0.86	7.04	6.38
From a friend/family	0.36	2.53	3.21	1.48	1.79
Other	1.95	2.43	3.92	3.06	2.72
<b>Net is 36 months old or older</b>					
Yes	12.25	9.58	24.90	11.01	13.43
No	87.75	90.42	75.10	88.99	86.57
<b>Net Color</b>					
White	89.49	98.90	84.96	97.96	93.57
Blue	2.26	0.95	15.04	1.08	3.88
Other Color	8.25	0.15	0.00	0.96	2.55

**Table 3.5.3b: Net Use Patterns**

**Table 3.5.3b** describes use patterns of available ITNs in households. This includes the proportion of ITNs that were slept under the night preceding the survey, as well as the proportion of available nets that were consistently slept under (i.e., every night in the past week). Results are disaggregated by urbanicity and household wealth quintile in each zone.

<b>Table 3.5.3b Insecticide-Treated Net Use Patterns, 2021 DRC MBS (n=7089)</b>								
<b>Characteristic</b>	Percent of ITNs that were slept under the night before the survey				Percent of ITNs that were slept under every night in the past week			
	Nord	Ouest	Kasai	Grand Est	Nord	Ouest	Kasai	Grand Est
<b>Residence</b>								
Rural	89.92	72.37	88.24	89.58	83.22	69.23	81.18	86.52
Urban	91.35	78.32	90.03	86.12	89.66	71.14	85.48	84.64
<b>Wealth Quintile</b>								
Lowest	91.03	79.59	91.61	87.30	85.60	71.43	82.89	80.16
Second	90.60	70.49	90.04	89.95	83.13	63.94	83.52	87.67
Middle	91.80	76.29	86.15	87.97	86.89	71.13	82.77	87.39
Fourth	88.49	72.76	92.78	89.98	87.36	66.20	84.17	87.90
Highest	91.14	78.51	84.05	84.97	88.61	72.93	84.66	82.56
<b>Total (%)</b>	<b>90.57</b>	<b>76.51</b>	<b>89.19</b>	<b>87.85</b>	<b>86.16</b>	<b>70.56</b>	<b>83.48</b>	<b>85.58</b>
<b>Total – All Zones</b>	<b>85.48</b>				<b>80.91</b>			

**Table 3.5.4: Net Care Practices**

**Table 3.5.4** describes net care practices in the DRC MBS. This includes the percent of used nets that have ever been washed, the product used for washing the net; the location of where the net was dried and where the net was observed during the household observation. Results are presented for each zone.

<b>Table 3.5.4 Net Care Practices, 2021 DRC MBS</b>						
<b>Characteristic</b>	Nord	Ouest	Kasai	Grand Est	All Zones	N
<b>Net has been washed</b>						
Yes	85.24	54.22	76.51	73.61	71.59	7089
No	14.76	44.88	23.49	26.39	28.41	
<b>Product that was used to wash net</b>						
Bar soap	78.95	84.62	93.55	87.20	85.14	5075
Detergent	15.87	12.83	3.89	5.78	10.31	
Bleach	0.24	0.09	1.84	0.23	0.51	
Mixture of products	4.57	1.32	0.20	5.56	3.25	
Nothing (water only)	0.36	1.14	0.51	0.12	0.79	
<b>Location where net was dried</b>						
Outside in the shade	50.63	70.47	72.57	48.27	58.70	5075
Outside in the sun	48.95	28.73	27.23	50.89	40.73	
Other location	0.42	0.79	0.20	0.84	0.57	
<b>Location where net was observed</b>						
Hanging above sleeping area	78.10	71.67	85.69	86.56	79.98	6060
Hanging, folded, and tied	19.86	18.37	12.29	8.59	15.17	
Not hanging but not stored	1.64	7.35	1.67	4.33	3.84	
Stored without packaging	2.83	2.55	0.35	0.45	0.94	
Stored, still in packaging	0.11	0.06	0.00	0.06	0.06	

**Table 3.5.5: Net Use Practices in Households with at least 1 ITN**

**Table 3.5.5** presents data on use of ITNs by household members in each study zone. The table includes the percent of household members that used an ITN when at least one ITN was available in the household, disaggregated by sociodemographic characteristics in each zone.

Table 3.5.5 Percent of household members that slept under a net the previous night, among households with at least one ITN, 2021 DRC MBS				
	Nord	Ouest	Kasai	Grand Est
Age				
0-4 years old	76.86	82.59	64.19	92.09
5-17 years old	72.27	70.30*	40.24	84.72
18+ years old	85.58**	75.42	84.52**	88.40
Sex				
Female	80.86**	79.45*	70.75	88.56
Male	76.50	68.92	71.42	86.66
Residence				
Rural	75.96	79.83	61.98	73.04
Urban	82.38	74.47	73.77*	88.57*
Wealth Quintile				
Lowest	72.93*	75.50	66.13	59.05**
Second	74.64	93.78***	72.35	79.12
Middle	82.03	76.01	61.87	89.75
Fourth	82.49	76.05	76.47	91.03
Highest	83.29	72.20	80.78	87.07
Total (%)	78.85	74.71	71.08	87.63*
Number of Observations	5191	4017	3727	4108
Total (%) All Zones (n=17043)	78.07			
Notes: Significance of difference of means across groups: * p<0.05; ** p<0.01; *** p<0.001				

**Table 3.5.6: Net Use Practices in Households with Adequate Number of Nets**

**Table 3.5.6** summarizes data on use of ITNs by household members in each study zone. The table includes the percent of household members that slept under an ITN the previous when at least one ITN was available in the household per every two members. Data is disaggregated by sociodemographic characteristics in each zone.

