

SUNMAP 2 LONGITUDINAL STUDY QUARTERLY REPORT ON MALARIA SERVICE PROVISION

Kano (October – December 2020)



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Cover Image: Distribution of insecticide treated mosquito nets to pregnant women through the UK Foreign, Commonwealth, and Development Office's Support to the National Malaria Programme in Nigeria. Copyright: Malaria Consortium.

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CONTENTS

1. INTRODUCTION	1
2. METHODOLOGY.....	2
3. LGA CONTEXTUAL OVERVIEW	3
4. HOUSEHOLD SURVEY COVERAGE.....	4
5. DEMAND.....	5
5.1. MALARIA KNOWLEDGE	5
5.2. MALARIA BURDEN.....	5
5.3. CARE SEEKING BEHAVIOUR	6
5.4. COVERAGE OF KEY ANTIMALARIAL INTERVENTIONS.....	8
A. TREATMENT	8
B. PREVENTION.....	10
5.5. EQUITY.....	11
6. SURVEY COVERAGE OF HEALTH SERVICES	12
7. SURVEY COVERAGE OF HEALTH SERVICES	13
7.1. SERVICE AVAILABILITY	13
7.2. STOCK-OUTS	15
7.3. HEALTH WORKER KNOWLEDGE	17
7.4. HEALTH SYSTEM SUPPORT	19
8. SUMMARY	22
A. DEMAND.....	22
B. SUPPLY.....	24
9. REFERENCES	25

1. INTRODUCTION

Support to the National Malaria Programme phase II (SuNMaP 2) is a six-year programme (2018-2024) funded by the UK Foreign, Commonwealth, and Development Office (FCDO) and implemented in six states - Jigawa, Kaduna, Kano, Katsina, and Yobe in Northern Nigeria and Lagos. The programme is led by Malaria Consortium in partnership with the National and State Malaria Elimination Programmes, Abt Britain, Federation of Muslim Women's Association in Nigeria, the Health Policy Research Group of the University of Nigeria, Innovision, Mannion Daniels West Africa, Nigeria Interfaith Action Association, and Springfield Centre.

SuNMaP2 aims to sustainably address current programmatic and technical gaps in Nigeria's malaria control programme to facilitate the UK FCDO's eventual and responsible exit from bilateral malaria support in Nigeria. It is anticipated that SuNMaP 2 activities build on the successes of phase I (2008-2016) and lead to sustainable gains, including lives saved beyond the programme timeline. This will be facilitated by gradually phasing out support over the course of the programme - from capacity building in the initial years of the programme to mentoring in the final years of SuNMaP 2.

London School of Hygiene & Tropical Medicine (LSHTM) is leading a four-year longitudinal study of SuNMaP2 in two of the six SuNMaP 2 states, Kaduna and Kano. The primary objective of the longitudinal study is to assess SuNMaP 2's theory of change to inform the effectiveness of the UK FCDO's exit strategy from bilateral malaria funding in Nigeria. As part of the longitudinal study LSHTM is conducting ongoing quarterly assessments of malaria service provision. These quarterly assessments are intended to provide information to the State Malaria Elimination Programmes (SMEPs) in Kaduna and Kano, and SuNMaP 2 partners, on the degree to which the quality and coverage of malaria control interventions are being implemented; and whether coverage is sustained as partner support to the government is reduced. The results will be regularly shared in reports such as these with the SMEPs in Kaduna and Kano on a quarterly basis, and to the National Malaria Elimination Programme (NMEP) on an annual basis.

For further information about the SuNMaP 2 longitudinal study visit:

<https://www.lshtm.ac.uk/research/centres-projects-groups/sunmap2-longitudinal-study>

2. METHODOLOGY

The quarterly assessments of malaria service provision are undertaken using continuous survey methodology. The continuous survey consists of quarterly cross-sectional surveys of households and the health services catering to those households, including both primary and secondary care, as well as community-based care such as community health workers (CHWs), retail pharmacies and patent and proprietary medicine vendors (PPMVs). Sampling for the household survey is conducted through a two-stage process. Random cluster sampling is conducted using a primary sampling frame of census area units from the National Population Commission of Nigeria, stratified by local government area (LGA) and 30 census area units are independently selected for a different LGA in each state every quarter, starting October 2020 and ending March 2024.

Within each selected census area unit, a complete household listing of residences is conducted using census area mapping of households from the National Population Commission of Nigeria as a guide. This household listing for the census area is the second sampling frame, from which a random sample of 55 households are selected in the field.

During the continuous survey, quantitative data is collected on demand and supply side indicators of malaria service provision. Continuous survey data was exported from the electronic data collection forms and analysed using STATA 16 (StataCorp, Texas, USA). For this quarterly report small-area indicator estimates were calculated at LGA level from household and service delivery site data. Household data is presented by age, gender, and socio-economic group. Service delivery site data is presented by service delivery type. These LGA indicator estimates are based on data from a small sample of 30 clusters, therefore the quarterly estimates are for programme management purposes only.

Ethics approval for this study has been received from Kaduna State Health Research Ethics Committee; Kano State Health Research Ethics Committee; National Health Research Ethics Committee of Nigeria (Reference: NHREC/01/01/2007-02/10/2020); and LSHTM ethics (Reference: 18052).

Further information on the methods can be found in the study protocol available at: www.lshtm.ac.uk/research/centres-projects-groups/sunmap2-longitudinal-study#other-materials

3. LGA CONTEXTUAL OVERVIEW

During October to December 2020 data was collected from Kano Municipal LGA in Kano state. A brief summary of contextual information for Kano Municipal LGA is summarised in figure 3.1, the information for which was obtained from district officials.

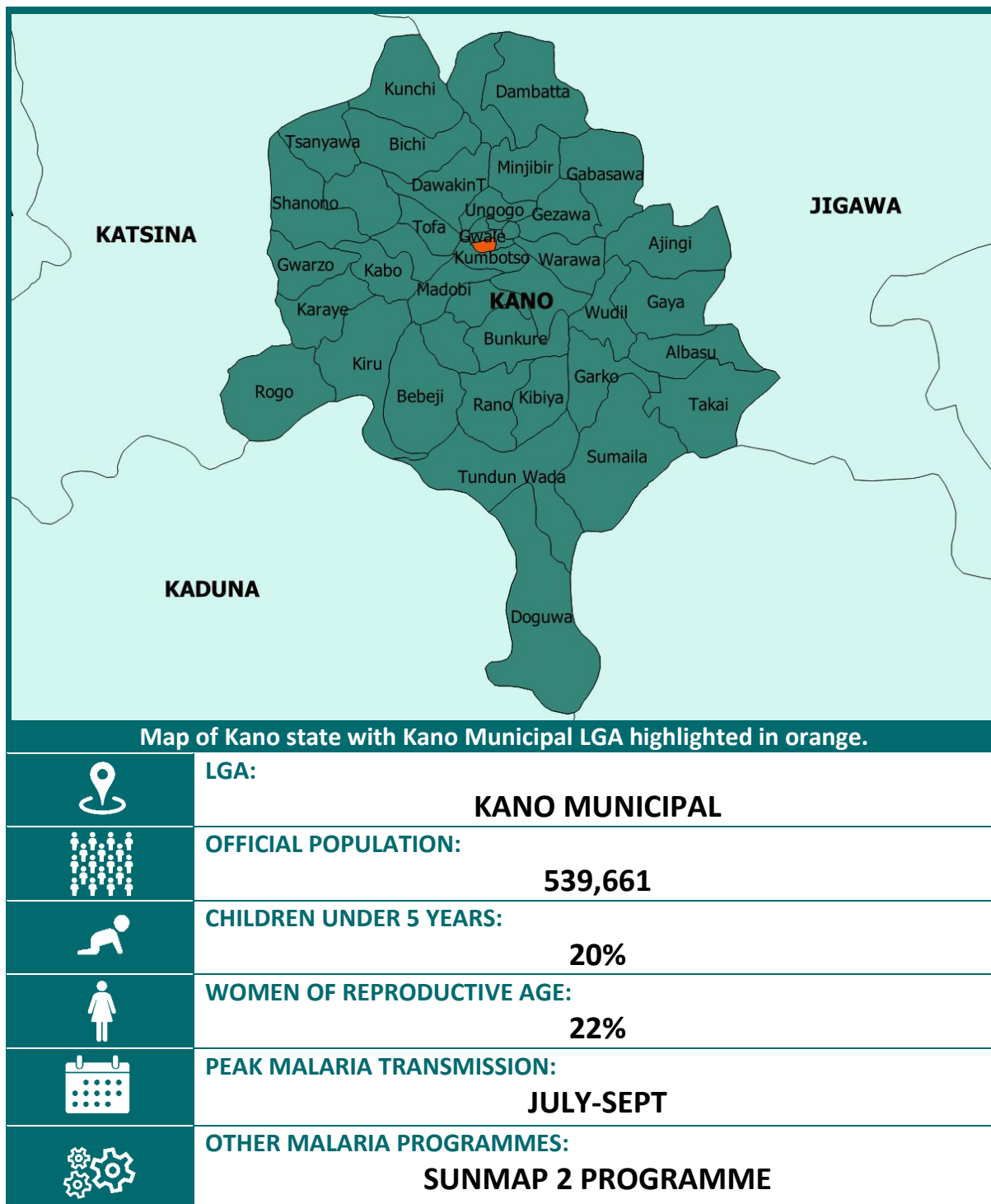


Figure 3.1. Infographic summarising contextual information for Kano Municipal LGA

Source: District Officials, SuNMaP 2 Longitudinal Study

4. HOUSEHOLD SURVEY COVERAGE

An overview of the households surveyed this quarter are summarised in tables 4.1 – 4.2.