Table 3.5.6 Percent of household members that slept under a net the previous night, among households with access to one ITN per 2 household members, 2021 DRC MBS				
	Nord	Ouest	Kasai	Grand Est
Age				
0-4 years old	91.52	84.86	98.15	98.06**
5-17 years old	93.38	89.19	89.89	87.19
18+ years old	90.84	82.99	95.47	90.43
Sex				
Female	93.06	91.74*	96.78	89.75
Male	90.25	75.89	93.86	91.18
Residence				
Rural	92.56	80.49	90.48	89.50
Urban	91.18	84.81	95.79	90.45
Wealth Quintile				
Lowest	90.36	74.19	95.84	86.63
Second	93.04	94.67	96.21	81.45*
Middle	92.00	86.79	95.84	91.41
Fourth	90.99	84.81	94.78	92.03
Highest	93.08	82.90	94.43	90.63
Total (%)	91.80	84.54	95.26**	90.43
Number of Observations	1387	2059	972	1575
Total (%) All Zones (n=5993)	87.43			
Notes: Significance of difference of means across groups: * p<0.05; ** p<0.01; *** p<0.001				

**Table 3.5.7: ITN Use:Access Ratio**

**Table 3.5.7** presents the ITN Use:Access Ratio in each zone, according to household characteristics. The Use:Access Ratio is calculated by dividing the total proportion of household members who slept under an ITN by the percent of household members who had adequate access to nets (1 ITN per 2 sleepers).

Table 3.5.7 ITN Use:Access Ratio, 2021 DRC MBS				
	Nord	Ouest	Kasai	Grand Est
Rate of ITN Use <sup>1</sup>				
Residence				
Rural	55.94	69.61	20.30	60.47
Urban	64.27	55.83	37.04	67.64
Wealth Quintile				
Lowest	51.21	70.43	28.33	47.61
Second	60.98	53.81	27.93	82.89
Middle	73.00	77.97	31.42	90.53
Fourth	71.84	64.99	39.47	87.30
Highest	79.92	57.45	57.76	82.76
Total (%)	59.34	59.67	26.46	63.58
Total - All Zones (%)	63.99			
Rate of ITN Access <sup>2</sup>				
Residence				
Rural	63.74	78.16	26.74	66.93
Urban	71.00	66.74	44.63	75.35
Wealth Quintile				
Lowest	43.57	78.71	26.28	40.63
Second	53.67	54.61	26.10	80.51
Middle	61.90	70.80	31.84	78.99
Fourth	65.00	71.63	36.36	82.63
Highest	75.14	59.35	55.70	82.62
Total (%)	66.70	69.93	33.32	70.59
Total - All Zones (%)	72.65			
ITN Use:Access Ratio <sup>3</sup>				
Residence				
Rural	0.88	0.89	0.76	0.90
Urban	0.91	0.84	0.83	0.90
Wealth Quintile				
Lowest	0.85	1.12	0.93	1.17
Second	0.88	1.01	0.93	1.03
Middle	0.85	0.91	1.01	1.15
Fourth	0.90	1.10	0.92	1.06
Highest	0.94	1.03	0.96	1.00

Total (%)	0.89	0.85	0.79	0.90
Total - All Zones (%)	0.88			
<sup>1</sup> Calculated by assessing whether household members used a net among all households, regardless of net possession.				
<sup>2</sup> Defined as a household having at least one ITN for every two de facto household members.				
<sup>3</sup> Percentage of de facto household population who could sleep under an ITN if each ITN in the household were used by up to two people.				

**Table 3.5.8: Use of mosquito nets by persons in the household**

**Table 3.5.8** describes the percentage of de facto population in each zone who slept under an ITN in the household every night in the past week.

<b>Table 3.5.8 Consistent Use of ITNs among Individuals Interviewed, 2021 DRC MBS</b>		
<b>Characteristic</b>	Percent of study population that reported using a net consistently in households with at least one net	Percent of study population that reported using a net consistently in households with at least one net for every two members
<b>Zone</b>		
Nord	85.95	88.59
Ouest	77.95	80.28*
Kasai	76.12	88.18
Grand Est	90.25	91.88
<b>Age</b>		
15-24 years	76.17*	80.40
25-34 years	85.48	85.34
35-44 years	83.40	86.86
45+ years	82.20	84.14
<b>Sex</b>		
Female	81.61	86.29*
Male	82.76	82.16
<b>Education</b>		
None	84.60	90.36
Primary	81.38	82.21
Secondary/Higher	81.88	84.34
<b>Residence</b>		
Rural	85.38*	87.41
Urban	80.33	83.19
<b>Household has child under five years old</b>		
Yes	83.45	89.49**
No	80.56	81.54
<b>Wealth Quintile</b>		
Lowest	85.23	89.54
Second	82.92	90.78

Middle	84.38	86.73
Fourth	92.77	82.22
Highest	80.06	83.16
<b>Total (%)</b>	<b>82.11</b>	<b>84.43</b>
<b>Number of Observations</b>	<b>5083</b>	<b>2203</b>
Notes: Significance of difference of means across groups: * p<0.05; ** p<0.01; *** p<0.001		

### A.3.6 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. The following tables or and figures may have been duplicated or referenced in the main body of the report.