Table 4.1. Overview of the household and individuals surveyed

Result	Eligible	Total Interviewed	
		#	%
Households	1650	1620	98.2%
Women aged 15-49 years	2463	1947	79.0%
Children <5 years	877	828	94.4%

Table 4.2. Household composition of those interviewed

Characteristic	Total
Mean size of households (N=1,620, SD= 3.4)	6.7
Household headship	
Male	71%
Female	29%
Households with pregnant women	2%
Households with children <5 years	26%

5. DEMAND



5.1. MALARIA KNOWLEDGE

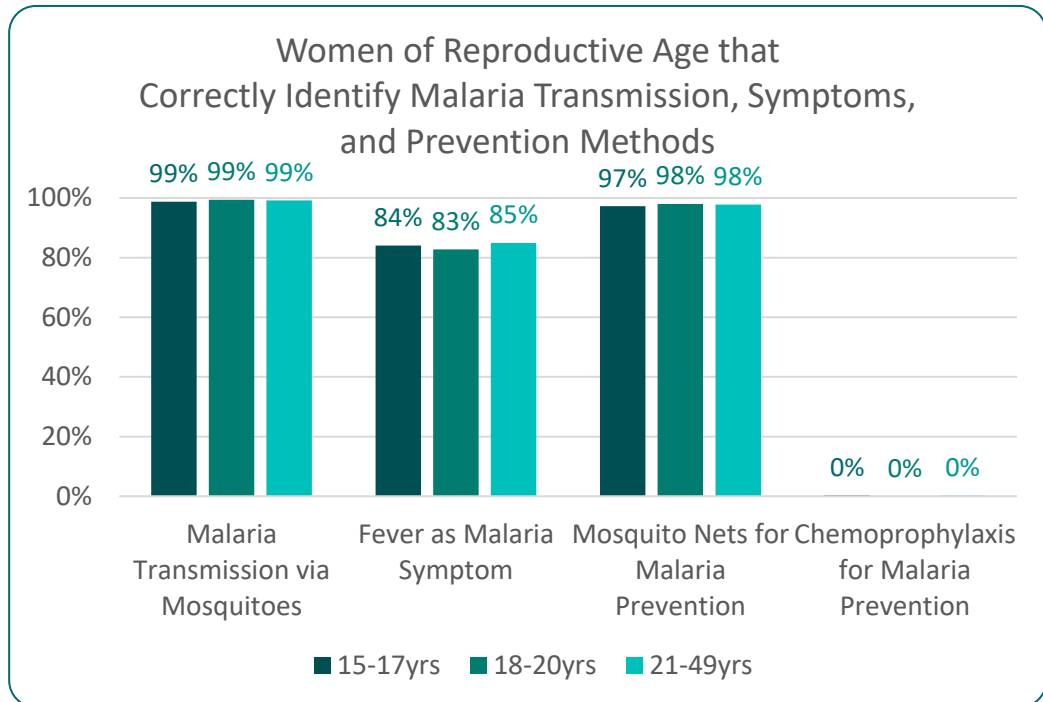


Figure 5.1.1

Women 15-17yrs (N=332); Women 18-20yrs (N=360); Women 21-49yrs (N=1255)

Source: Household Survey, SuNMaP 2 Longitudinal Study



5.2. MALARIA BURDEN

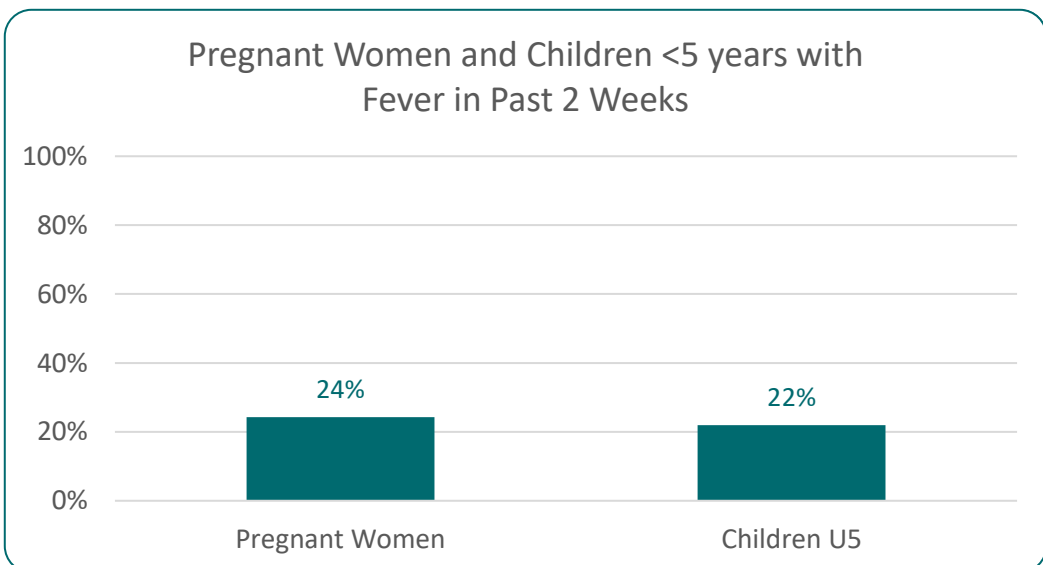


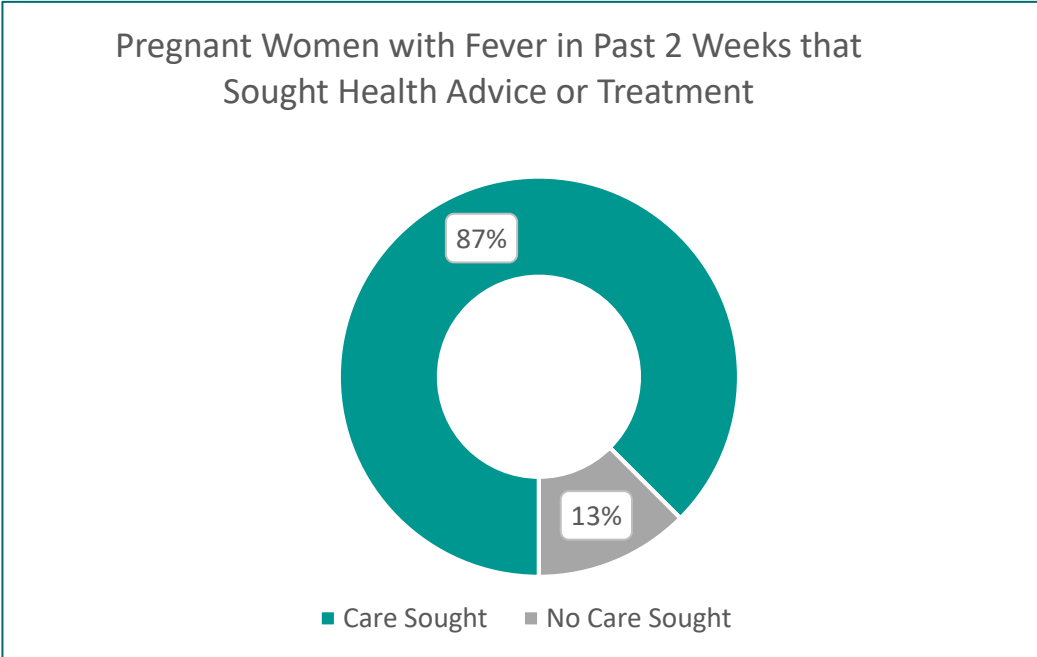
Figure 5.2.1

Pregnant women (N=33); Children <5 years (N=828)

Source: Household Survey, SuNMaP 2 Longitudinal Study

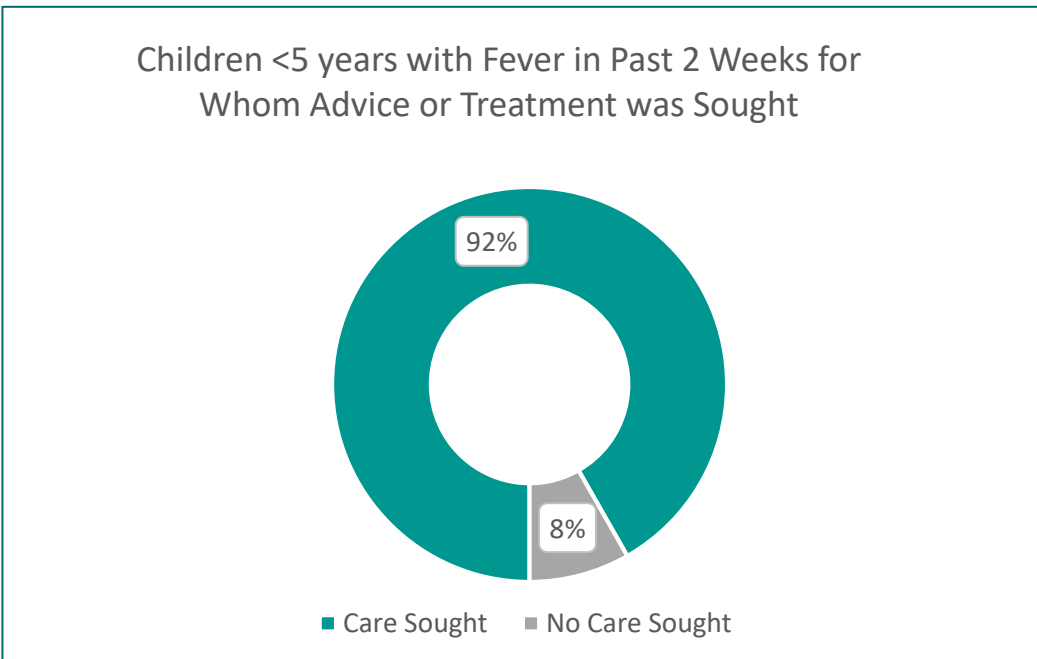


5.3. CARE SEEKING BEHAVIOUR



AVERAGE LENGTH OF TIME BETWEEN FEVER ONSET AND CARE-SEEKING FOR PREGNANT WOMEN: 1.9 Days

Figure 5.3.1
Pregnant women with fever (N=8); Mean (N=7, SD=0.9 days)
Source: Household Survey, SuNMaP 2 Longitudinal Study



AVERAGE LENGTH OF TIME BETWEEN FEVER ONSET AND CARE-SEEKING FOR CHILDREN <5 YEARS: 1.8 Days

Figure 5.3.2
Children <5 years with fever (N=182); Mean (N=167, SD= 1.4 days)
Source: Household Survey, SuNMaP 2 Longitudinal Study

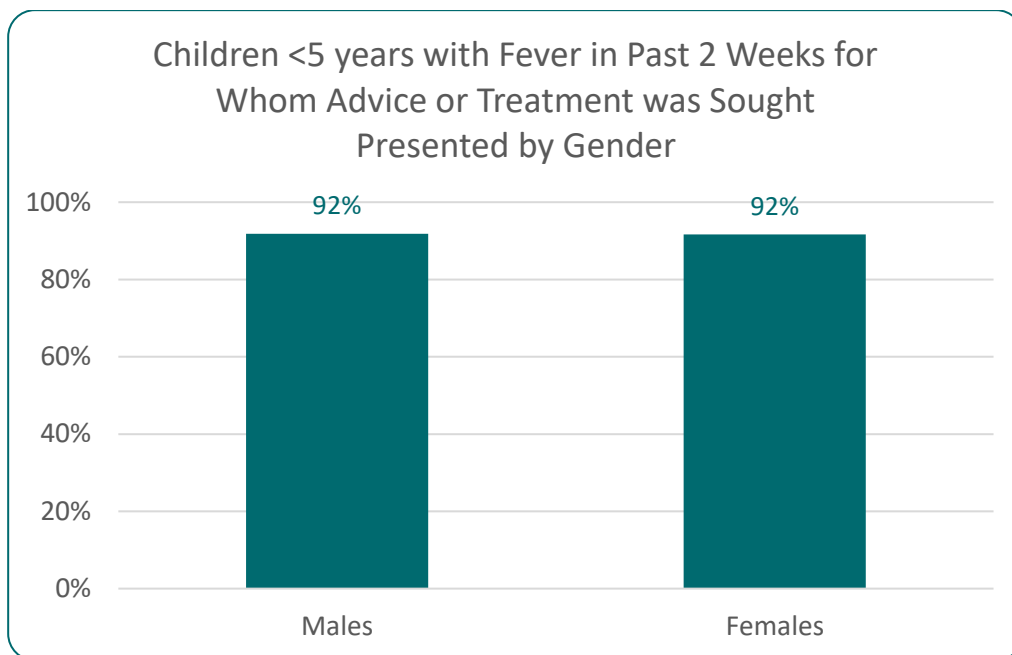


Figure 5.3.3

Male children <5 years with fever (N=98); Female children <5 years with fever (N=84)