**Table 3.6.1: Awareness of Indoor Residual Spraying**

**Table 3.6.1** presents the distribution of awareness of IRS programs by study zone. Data is disaggregated by respondent sex, age group, level of education, zone, and household residence type.

<b>Table 3.6.1</b> Percent of respondents with IRS program awareness, 2021 DRC MBS	
<b>Sociodemographic Characteristic</b>	Aware of IRS program in their community
<b>Sex</b>	
Female	8.87
Male	7.56
<b>Age</b>	
15-24 years	6.01
25-34 years	8.48
35-44 years	9.48
45+ years	8.10
<b>Residence</b>	
Urban	3.54
Rural	10.95***
<b>Zone</b>	
Nord	5.06
Ouest	12.96**
Kasaï	2.45
Grand Est	3.50
<b>Level of education</b>	
None	4.10
Primary	3.99
Secondary or Higher	9.77***
<b>Total (%)</b>	<b>8.12</b>
<b>Number of Observations</b>	<b>7791</b>
Notes: Significance of difference of means across groups * p < .05; ** p < .01; *** p < .001	

**Table 3.6.2: Attitudes towards Indoor Residual Spraying**

**Table 3.6.2** presents the distribution of favorable attitudes toward IRS. Attitude favorability is calculated based on a participant's agreement or disagreement to several statements related to IRS. The data is presented according to respondent characteristics in each zone.

<b>Table 3.6.2: Attitudes towards IRS</b>					
Percent of respondents with favorable attitudes towards IRS by zone and by sociodemographic variables, DRC 2021					
<b>Sociodemographic Characteristics</b>	<b>Nord</b>	<b>Ouest</b>	<b>Kasaï</b>	<b>Grand Est</b>	<b>All Zones</b>
Sex					
Female	61.81	42.40	52.52	35.44	44.06
Male	94.36***	89.67***	34.85	88.80***	88.89***
Age					
15 – 24 years	75.43	49.99	10.31*	42.62	50.08*
25 – 35 years	69.32	61.12	58.59	87.19*	63.50
35 – 44 years	81.54	66.68	45.91	67.96	67.77
45 years and older	77.85	78.43	46.19	70.80	76.31
Residence					
Rural	73.88	77.41	52.19	57.35	70.39
Urban	76.44	63.50	36.99	67.74	63.97
Level of education					
None	58.42	80.89	27.88	72.35	69.38
Primary	71.96	61.39	43.26	54.19	61.23
Secondary or higher	94.12**	66.54	76.35	90.67	70.82
<b>All Respondents</b>	<b>75.31</b>	<b>64.76</b>	<b>41.66**</b>	<b>63.80</b>	<b>65.04</b>
<b>Number of observations</b>	<b>72</b>	<b>194</b>	<b>48</b>	<b>44</b>	<b>358</b>
<i>Notes: Significance of difference of means across groups: * <math>p &lt; 0.05</math>; ** <math>p &lt; 0.01</math>; *** <math>p &lt; 0.001</math></i>					

**Table 3.6.3: Perceived response efficacy of Indoor Residual Spraying**

**Table 3.6.3** presents the distribution of perceived response-efficacy of IRS. Perceived response-efficacy is calculated based on a participant's agreement or disagreement to several statements related to IRS. The data is presented according to respondent sociodemographic characteristics in each zone.

<b>Table 3.6.3: Percent of respondents with perceived response efficacy to IRS, 2021 DRC MBS</b>				
<b>Characteristic</b>	Believes that IRS is effective way to prevent malaria	Believes people who lived in sprayed houses are less likely to get malaria	Believes that IRS is an effective way to kill mosquitoes	Has perceived response efficacy
<b>Sex</b>				
Female	83.70	70.18	83.61	84.81
Male	87.86	73.56	N/A	77.47
<b>Age</b>				
15-24 years	81.00	72.54	85.48	83.62
25-34 years	86.81	68.70	84.29	80.60
35-44 years	83.00	71.36	80.98	81.34
45+ years	92.77	76.68	85.41	80.64
<b>Residence</b>				
Urban	85.22	72.49	81.85	81.05
Rural	87.78	68.13	94.53*	83.03
<b>Zone</b>				
Nord	91.34	66.07	98.69	85.00
Ouest	87.66	73.91	83.34	82.58
Kasaï	63.11	52.21	46.05**	58.51
Grand Est	70.95	69.79	82.39	76.38
<b>Level of education</b>				
None	74.20	52.79	81.62	81.62
Primary	89.39	69.48	76.47	90.05
Secondary or Higher	85.58	72.58	84.70	80.28
<b>Total (%)</b>	<b>85.65</b>	<b>71.76</b>	<b>83.61</b>	<b>81.38</b>
<b>Number of Observations</b>	<b>358</b>	<b>358</b>	<b>262</b>	<b>358</b>
Notes: Significance of difference of means across groups * $p < .05$ ; ** $p < .01$ ; *** $p < .001$				

**Table 3.6.4: Perceived self-efficacy regarding Indoor Residual Spraying**

**Table 3.6.4** presents the distribution of perceived self-efficacy regarding IRS. Perceived self-efficacy is calculated based on a participant's report that they could or could not do several actions related to IRS. The data is presented according to respondent sociodemographic characteristics in each zone.