Source: Household Survey, SuNMaP 2 Longitudinal Study

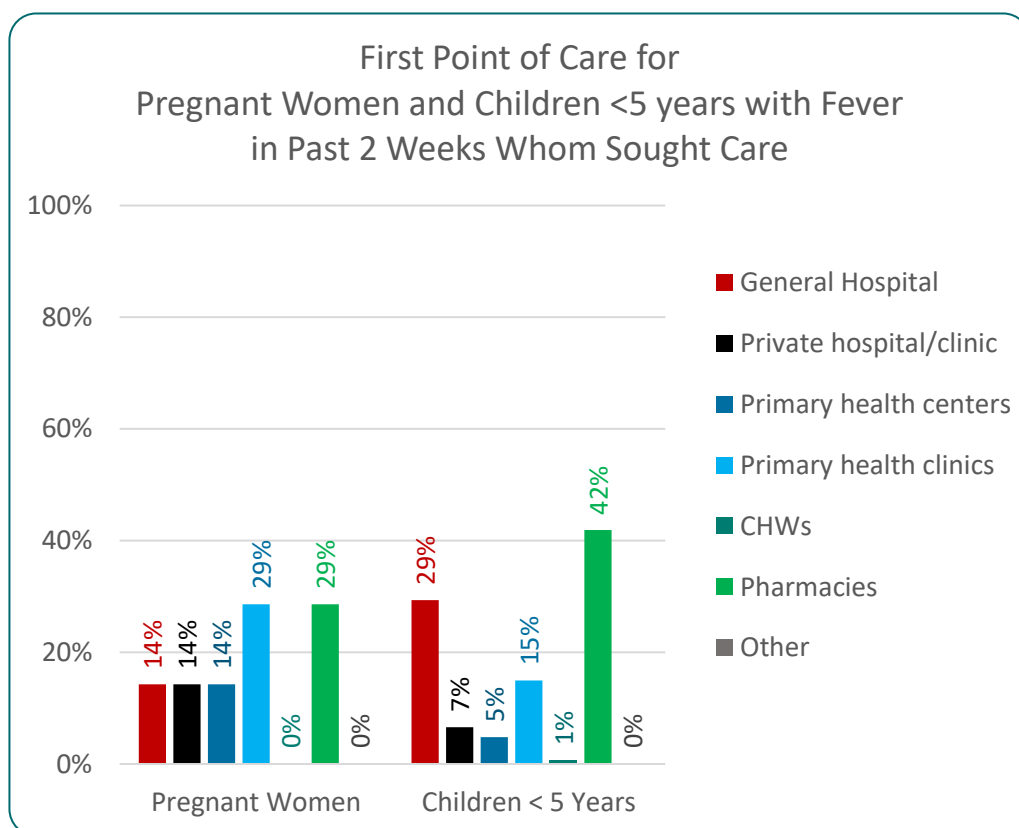


Figure 5.3.4

Pregnant women with fever that sought care (N= 7);

Children <5 years with fever that sought care (N= 167)

Source: Household Survey, SuNMaP 2 Longitudinal Study



5.4. COVERAGE OF KEY ANTIMALARIAL INTERVENTIONS

A. TREATMENT

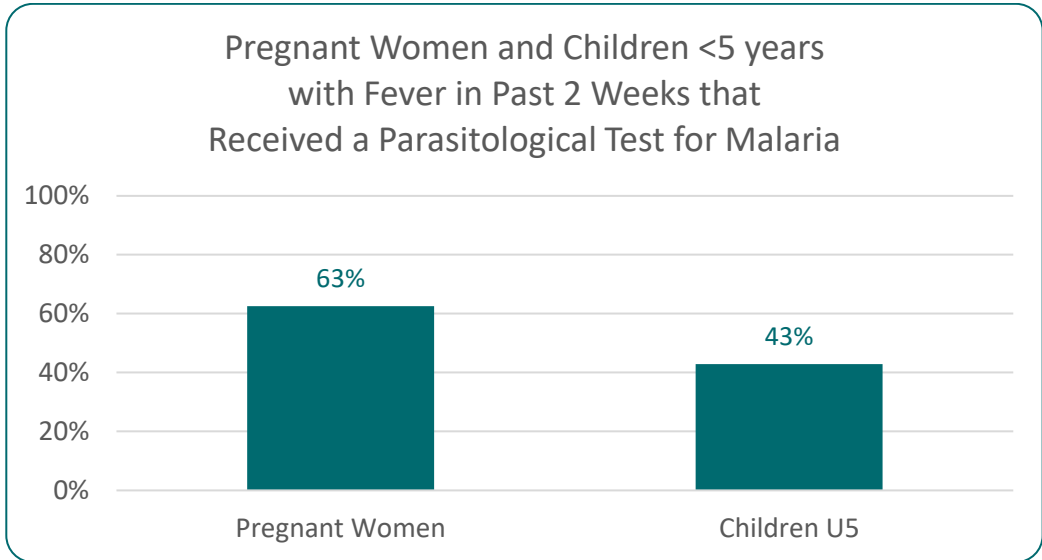


Figure 5.4.1

Pregnant women with fever (N=8); Children <5 years with fever (N=182)
Source: Household Survey, SuNMaP 2 Longitudinal Study

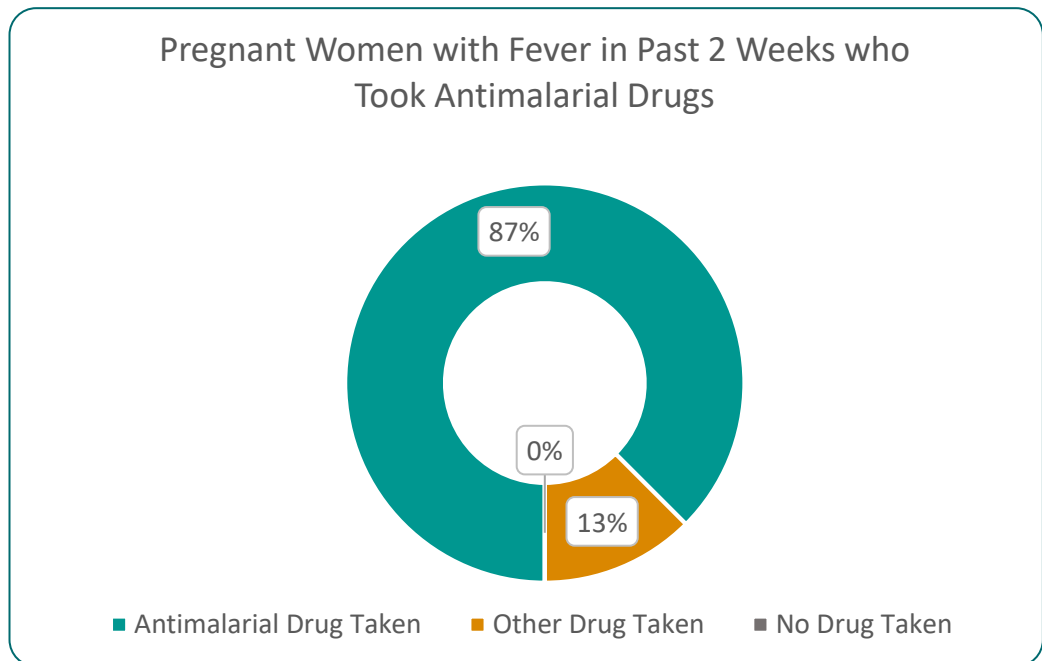


Figure 5.4.2

Pregnant women with fever (N=8)
Source: Household Survey, SuNMaP 2 Longitudinal Study

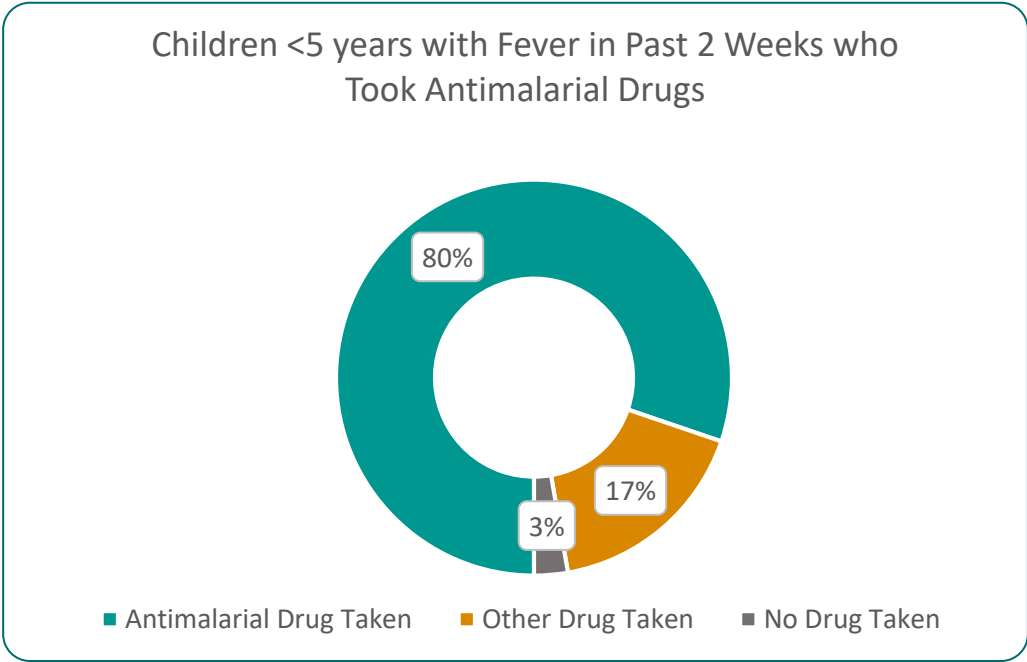


Figure 5.4.3
 Children <5 years with fever (N=182)
 Source: Household Survey, SuNMaP 2 Longitudinal Study

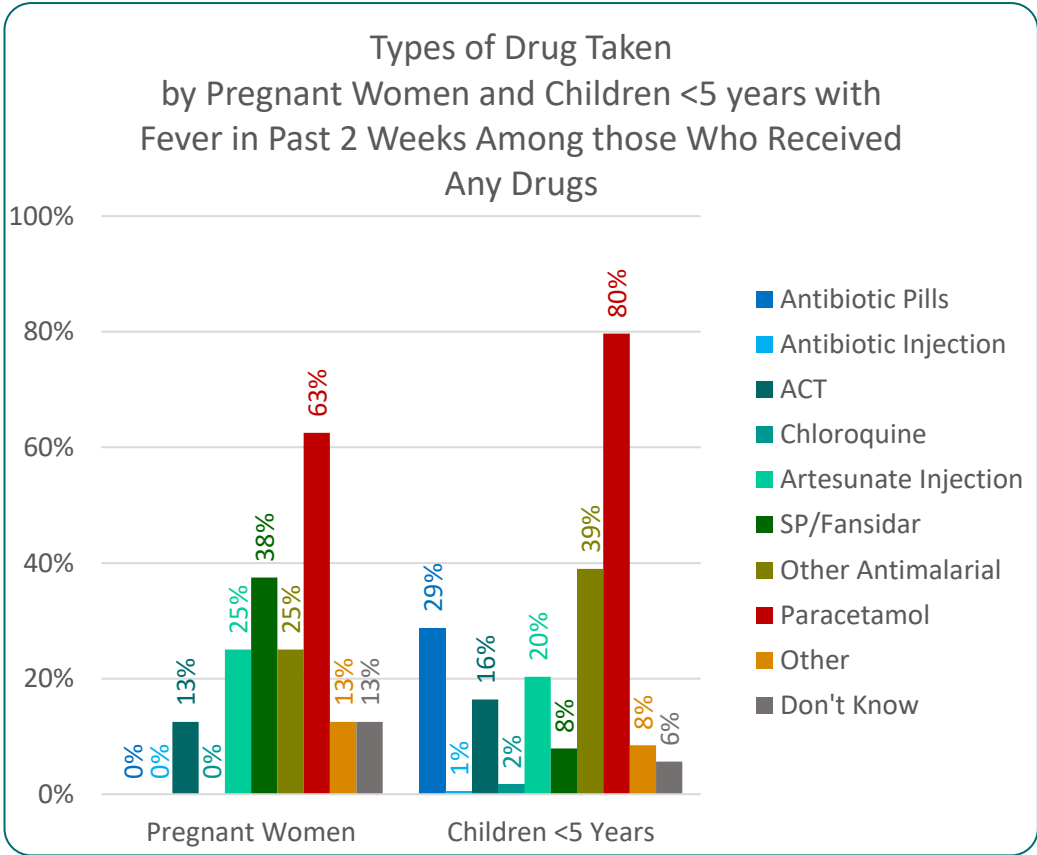


Figure 5.4.4
 Pregnant women with fever that received drugs (N=8); Children <5 years with fever that received drugs (N=177). Source: Household Survey, SuNMaP 2 Longitudinal Study