<b>Table 3.6.4: Percent of respondents with perceived self-efficacy: IRS, 2021 DRC MBS</b>			
<b>Characteristic</b>	Self-efficacy to move furniture in preparation for spraying	Self-efficacy to sleep in house the night it is sprayed	Has perceived self-efficacy
<b>Sex</b>			
Female	77.53	78.05	72.09
Male	84.63	90.24**	80.88
<b>Age</b>			
15-24 years	75.48	85.15	78.37
25-34 years	85.72	81.63	78.54
35-44 years	82.26	79.15	73.40
45+ years	75.49	94.11*	75.49
<b>Residence</b>			
Urban	78.65	84.64	75.27
Rural	91.88**	79.28	80.87
<b>Zone</b>			
Nord	94.40**	95.10	94.40*
Ouest	80.78	81.93	74.16
Kasaï	60.34	61.63*	60.34
Grand Est	72.23	93.46	75.93
<b>Level of education</b>			
None	78.05	82.96	78.05
Primary	85.44	83.58	83.09
Secondary or Higher	80.35	83.78	75.23
<b>Total (%)</b>	<b>80.85</b>	<b>83.75</b>	<b>76.20</b>
<b>Number of Observations</b>	<b>358</b>	<b>358</b>	<b>358</b>
Notes: Significance of difference of means across groups * $p < .05$ ; ** $p < .01$ ; *** $p < .001$			

**Table 3.6.6: Indoor Residual Spraying coverage**

**Table 3.6.6** summarizes household IRS coverage in each study zone. Data are disaggregated by household residence type.

<b>Table 3.6.6 IRS Coverage, Acceptance, and Wall Modification, 2021 DRC MBS</b>			
	Household was approached for spraying IRS in the past 12 months	Among those approached, household walls were sprayed in the past 12 months	Since spraying, walls have been repainted, re-plastered, or washed
<b>Residence</b>			
Urban	1.28*	54.65**	25.79
Rural	0.48	15.84	11.70
<b>Zone</b>			
Nord	1.23	12.99	22.56
Ouest	5.46***	61.92	25.46
Kasaï	0.27	41.31	33.64
Grand Est	1.38	31.36	0
<b>Total (%)</b>	<b>0.80</b>	<b>40.60</b>	<b>23.80</b>
<b>Number of Observations</b>	<b>4998</b>	<b>93</b>	<b>42</b>
Notes: Significance of difference of means across groups * p < .05; ** p < .01; *** p < .001			

### A.3.7 Media Consumption and Message Exposure

This subsection of the Annex provides all data tables related to media consumption and exposure to malaria messages. The following tables may have been duplicated or referenced in the main body of the report.

**Table 3.7.1: Radio listenership at least once a week**

**Table 3.7.1** (next page) describes the distribution of radio listenership. It includes data from all respondents as well as respondents in households that own a radio. The data presented in this table is disaggregated by zone.

**Table 3.7.1** Percent of household members that regularly listen to the radio, 2021 DRC MBS

Characteristic	All respondents					Respondents in a household with a radio				
	Nord	Ouest	Kasai	Grand Est	All Zones	Nord	Ouest	Kasai	Grand Est	All Zones
<b>Sex</b>										
Female	37.28	43.10	30.07	27.51	37.20	57.91	58.06	61.56	46.52	55.92
Male	60.60***	70.88***	45.61***	56.15***	62.31***	79.39***	87.78***	83.11***	74.79***	83.27***
<b>Age</b>										
15-24 years	38.39	44.75	32.92	35.38	39.64	57.45*	56.86*	64.57	56.12	57.59
25-34 years	45.13	49.30	36.54	39.15	44.60	68.49	70.24	73.69	59.00	67.43
35-44 years	52.54	55.46	35.45	40.68	49.46	73.87	71.88	67.17	57.35	68.95
45+ years	55.45	70.62***	46.19*	48.75	61.10***	70.74	82.63	82.77*	67.79	78.68***
<b>Residence</b>										
Urban	53.49*	52.73	56.93***	50.83***	52.85***	68.92	67.21	81.06***	62.39	67.49
Rural	41.67	62.21	23.33	27.74	40.06	65.81	86.90***	56.32	53.38	69.79
<b>Level of education</b>										
None	24.57	39.42	15.55	14.13	21.41	36.37**	74.07	42.54	39.61	47.75***
Primary	39.46	47.80	27.24	29.87	38.64	68.31	67.71	61.20	55.88	64.49
Secondary or Higher	52.31**	56.98*	47.46***	48.27***	53.50***	69.25	71.77	77.28**	62.31	69.92
<b>Total (%)</b>	<b>46.81</b>	<b>54.79*</b>	<b>37.34</b>	<b>40.12</b>	<b>47.96</b>	<b>67.42</b>	<b>71.24</b>	<b>71.70</b>	<b>59.32*</b>	<b>68.16</b>
<b>Number of Observations</b>	<b>1861</b>	<b>1563</b>	<b>2923</b>	<b>1443</b>	<b>7790</b>	<b>802</b>	<b>880</b>	<b>901</b>	<b>648</b>	<b>3231</b>

Notes: Significance of difference of means across groups: \* p<0.05; \*\* p<0.01; \*\*\* p<0.001

**Table 3.7.2: Preferred time to listen to radio**

**Table 3.7.2** summarizes respondents' preferred time to listen to the radio. It includes data across all study zones, respondent sex, respondent age, respondent level of education, and household wealth quintile. The data presented in this table is disaggregated by certain times at which one listens to the radio.