B. PREVENTION




	HOUSEHOLDS WITH AT LEAST ONE ITN:	83%
	PREGNANT WOMEN THAT SLEPT UNDER AN ITN:	85%
	CHILDREN <5 YEARS THAT SLEPT UNDER AN ITN:	86%

Figure 5.4.5
 Households (N=1620); Pregnant Women (N=33); Children <5 years (N=828)
 Source: Household Survey, SuNMaP 2 Longitudinal Study

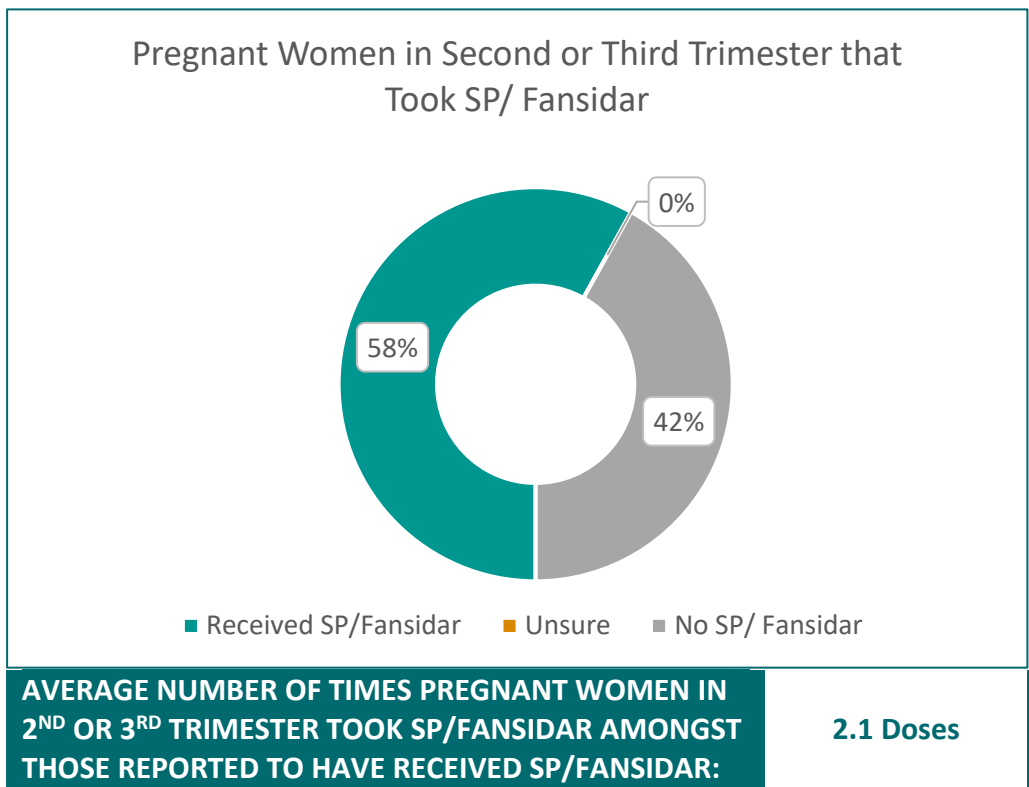


Figure 5.4.6
 Pregnant women in second or third trimester (N=31); Mean (N=18, SD=2.9 doses)
 Source: Household Survey, SuNMaP 2 Longitudinal Study



5.5. EQUITY

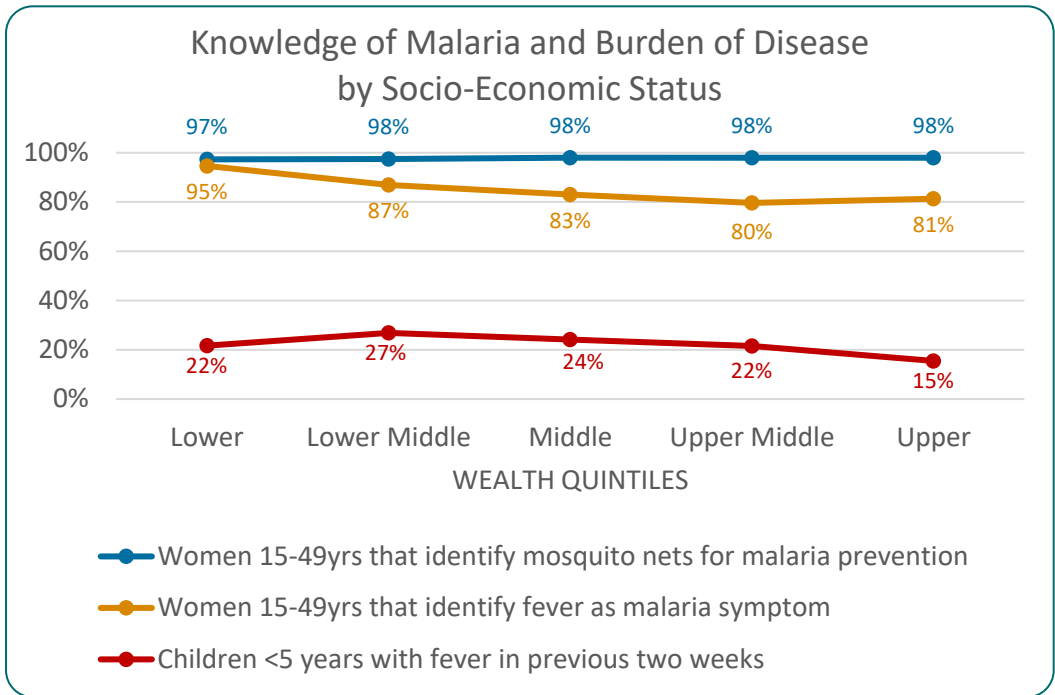


Figure 5.5.1

Women 15-49yrs (N=1,947); Children <5 years (N=828)

N.B. Pregnant women with fever not shown as sample too small for equity analysis.

Source: Household Survey, SuNMaP 2 Longitudinal Study

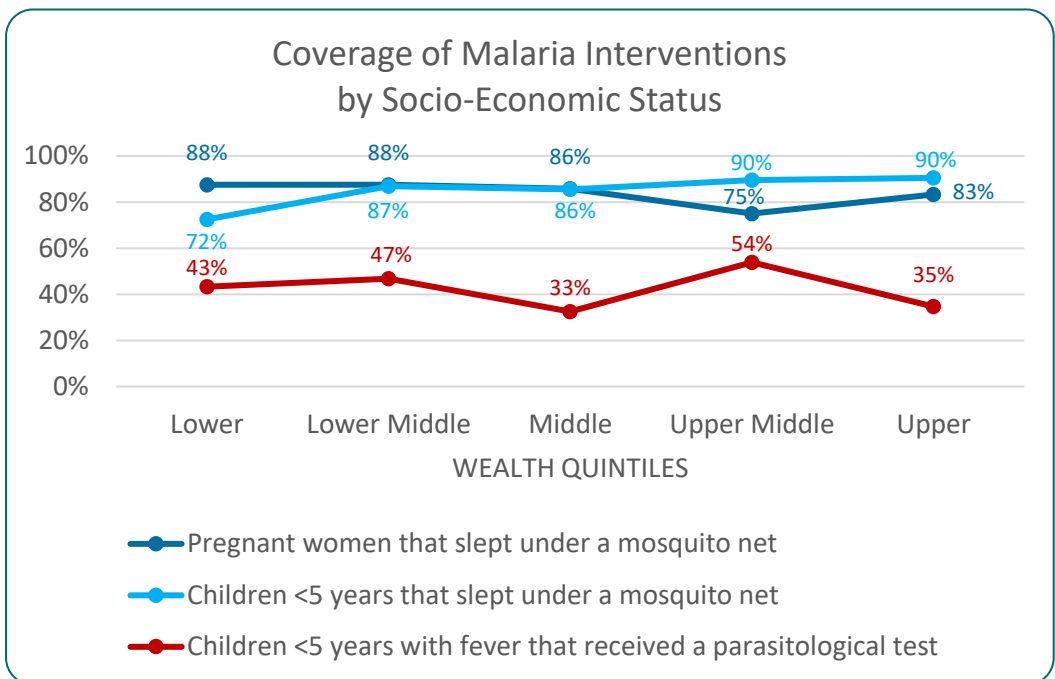


Figure 5.5.2

Pregnant Women (N=33); Children <5 years (N=828); Children <5 years with fever (N=182)

N.B. Pregnant women with fever that received parasitological test not shown as sample too small for equity analysis.

Source: Household Survey, SuNMaP 2 Longitudinal Study

6. SURVEY COVERAGE OF HEALTH SERVICES

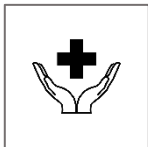
The number of service delivery sites in Kano Municipal LGA reported operational by district officials during the time of survey and the number of these sites that were surveyed are summarised in table 6.1. The service delivery sites surveyed were the main Level II, Level I, and community health worker and pharmacy sites identified by the households in the survey areas for malaria services.

Table 6.1. Overview of the number of operational primary, secondary, and community-based care sites in Kano Municipal Local Government Area and the number of sites surveyed

Health Service Delivery Types	Total Operational [^]	No. Surveyed (%)
Level II	5	1 (20%)
General Hospitals	5	1 (20%)
Cottage Hospitals	0	0 (0%)
Level I	22	15 (68%)
Primary Health Centres	14	7 (50%)
Primary Health Clinics	8 ^{^^}	8 (100%)
Community-based Care	395	52 (13%)
Community Health Workers (CHWs)*	75	23 (31%)
Pharmacies**	320	29 (9%)

Note: *Community health workers includes community-oriented resource persons (CORPs), community health influencers, promoters, and service (CHIPs) agents, community health extension workers (CHEWs) and junior community health extension workers (JCHEWs). CHEWs and JCHEWs are associated with Level I health facilities but conduct 60% and 80% of their work respectively in the community. Consequently, they have been listed under community-based care in the table as they were surveyed based on their identification as the main community health worker by the households in the areas surveyed. **Pharmacies includes PPMVs and retail pharmacies. [^] Total number operational as reported by the district officials during the time of survey. ^{^^} Three primary health clinics were reported by district officials but 8 were identified during the survey. There are however 8 clinics listed on the Nigeria Health Facility Registry (<https://hfr.health.gov.ng/facilities>).