Table 3.7.2 Preferred radio listening times, 2021 DRC MBS						
	Early Morning	Late Morning	Afternoon	Early Evening	Late Evening	Night
<b>Zone</b>						
Nord	19.13	9.61	7.67	45.26	14.51	3.82
Ouest	28.58	15.79	10.49	26.65	16.81	1.69
Kasai	33.41	7.97	3.20	22.77	31.05	1.61
Grand Est	47.22	12.43	7.99	21.15	9.97	1.24
<b>Sex</b>						
Female	24.09	14.70	9.51	34.31	15.47	1.93
Male	35.83	12.02	8.18	24.33	17.56	2.07
<b>Age</b>						
15-24 years	22.99	14.39	12.41	32.10	16.38	1.73
25-34 years	31.36	13.46	8.01	27.98	15.48	1.72
35-44 years	30.02	13.67	8.01	28.56	16.51	3.24
45+ years	36.29	11.48	7.68	25.28	18.23	1.02
<b>Residence</b>						
Urban	34.14	14.71	10.63	20.86	17.64	2.03
Rural	23.06	10.17	4.97	45.32	14.51	1.97
<b>Level of education</b>						
None	22.48	9.69	11.84	38.58	14.32	3.09
Primary	22.12	10.40	8.29	35.37	21.98	1.84
Secondary or Higher	32.65	13.97	8.83	27.16	15.43	1.97
<b>Total (%)</b>	<b>30.53</b>	<b>13.23</b>	<b>8.78</b>	<b>28.84</b>	<b>16.61</b>	<b>2.01</b>
<b>Number of Observations</b>	<b>3286</b>					
Notes: Significance of difference of means across groups: * p<0.05; ** p<0.01; *** p<0.001						

**Table 3.7.2A – 3.7.2D: Preferred time to listen to radio in each zone**

**Table 3.7.2A** summarizes respondents' preferred time to listen to the radio in the Nord Zone.

**Table 3.7.2B** summarizes respondents' preferred time to listen to the radio in the Ouest Zone.

**Table 3.7.2C** summarizes respondents' preferred time to listen to the radio in the Kasai Zone.

**Table 3.7.2D** summarizes respondents' preferred time to listen to the radio in the Grand Est Zone.

**Table 3.7.2A Preferred radio listening times in Nord zone, 2021 DRC MBS**

Characteristic	Early Morning	Late Morning	Afternoon	Early Evening	Late Evening	Night
Sex						
Female	12.87	9.15	9.52	52.92	12.74	2.80
Male	25.10	10.06	5.91	37.93	16.20	4.80
Age						
15-24 years	15.59	8.03	12.75	47.52	13.93	2.17
25-34 years	17.09	9.32	5.97	49.46	15.85	2.32
35-44 years	23.06	11.21	4.53	41.33	11.91	7.96
45+ years	20.72	9.61	8.70	41.87	17.39	1.70
Residence						
Urban	21.94	11.04	9.34	37.78	17.73	2.17
Rural	16.45	8.26	6.08	52.35	11.45	5.39
Level of education						
None	13.52	7.32	8.27	43.78	18.43	8.69
Primary	14.58	7.13	8.58	58.20	7.97	3.55
Secondary or Higher	21.05	10.50	7.43	41.25	16.45	3.31
Total (%)	19.13	9.61	7.67	45.26	14.51	3.82
Number of Observations	868					
Notes: Significance of difference of means across groups: * p<0.05; ** p<0.01; *** p<0.001						

**Table 3.7.2B Preferred radio listening times in Ouest zone, 2021 DRC MBS**

Characteristic	Early Morning	Late Morning	Afternoon	Early Evening	Late Evening	Night
Sex						
Female	23.99	17.78	9.89	30.74	15.53	2.07
Male	32.41	14.12	11.00	23.24	17.88	1.36
Age						
15-24 years	20.36	20.98	13.27	27.31	16.40	1.68
25-34 years	29.81	14.93	10.30	26.83	16.64	1.48
35-44 years	26.33	16.41	10.15	27.74	16.61	2.77
45+ years	34.93	12.75	9.40	24.85	17.42	0.65
Residence						
Urban	31.72	16.66	12.76	19.05	17.57	2.23
Rural	18.87	13.08	3.50	50.10	14.46	0.00
Level of education						
None	17.96	17.70	15.77	44.13	4.44	0.00
Primary	18.62	12.63	10.36	28.28	29.10	1.01
Secondary or Higher	30.61	16.33	10.42	26.03	14.77	1.84
Total (%)	28.58	15.79	10.49	26.65	16.81	1.69
Number of Observations	857					
Notes: Significance of difference of means across groups: * p<0.05; ** p<0.01; *** p<0.001						