7. SURVEY COVERAGE OF HEALTH SERVICES



7.1. SERVICE AVAILABILITY

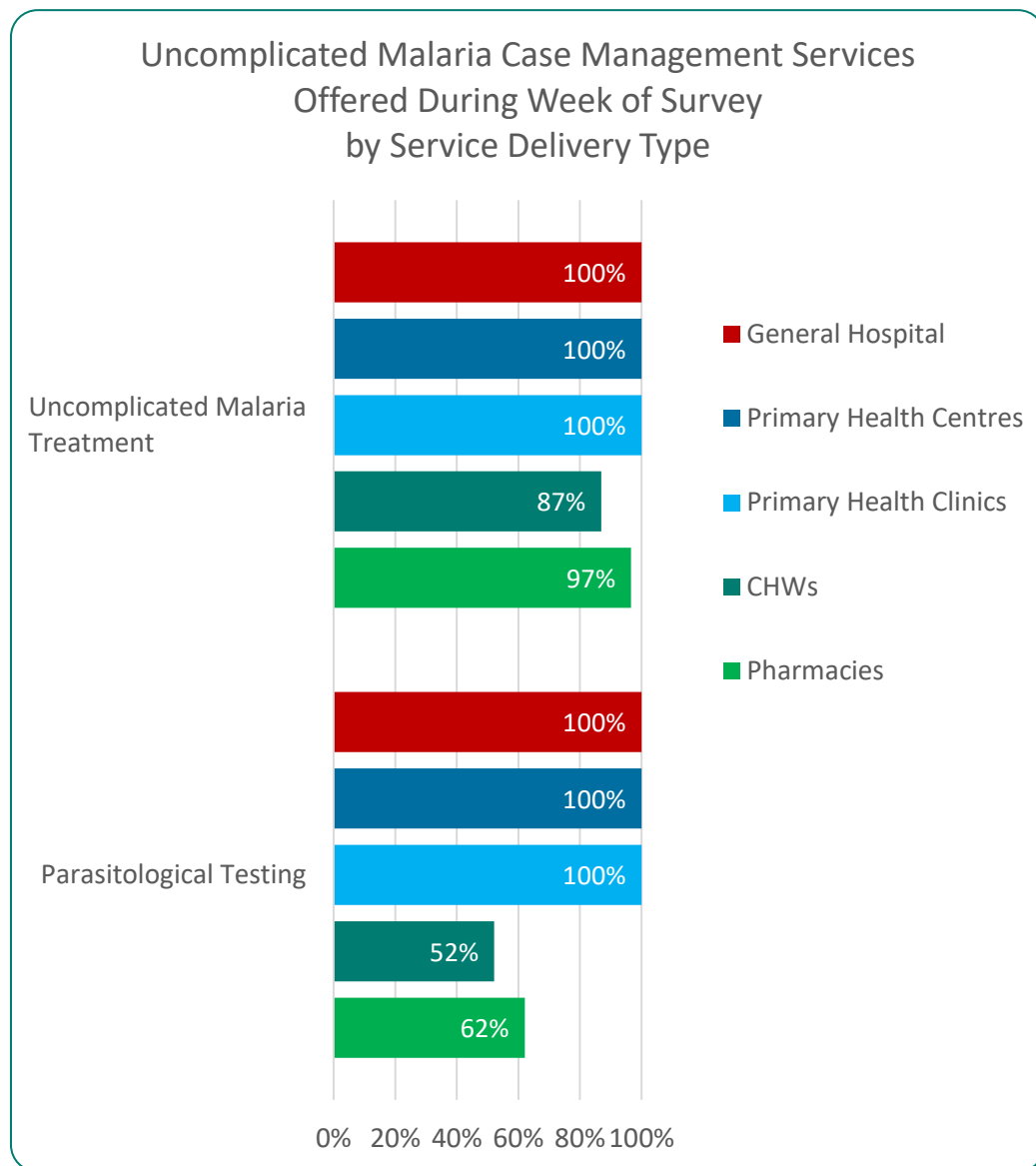


Figure 7.1.1

General Hospital (N=1); Primary Health Centres (N=7); Primary Health Clinics (N=8); CHWs (N=23); Pharmacies (N=29).

Source: Health Service Delivery Site Survey, SuNMaP 2 Longitudinal Study

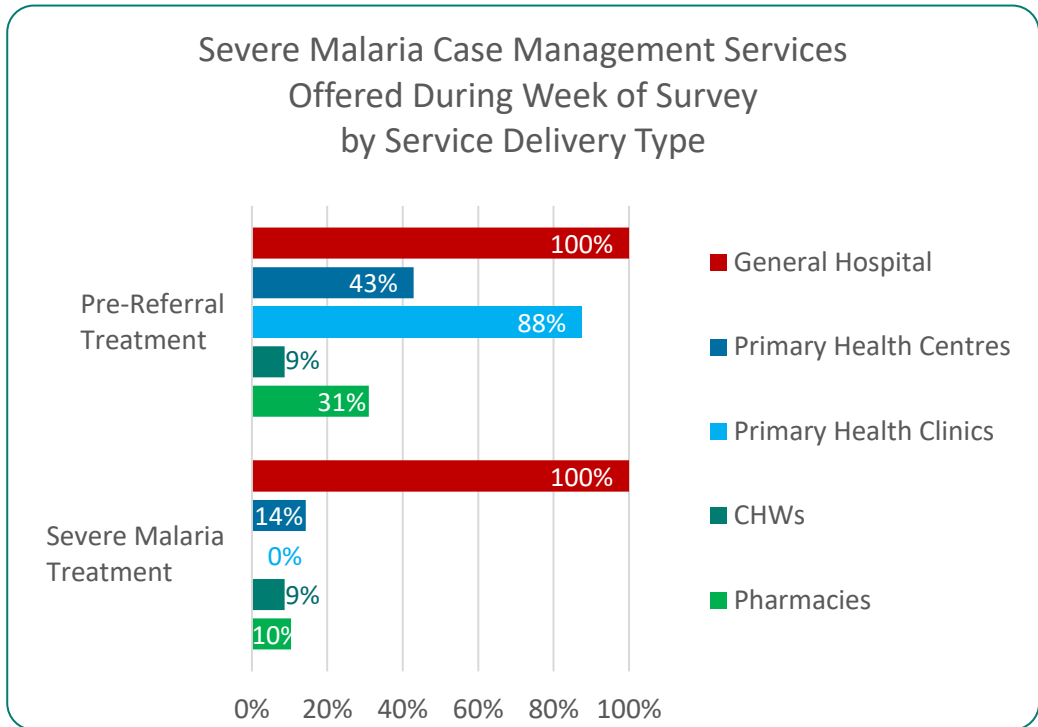


Figure 7.1.2

General Hospital (N=1); Primary Health Centres (N=7); Primary Health Clinics (N=8); CHWs (N=23); Pharmacies (N=29).

Source: Health Service Delivery Site Survey, SuNMaP 2 Longitudinal Study

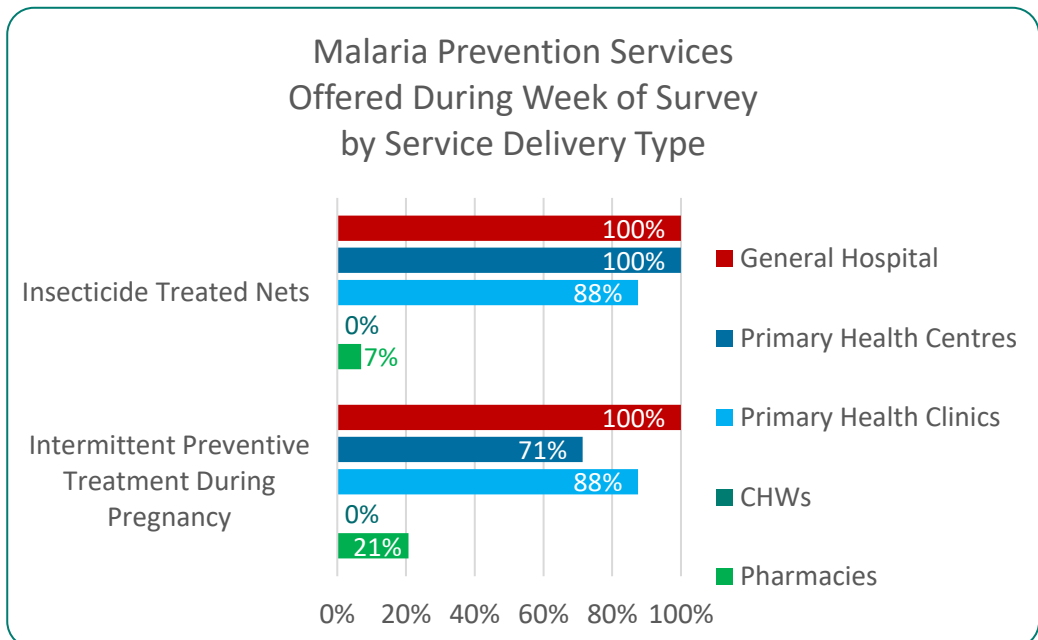


Figure 7.1.3

General Hospital (N=1); Primary Health Centres (N=7); Primary Health Clinics (N=8); CHWs (N=23); Pharmacies (N=29).