**Table 3.7.2C Preferred radio listening times in Kasai zone, 2021 DRC MBS**

Characteristic	Early Morning	Late Morning	Afternoon	Early Evening	Late Evening	Night
Sex						
Female	29.66	9.23	4.04	26.61	28.67	1.78
Male	36.44	6.94	2.52	19.66	32.97	1.47
Age						
15-24 years	30.68	7.86	3.63	25.06	30.59	2.19
25-34 years	41.75	8.01	1.60	19.62	27.04	1.98
35-44 years	30.44	6.78	5.54	23.70	33.25	0.29
45+ years	29.86	9.27	2.11	23.17	33.54	2.06
Residence						
Urban	38.10	9.64	2.97	16.90	30.71	1.67
Rural	26.51	5.51	3.54	31.38	31.54	1.53
Level of education						
None	37.22	7.48	7.21	14.77	33.32	0.00
Primary	32.49	8.16	3.04	24.89	29.43	1.99
Secondary or Higher	33.75	8.14	3.06	23.02	30.38	1.66
Total (%)	33.41	7.97	3.20	22.77	31.05	1.61
Number of Observations	1049					
Notes: Significance of difference of means across groups: * p<0.05; ** p<0.01; *** p<0.001						

**Table 3.7.2D Preferred radio listening times in Grand Est zone, 2021 DRC MBS**

Characteristic	Early Morning	Late Morning	Afternoon	Early Evening	Late Evening	Night
Sex						
Female	35.62	14.93	11.67	26.99	10.42	0.38
Male	55.14	10.72	5.48	17.16	9.67	1.83
Age						
15-24 years	33.88	10.64	15.43	28.55	10.49	1.01
25-34 years	44.09	16.76	7.71	23.32	6.57	1.55
35-44 years	49.80	10.93	6.05	19.62	12.50	1.10
45+ years	62.93	9.48	3.31	11.84	11.23	1.20
Residence						
Urban	49.96	13.53	8.26	15.74	11.12	1.39
Rural	41.53	10.15	7.43	32.37	7.59	0.94
Level of education						
None	29.19	4.17	14.55	41.44	8.56	2.10
Primary	36.38	10.68	5.78	28.83	16.86	1.48
Secondary or Higher	50.19	12.92	8.16	18.91	8.64	1.18
Total (%)	47.22	12.43	7.99	21.15	9.97	1.24
Number of Observations	512					
Notes: Significance of difference of means across groups: * p<0.05; ** p<0.01; *** p<0.001						

**Table 3.7.3: Television viewership at least once a week**

**Table 3.7.3** (next page) describes the distribution of television listenership. It includes data from all respondents as well as respondents in households that own a radio. The data presented in this table is disaggregated by zone.

**Table 3.7.3** Percent of respondents who watch TV at least once per week, 2021 DRC MBS

Characteristic	All respondents					Respondents in a household with a television				
	Nord	Ouest	Kasai	Grand Est	All Zones	Nord	Ouest	Kasai	Grand Est	All Zones
<b>Sex</b>										
Female	17.90	67.72	12.19	33.88	44.27	68.46	87.30	68.74	84.68	89.66*
Male	22.39*	66.60	15.20**	37.96	45.18	73.88	93.54***	74.99	85.44	85.60
<b>Age</b>										
15-24 years	21.17	74.66*	15.33	34.46	45.60	69.11	94.45	78.23	86.35	90.28
25-34 years	18.63	67.34	15.70	35.00	43.84	67.94	90.82	70.14	86.59	87.63
35-44 years	21.63	65.69	11.01	38.61	45.76	72.92	91.90	70.36	84.15	88.75
45+ years	16.17	62.21	12.18	33.56	43.07	75.58	86.26	68.33	81.39	84.52
<b>Residence</b>										
Urban	30.93***	79.34***	27.31***	56.93***	62.24***	73.13	91.56	80.53***	87.92**	89.65***
Rural	11.11	23.70	3.79	11.12	13.05	64.54	76.48	27.55	64.53	68.25
<b>Level of education</b>										
None	9.02	29.17	7.88	8.75	12.37	51.12	70.82	13.65	72.89	67.52
Primary	11.60	45.66	7.92	12.39	24.15	62.91	82.98	80.41***	73.52	80.23
Secondary or Higher	24.20***	73.14***	17.64**	48.53***	54.10***	72.93	92.35	73.82	86.58	89.48*
<b>All respondents</b>	<b>19.73</b>	<b>67.25***</b>	<b>13.60</b>	<b>35.68</b>	<b>44.66</b>	<b>70.78</b>	<b>90.96***</b>	<b>71.89</b>	<b>85.01</b>	<b>87.95</b>
<b>Number of Observations</b>	<b>1861</b>	<b>1563</b>	<b>2923</b>	<b>1443</b>	<b>7790</b>	<b>280</b>	<b>933</b>	<b>197</b>	<b>390</b>	<b>1800</b>

Notes: Significance of difference of means across groups: \* p<0.05; \*\* p<0.01; \*\*\* p<0.001

**Table 3.7.4: Preferred time to watch television**

**Table 3.7.4** summarizes respondents' preferred time to watch television. It includes data by study zone, respondent sex, respondent age, respondent level of education, and household wealth quintile. The data presented in this table is disaggregated by certain times at which one can watch television.