Source: Health Service Delivery Site Survey, SuNMaP 2 Longitudinal Study



7.2. STOCK-OUTS

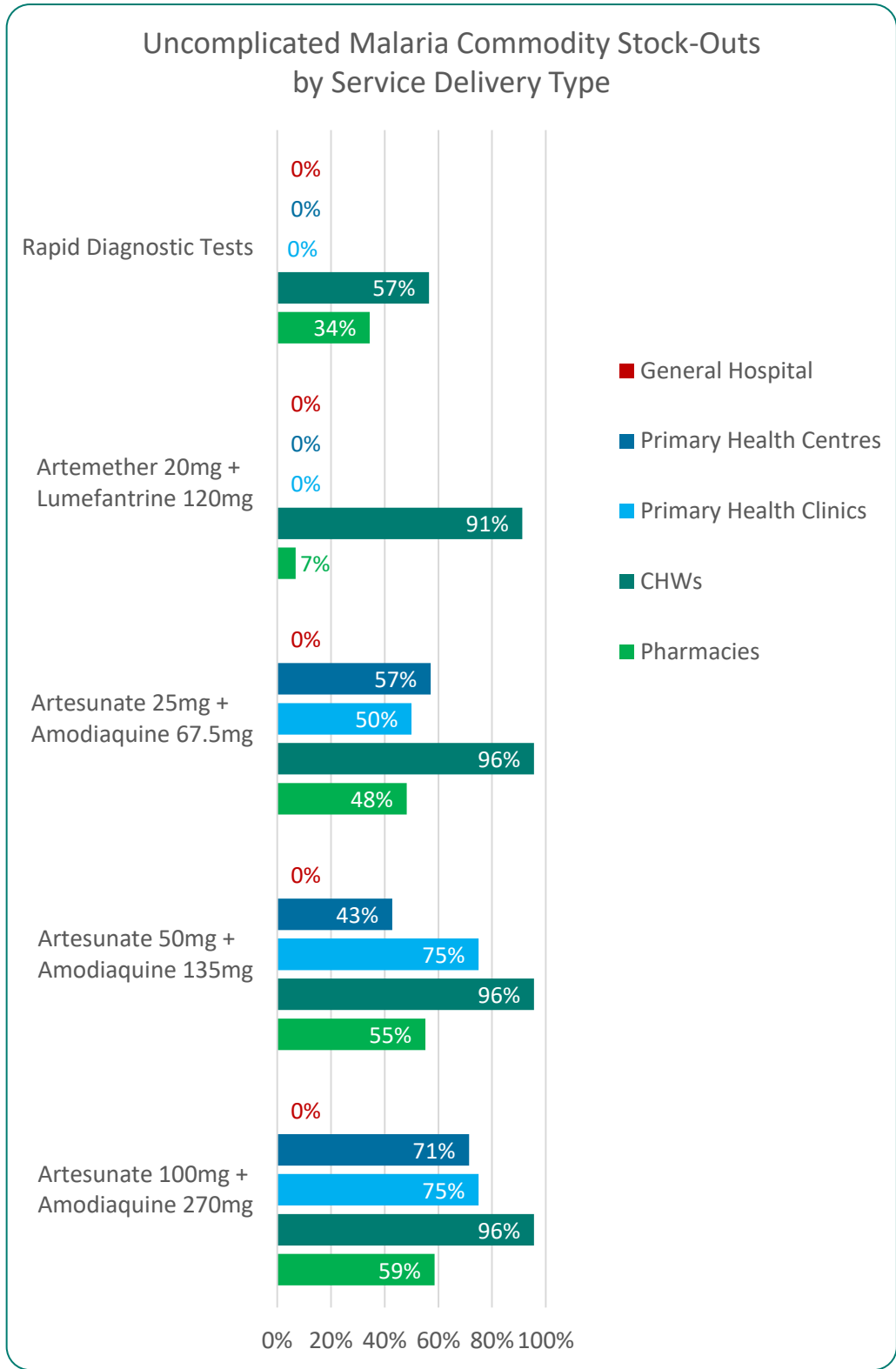


Figure 7.2.1

General Hospital (N=1); Primary Health Centres (N=7); Primary Health Clinics (N=8); CHWs (N=23); Pharmacies (N=29).

Source: Health Service Delivery Site Survey, SuNMaP 2 Longitudinal Study

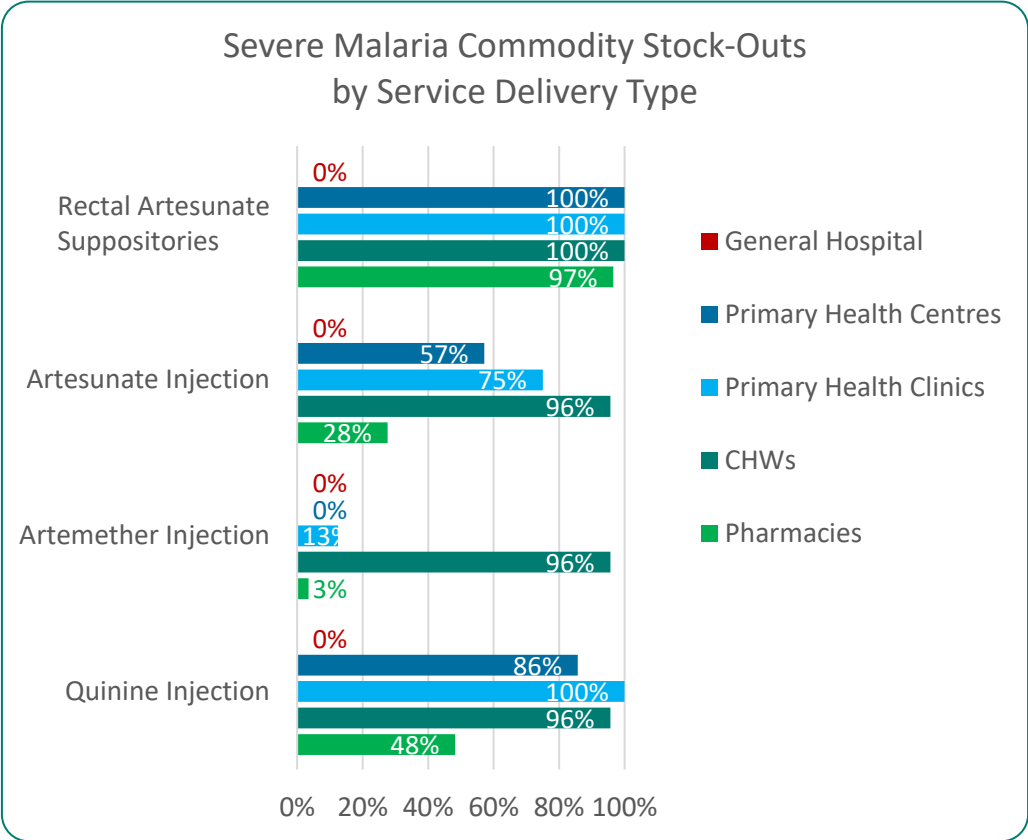


Figure 7.2.2
 General Hospital (N=1); Primary Health Centres (N=7); Primary Health Clinics (N=8); CHWs (N=23); Pharmacies (N=29).
 Source: Health Service Delivery Site Survey, SuNMaP 2 Longitudinal Study

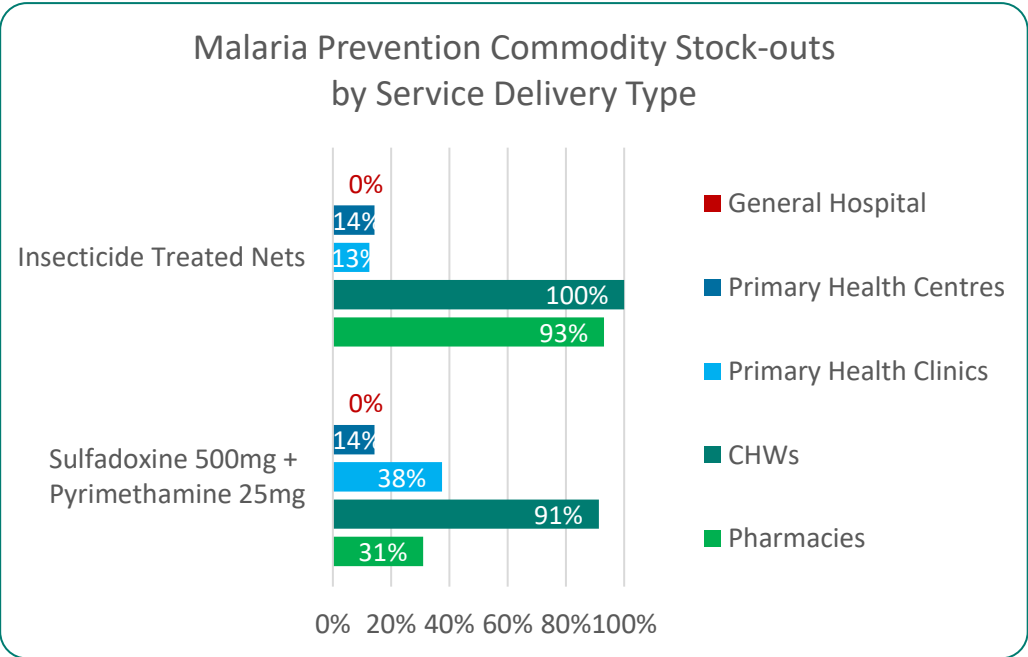


Figure 7.2.3
 General Hospital (N=1); Primary Health Centres (N=7); Primary Health Clinics (N=8); CHWs (N=23); Pharmacies (N=29).
 Source: Health Service Delivery Site Survey, SuNMaP 2 Longitudinal Study



7.3. HEALTH WORKER KNOWLEDGE

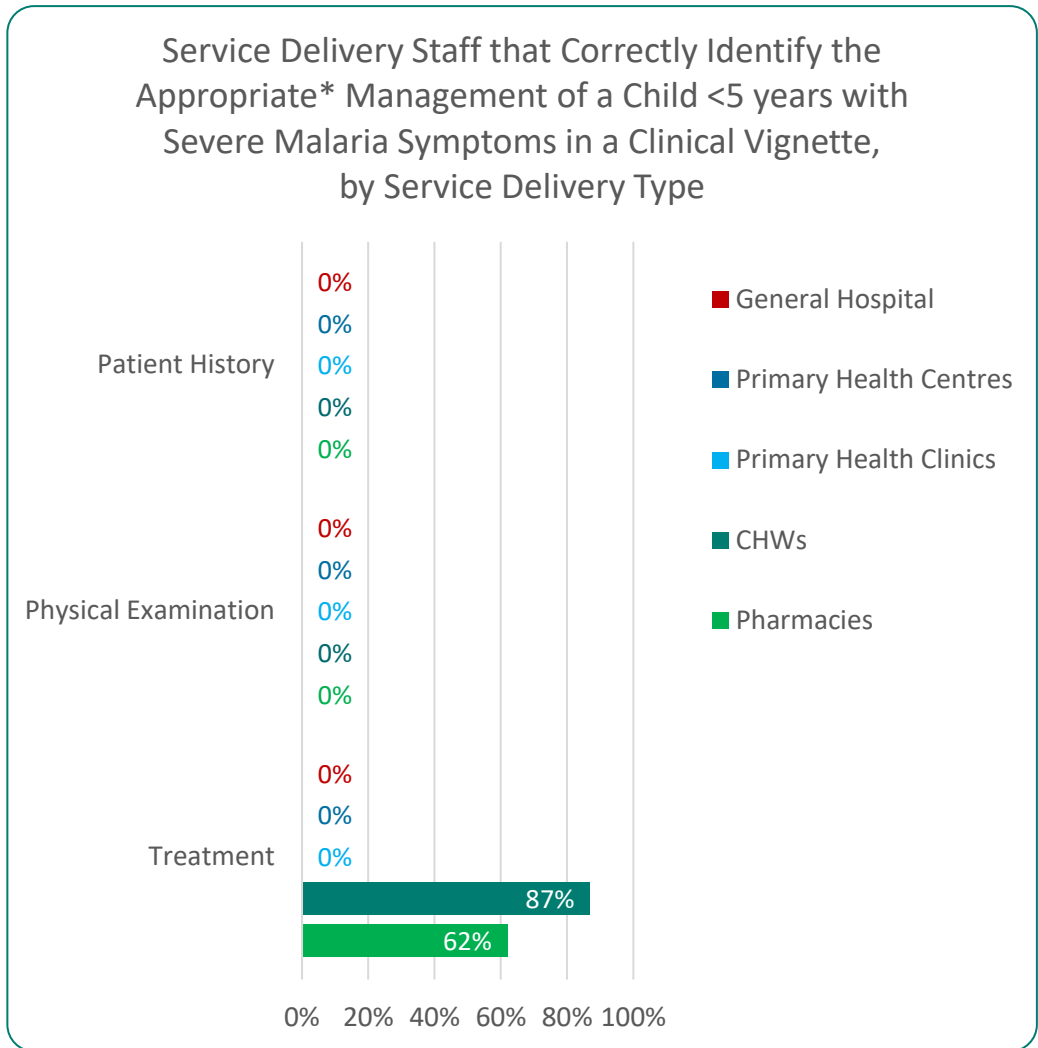


Figure 7.3.1

General Hospital (N=1); Primary Health Centres (N=7); Primary Health Clinics (N=8); CHWs (N=23); Pharmacies (N=29).

*Appropriate patient history was defined as enquiries regarding name, age, symptoms, first visit or revisit for same illness, previous prescribed medication for all service delivery types; Appropriate physical examination was defined for community-based care and level I health facilities as checking for general danger signs, temperature measurement, and determining length of fever (given that patients with general danger signs are to be referred to level health facilities for treatment without a malaria test). For level II health facilities correct physical exam was defined the same but with the addition of parasitological testing for malaria. Appropriate treatment was defined as referral to nearest health facility for community-based care with or without pre-referral treatment (first dose rectal artesunate or intramuscular artesunate and first dose of amoxicillin). For level I health facilities this was defined as referral to next level health facility and administration of pre-referral treatment (first dose rectal artesunate or intramuscular artesunate and first dose of amoxicillin). For level II health facilities appropriate treatment was defined as intravenous or intramuscular artesunate for at least 24 hours with or without accompanying antibiotic treatment given that the respondents were not given the result of the parasitological test in the scenario (1). All service delivery types were also permitted to give or not give paracetamol without affecting the outcome of the analysis.

Source: Health Service Delivery Site Survey, SuNMaP 2 Longitudinal Study

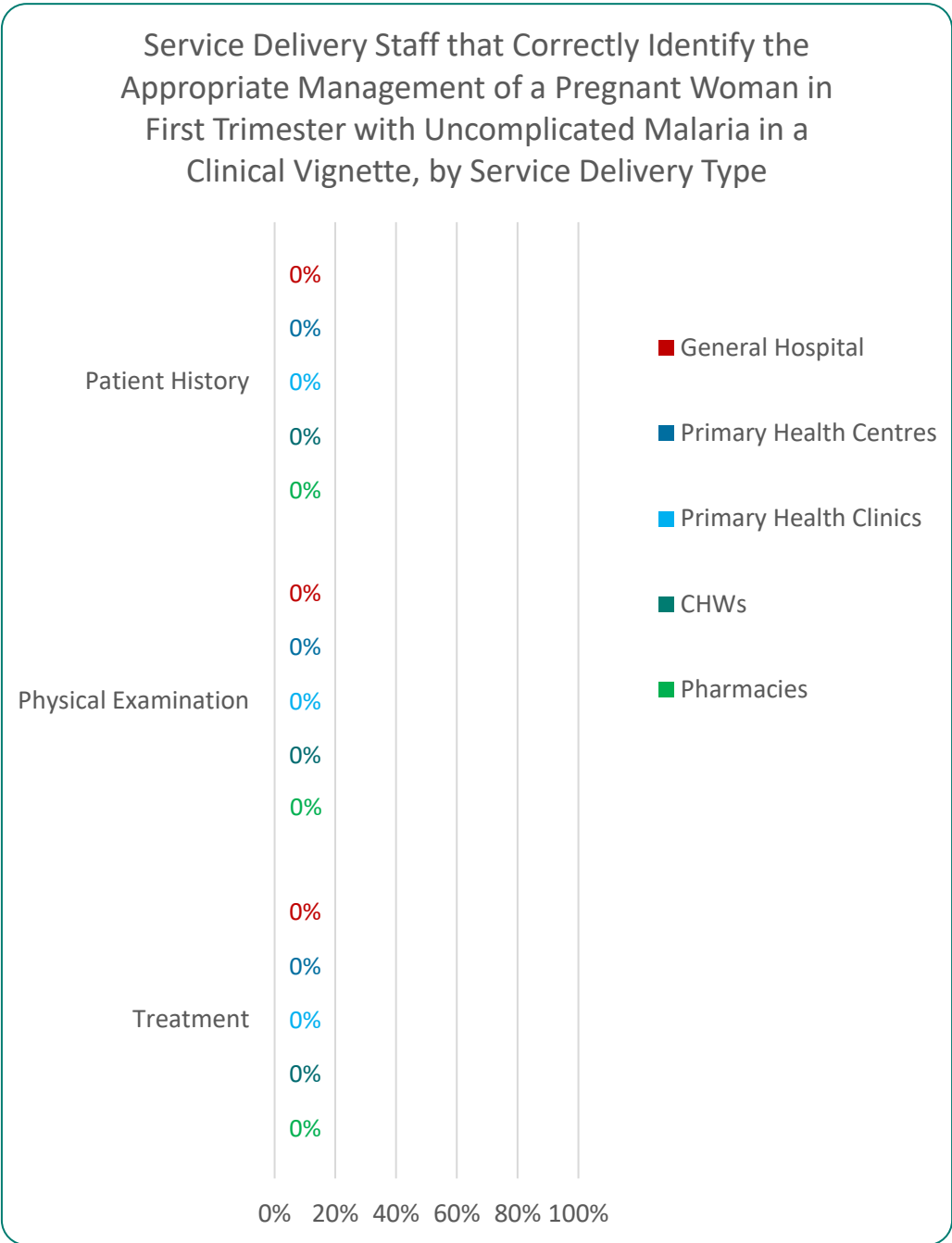


Figure 7.3.2
 General Hospital (N=1); Primary Health Centres (N=7); Primary Health Clinics (N=8); CHWs (N=23); Pharmacies (N=29).

*Appropriate patient history was defined as enquiries regarding name, age, length of pregnancy, symptoms, first visit or revisit for same illness, and previous prescribed medication, for all service delivery types; Appropriate physical examination was defined for all service delivery types as checking for general and pregnancy danger signs, temperature measurement, determining length of fever, and conducting a parasitological test for malaria. Appropriate treatment for the pregnant woman in her first trimester was defined for all service delivery types as 3 day artemisinin combination therapy (ACT) or quinine tablets (+ clindamycin) for 7 days, with or without paracetamol (1, 2).

Source: Health Service Delivery Site Survey, SuNMaP 2 Longitudinal Study



7.4. HEALTH SYSTEM SUPPORT

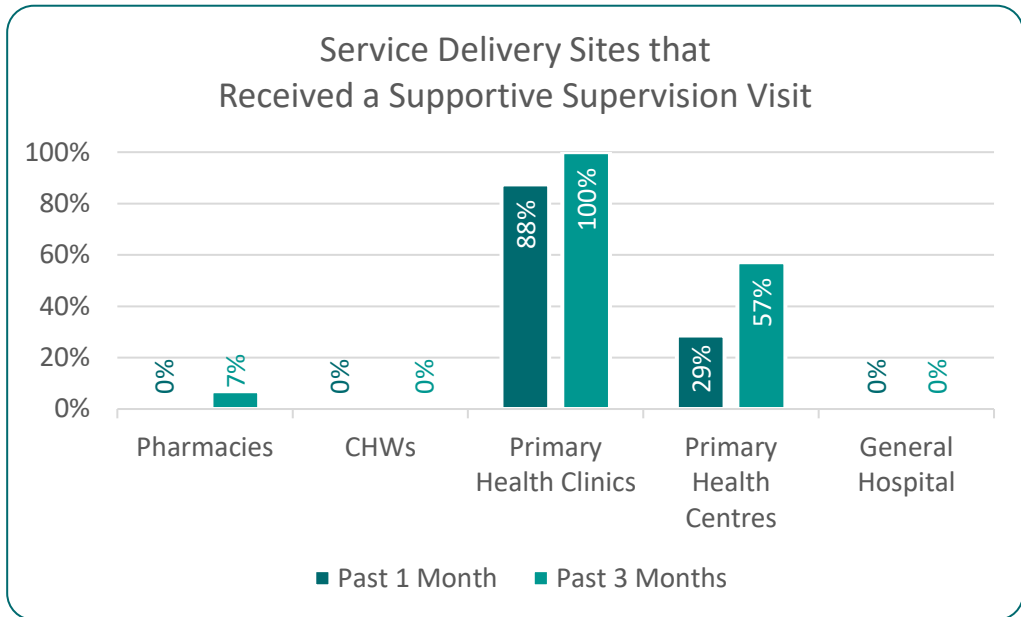


Figure 7.4.1

General Hospital (N=1); Primary Health Centres (N=7); Primary Health Clinics (N=8); CHWs (N=23); Pharmacies (N=29).

Source: Health Service Delivery Site Survey, SuNMaP 2 Longitudinal Study







 AVERAGE NUMBER OF SUPPORTIVE SUPERVISION VISITS* OF THOSE THAT RECEIVED A VISIT IN THE PAST 3 MONTHS (TO NEAREST VISIT):		
	GENERAL HOSPITAL:	0
	PRIMARY HEALTH CENTRES:	5
	PRIMARY HEALTH CLINICS:	7
	CHWs:	0
	PHARMACIES:	1

Figure 7.4.2

General Hospital (N=0, SD=N/A); Primary Health Centres (N=4,SD=4.5 visits); Primary Health Clinic (N=8, SD= 3 visits); CHWs (N=0, SD=N/A visits); Pharmacies (N=2, SD= 0 visits). *Monitoring visits in the case of pharmacies.