Table 3.7.4 Preferred time to watch television, 2021 DRC MBS						
	Early Morning	Late Morning	Afternoon	Early Evening	Late Evening	Night
<b>Zone</b>						
Nord	3.30	1.49	7.13	42.94	43.51	1.64
Ouest	5.78	9.21	11.94	35.69	36.29	1.09
Kasai	28.07	2.84	4.41	17.54	47.04	0.10
Grand Est	11.05	10.18	9.62	34.26	34.11	0.78
<b>Sex</b>						
Female	6.67	10.87	15.63	41.80	24.37	0.67
Male	8.14	5.14	4.74	27.55	52.91	1.52
<b>Age</b>						
15-24 years	7.63	12.09	17.59	43.07	18.73	0.89
25-34 years	6.11	10.19	10.36	35.73	36.85	0.76
35-44 years	8.71	5.25	9.97	31.80	42.96	1.31
45+ years	6.61	5.48	3.91	31.07	51.65	1.28
<b>Residence</b>						
Urban	7.97	9.38	11.51	32.39	37.86	0.90
Rural	3.62	2.11	6.38	52.92	33.02	1.94
<b>Level of education</b>						
None	17.51	6.10	9.19	41.98	24.23	0.99
Primary	6.54	8.23	9.51	34.59	37.22	0.97
Secondary or Higher	6.74	8.48	9.79	35.64	38.35	1.00
<b>Total (%)</b>	<b>7.33</b>	<b>8.30</b>	<b>10.76</b>	<b>35.42</b>	<b>37.14</b>	<b>1.05</b>
<b>Number of Observations</b>	<b>2210</b>					
Notes: Significance of difference of means across groups: * p<0.05; ** p<0.01; *** p<0.001						

**Table 3.7.4A-3.7.4D: Preferred time to watch television in each zone**

**Table 3.7.4A** summarizes respondents' preferred time to watch television in the Nord Zone.

**Table 3.7.4B** summarizes respondents' preferred time to watch television in the Ouest Zone.

**Table 3.7.4C** summarizes respondents' preferred time to watch television in the Kasai Zone.

**Table 3.7.4D** summarizes respondents' preferred time to watch television in the Grand Est Zone.

**Table 3.7.4A Preferred television watching times in Nord zone, 2021 DRC MBS**

Characteristic	Early Morning	Late Morning	Afternoon	Early Evening	Late Evening	Night
Sex						
Female	3.19	2.77	9.81	49.31	34.04	0.88
Male	3.42	0.00	4.00	35.51	54.55	2.52
Age						
15-24 years	1.72	2.73	12.65	57.44	22.99	2.47
25-34 years	3.89	1.29	4.42	45.14	44.28	0.98
35-44 years	3.64	1.07	5.27	31.33	56.50	2.20
45+ years	4.81	0.00	4.74	29.35	61.10	0.00
Residence						
Urban	5.01	1.91	9.21	35.87	46.60	1.40
Rural	0.67	0.84	3.93	53.79	38.76	2.01
Level of education						
None	2.93	0.00	2.10	51.45	43.51	0.00
Primary	4.03	1.15	6.23	43.02	44.74	0.83
Secondary or Higher	3.35	1.51	7.64	42.45	43.15	1.90
Total (%)	3.30	1.49	7.13	42.94	43.51	1.64
Number of Observations	454					
Notes: Significance of difference of means across groups: * p<0.05; ** p<0.01; *** p<0.001						

**Table 3.7.4B Preferred television watching times in Ouest zone, 2021 DRC MBS**

Characteristic	Early Morning	Late Morning	Afternoon	Early Evening	Late Evening	Night
Sex						
Female	5.26	11.92	17.30	41.78	23.02	0.72
Male	6.47	5.62	4.82	27.61	53.91	1.57
Age						
15-24 years	5.66	13.28	21.17	43.23	16.04	0.62
25-34 years	3.23	11.59	11.76	35.36	37.08	0.98
35-44 years	8.29	5.67	11.05	34.65	38.76	1.57
45+ years	5.68	6.65	3.15	29.26	54.22	1.04
Residence						
Urban	6.39	9.97	12.55	32.89	37.14	1.06
Rural	0.54	2.71	6.67	59.77	28.99	1.32
Level of education						
None	19.69	8.70	19.40	42.82	9.38	0.00
Primary	7.19	9.23	21.26	31.63	28.73	1.96
Secondary or Higher	5.40	9.23	10.55	36.05	37.78	0.98
Total (%)	5.78	9.21	11.94	35.69	36.29	1.09
Number of Observations	1053					
Notes: Significance of difference of means across groups: * p<0.05; ** p<0.01; *** p<0.001						

**Table 3.7.4C Preferred television watching times in Kasai zone, 2021 DRC MBS**

Characteristic	Early Morning	Late Morning	Afternoon	Early Evening	Late Evening	Night
Sex						
Female	33.02	6.01	5.26	17.81	37.66	0.24
Male	24.22	0.37	3.74	17.33	54.33	0.00
Age						
15-24 years	34.70	8.52	3.40	12.90	40.07	0.42
25-34 years	43.61	2.33	5.64	11.76	36.65	0.00
35-44 years	18.20	0.00	3.19	17.28	61.33	0.00
45+ years	8.56	0.00	5.33	32.51	53.60	0.00
Residence						
Urban	28.53	3.16	2.60	17.35	48.36	0.00
Rural	26.14	1.48	12.06	18.35	41.43	0.55
Level of education						
None	49.74	0.00	2.92	10.00	37.34	0.00
Primary	50.40	3.98	2.23	12.25	31.14	0.00
Secondary or Higher	21.50	2.95	5.22	19.72	50.48	0.14
Total (%)	28.07	2.84	4.41	17.54	47.04	0.10
Number of Observations	330					
Notes: Significance of difference of means across groups: * p<0.05; ** p<0.01; *** p<0.001						

**Table 3.7.4D Preferred television watching times in Grand Est zone, 2021 DRC MBS**

Characteristic	Early Morning	Late Morning	Afternoon	Early Evening	Late Evening	Night
Sex						
Female	9.73	12.32	13.81	42.37	21.36	0.40
Male	12.45	7.93	5.18	25.67	47.60	1.18
Age						
15-24 years	12.78	15.73	10.78	39.48	20.33	0.89
25-34 years	8.88	12.24	9.82	37.62	31.44	0.00
35-44 years	11.32	7.04	9.54	23.09	49.00	0.00
45+ years	12.40	3.53	7.49	42.30	30.33	3.94
Residence						
Urban	11.35	11.71	10.03	32.39	34.38	0.14
Rural	9.55	2.58	7.58	43.58	32.74	3.98
Level of education						
None	13.04	7.34	0.00	48.15	27.21	4.27
Primary	8.66	8.03	21.14	37.01	37.01	25.16
Secondary or Higher	10.99	10.50	8.85	33.65	35.26	0.75
Total (%)	11.05	10.18	9.62	34.26	34.11	0.78
Number of Observations	373					
Notes: Significance of difference of means across groups: * p<0.05; ** p<0.01; *** p<0.001						

**Table 3.7.5: Telephone or Tablet Ownership**

**Table 3.7.5** summarizes the percent of respondents who own a telephone or tablet. Data is presented in each zone by respondent sociodemographic characteristics.

Table 3.7.5 Percent of respondents who report owning a personal telephone or tablet, 2021 DRC MBS				
Characteristic	Nord	Ouest	Kasai	Grand Est
Sex				
Female	24.39	49.50	18.43	38.56
Male	52.50***	69.00***	37.30***	60.23***
Age				
15-24 years	23.09***	48.79*	18.80	35.41**
25-34 years	40.55	60.51	27.15	51.83
35-44 years	39.54	57.93	26.41	53.19
45+ years	43.31	62.35	38.52**	51.70
Residence				
Urban	46.90***	64.48***	40.00***	62.35***
Rural	27.40	33.29	18.15	31.65
Level of education				
None	11.90	27.40	8.20	14.87
Primary	18.02	31.68	19.84	28.56
Secondary or Higher	45.96***	64.12***	35.40***	59.41***
Total	35.88	57.70*	27.25	48.10
Number of Observations	1861	1563	2923	1443
Total - All Zones (n=7790)	47.61			
Notes: Significance of difference of means across groups: * p<0.05; ** p<0.01; *** p<0.001				

**Table 3.7.5B: Telephone Capabilities**

**Table 3.7.5B** summarizes the percent of telephones owned by respondents that are capable of receiving content via various media, including SMS texts, photos, videos, audios, a link to the internet, email, and other types of media. Data is presented for each study zone.

<b>Table 3.7.5B Percent of owned phones capable of receiving media, by media type, 2021 DRC MBS</b>					
<b>Characteristic</b>	<b>Nord</b>	<b>Ouest</b>	<b>Kasai</b>	<b>Grand Est</b>	<b>All Zones</b>
<b>Phone is capable to receive</b>					
SMS	85.38	95.13	87.50	87.10	91.47
Photos	63.01	74.38	63.83	53.17	67.49
Videos	60.95	70.51	59.99	51.28	64.30
Audio files	58.29	70.46	65.61	51.18	64.28
A link to a website	25.41	49.22	26.13	43.18	42.81
Email	15.92	42.93	18.34	38.42	36.27
Other media	3.64	4.83	1.64	22.42	8.13
<b>Number of Observations</b>	<b>526</b>	<b>802</b>	<b>664</b>	<b>553</b>	<b>2545</b>

**Table 3.7.6: Exposure to Malaria Messages**

**Table 3.7.6** presents the percent of respondents who were exposed to a malaria message in the 12 months preceding the survey. Data is presented for each zone by respondent sociodemographic characteristics.

Table 3.7.6 Percent of respondents exposed to malaria messages in past 12 months, 2021 DRC MBS				
Characteristic	Nord	Ouest	Kasai	Grand Est
Sex				
Female	23.83	40.87	25.01	21.59
Male	25.82	48.98*	31.58**	21.49
Age				
15-24 years	23.68	32.23***	28.49	19.66
25-34 years	24.77	45.97	29.16	21.28
35-44 years	24.38	46.46	24.14	23.86
45+ years	26.53	50.61	31.45	20.83
Residence				
Urban	25.71	49.10***	43.40***	27.36*
Rural	23.82	26.94	17.13	14.83
Level of education				
None	22.76	18.10	10.95	13.68*
Primary	20.64	34.96	20.32	22.36
Secondary or Higher	26.71*	47.24**	35.97***	22.57
Total	24.64	44.28***	28.08	21.54
Number of Observations	1861	1563	2923	1443
Total – All Zones (n=7790)	33.69			
Notes: Significance of difference of means across groups: * p<0.05; ** p<0.01; *** p<0.001				