Source: Health Service Delivery Site Survey, SuNMaP 2 Longitudinal Study

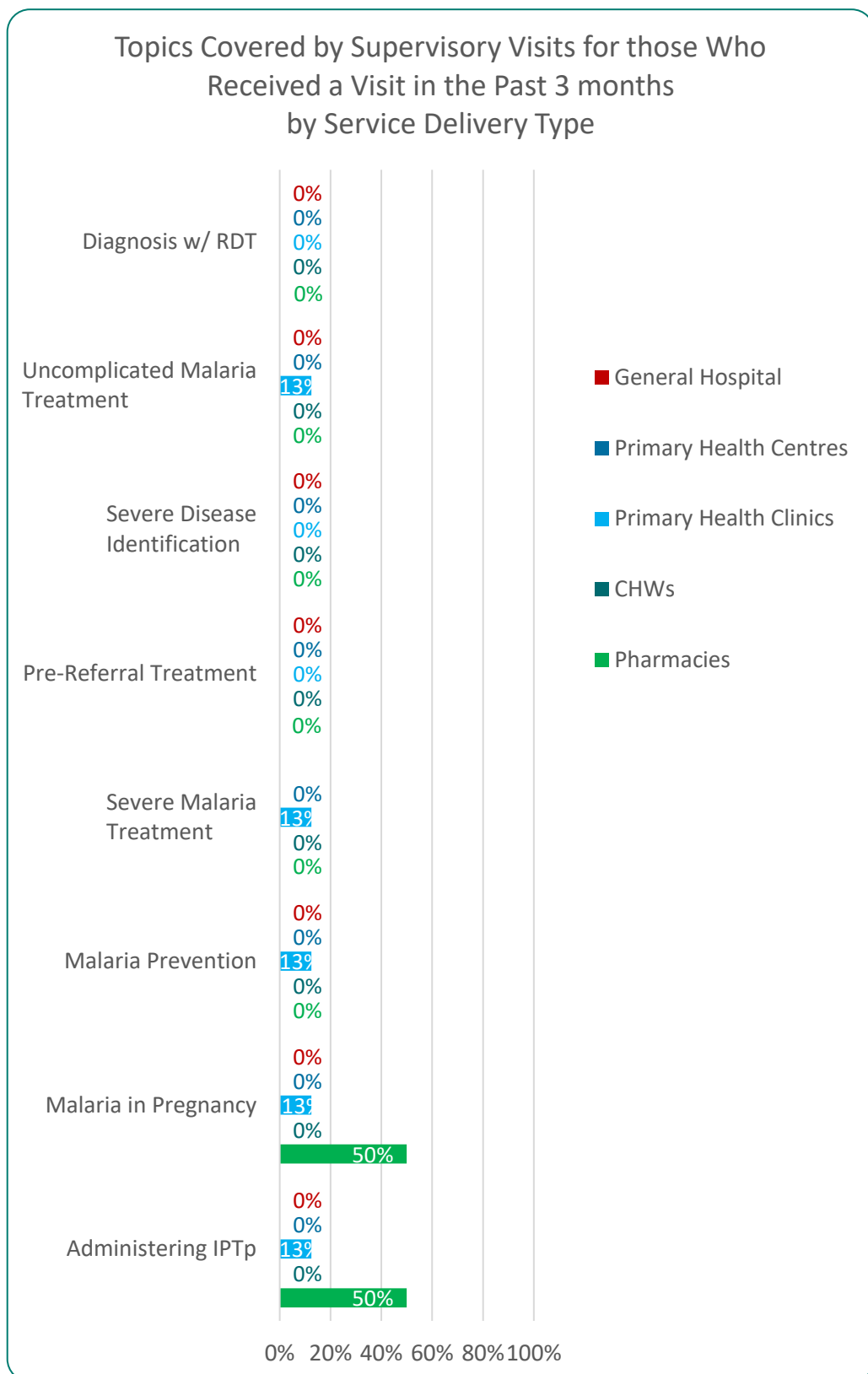


Figure 7.4.3

General Hospital (N=0); Primary Health Centres (N=4); Primary Health Clinic (N=8); CHWs (N=0); Pharmacies (N=2).

Source: Health Service Delivery Site Survey, SuNMaP 2 Longitudinal Study







 PROPORTION OF SERVICE DELIVERY SITES THAT WERE DISATISFIED WITH THE SUPERVISION RECEIVED IN THE PAST 3 MONTHS:		
	GENERAL HOSPITAL:	-
	PRIMARY HEALTH CENTRES:	0%
	PRIMARY HEALTH CLINICS:	0%
	CHWs:	-
	PHARMACIES:	0%

Figure 7.4.4

General Hospital (N=0); Primary Health Centres (N=4); Primary Health Clinic(N=8); CHWs (N=0); Pharmacies (N=2).

Source: Health Service Delivery Site Survey, SuNMaP 2 Longitudinal Study

8. SUMMARY

A. DEMAND

Households

- Awareness of malaria chemoprophylaxis, including intermittent preventive treatment during pregnancy (IPTp) and seasonal malaria chemoprevention, amongst women of reproductive age was very low at 0% across all age groups (**figure 5.1.1**). However, a high proportion of women of reproductive age could correctly identify fever as a main malaria symptom (83-85%), mosquito nets for malaria prevention (97%-98%), and that malaria is transmitted via mosquitoes (99%). The equity analysis also showed that amongst women of reproductive age identification of insecticide treated nets (ITNs) for malaria prevention was fairly equitable across all wealth quintiles (**figure 5.5.1**). However, identification of fever as a main symptom of malaria was slightly higher in the lower (95%) and lower-middle wealth (87%) quintiles compared to the upper wealth quintile (81%). The high level of malaria awareness amongst women of reproductive age is positive given that they are a key demographic in terms of achieving coverage of malaria interventions amongst the most vulnerable – pregnant women and children under 5 years old (U5).
- Amongst the households surveyed 83% had at least one ITN (**figure 5.4.5**). However, the average household size was 6.7 members (**table 4.2**) and the recommendation is for at least one ITN per two people in a household (3).

Pregnant Women

Treatment

- Amongst the pregnant women surveyed, 24% reported having fever in the two weeks previous to the survey (**figure 5.2.1**). Sixty-three percent of pregnant women who had fever received a parasitological test for malaria (**figure 5.4.1**). Of those that sought care (87%) (**figure 5.3.1**), the predominant first points of care were primary health clinics (29%) and pharmacies (29%) (**figure 5.3.4**). Average length of time between fever onset and seeking care was 1.9 days (**figure 5.3.1**).
- All pregnant women with fever took drugs, and 87% took antimalarials (**figure 5.4.2**). The most commonly reported drug was paracetamol (taken by 63%). For antimalarials, the most commonly reported was sulfadoxine-pyrimethamine (SP), also known as Fansidar (38%) (**figure 5.4.4**). However SP/Fansidar should only be taken as a preventive medicine for malaria during pregnancy (1, 2). The recommended treatment for pregnant women in Nigeria with uncomplicated malaria is artemisinin-based combination therapy (ACT), of which only 13% of pregnant women with fever reported receiving (1).

Prevention

- Eighty-five percent of pregnant women slept under an ITN the previous night (**figure 5.4.5**). The equity analysis showed that the proportion of pregnant women that slept under an ITN was fairly even across lower to middle wealth quintiles (88%-86%), although slightly lower in upper-middle (75%) and upper quintiles (83%) (**figure 5.5.2**).
- IPTp had been taken by 58% of pregnant women surveyed in their second or third trimester (**figure 5.4.6**). Amongst those who had taken SP the average number of doses was 2.1, below the recommended minimum of 3 (1).

Children Under 5 Years Old

Treatment

- The percentage of children U5 with fever in the two weeks previous to the survey was 22% (**figure 5.2.1**). This was comparative to the burden seen in pregnant women (24%). The equity analysis (**figure 5.5.1**) showed that the percentage of children U5 with fever was fairly comparable across lower to upper-middle wealth quintiles (22%-27%). However, the percentage of children U5 with fever was lowest in the upper wealth quintile (15%).
- Amongst children U5 with fever in the two weeks previous to the survey, 43% received a parasitological test (**figure 5.4.1**), lower than the 63% of pregnant women with fever that were tested. Equity analysis showed that despite a similar likelihood of fever in children U5 amongst the lower to upper-middle wealth quintiles (**figure 5.5.1**), there was a higher coverage of parasitological testing in the upper-middle group (54%) compared to lower (43%), and lower-middle wealth quintiles (47%) (**figure 5.5.2**). Nevertheless, the middle and upper wealth quintiles had the lowest levels of testing, with 33% and 35% respectively.
- Ninety-two percent of children U5 with fever, sought care (**figure 5.3.2**). Careseeking for children U5 with fever was evenly distributed between sexes (**figure 5.3.3**). Of those that sought care, 42% visited a pharmacy as their first point of care (**figure 5.3.4**). Average length of time between fever onset and seeking care was comparative to that of pregnant women with 1.8 days (**figure 5.3.2**).
- Ninety-seven percent of children U5 with fever received drugs, 80% of which took an antimalarial (**figure 5.4.3**). The most commonly reported was paracetamol (**figure 5.4.4**). For antimalarials, the most commonly reported was "Other Antimalarial" (39%); only 16% received an ACT, the recommended treatment for children U5 with uncomplicated malaria (1).

Prevention

- Eighty-six percent of children U5 had slept under an ITN the previous night (**figure 5.4.5**). Furthermore, fewer children U5 in the poorest quintile slept under an ITN the night before (72%) compared to those in the wealthiest group (90%) (**figure 5.5.2**).

B. SUPPLY

Treatment

- The survey found limited availability of parasitological testing services amongst community-based care providers, particularly for community health workers (CHWs) (**figure 7.1.1**). This correlates with the high percentage of stock-outs reported of rapid diagnostic tests (RDTs) amongst community-based care providers (**figure 7.2.1**). Given that pharmacies tended to be the first point of care in the communities surveyed, particularly for children (**figure 5.3.4**), this provides a potential explanation for the lower level of parasitological testing observed amongst children U5 with fever in the two weeks preceding the survey.
- Artemether-Lumefantrine is the primary artemisinin-based combination therapy (ACT) recommended in Nigeria, with Artesunate-Amodiaquine as an alternative (1). Stock-outs of Artemether-Lumefantrine were predominantly focused amongst CHWs (**figure 7.2.1**). However, there was a high percentage of stock-outs reported for all concentrations of Artesunate-Amodiaquine for nearly all service delivery levels. Stock-outs of pre-referral treatment and treatment for severe malaria treatment were predominantly focused amongst level I health facilities (**figure 7.2.2**). To note that the 4th Edition of the National Guidelines for Diagnosis and Treatment of Malaria indicates that pre-referral treatment and severe malaria treatment is not provided as part of community-based care, however there were a few CHWs and pharmacies that reported offering these services (**figure 7.1.2**)(1).
- Overall, surveyed service delivery staff could not correctly identify the appropriate management of a child U5 with severe malaria symptoms and a pregnant woman with uncomplicated malaria in hypothetical scenarios (clinical vignettes) (**figure 7.3.1** and **figure 7.3.2**). For the hypothetical scenario involving a child U5 with severe malaria, no service delivery sites correctly identified how to collect patient history, conduct a physical examination, and provide appropriate treatment – although 87% of CHWs and 62% of pharmacies correctly identified appropriate treatment for community-based care in accordance with guidelines (**figure 7.3.1**) (1). For the scenario involving uncomplicated malaria in a pregnant woman in her first trimester, no service delivery sites correctly identified any steps for the three areas of patient history, physical examination, and appropriate treatment (**figure 7.3.2**).
- Only level I health facilities and pharmacies reported any supervision in the 3 months preceding the survey. Supervision was fairly high amongst primary health clinics, with 100% of facilities receiving a supportive supervision visit in the 3 months and 88% in

the one month preceding the survey. Whereas only 57% and 29% of primary health centres received a visit in the previous three and one month respectively. Amongst pharmacies, only 7% received a visit in the preceding 3 months. The focus on malaria topics within supervision visits was limited, with uncomplicated malaria treatment, severe malaria treatment, prevention, malaria in pregnancy and IPTp being touched upon in 13% of primary health clinics that received visits (**figure 7.4.3**). For pharmacies 50% received monitoring visits that focused on malaria in pregnancy and IPTp. Whereas none of the primary health centres reported receiving supervision on malaria topics. Of those service delivery sites that received a supervision none were dissatisfied with the supervision received (**figure 7.4.4**).

Prevention

- IPTp was predominantly reported as being delivered at level I and II health facilities in line with guidelines (**figure 7.1.3**) (1). However, there were reported stock outs of SP at primary health centres (14%) and clinics (38%) (**figure 7.2.3**).
- ITNs were generally available at level I and level II health facilities for distribution during the time of survey but were largely not being distributed through community-based care providers (**figure 7.1.3**). Furthermore, 93% of private sector pharmacies did not have ITNs in stock (**figure 7.2.3**).

9. REFERENCES

1. National Guidelines for Diagnosis and Treatment of Malaria. Fourth ed. Abuja, Nigeria: Federal Ministry of Health; 2020. p. 1-79.
2. Guidelines for the treatment of malaria. Third ed. Geneva: World Health Organization; 2015. p. 1-317.
3. World malaria report. Geneva: World Health Organization; 2019.

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