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Behavioral Sentinel Surveillance Survey in Nigeria: baseline technical report

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List of Acronyms

ACT	Artemisinin-based combination therapies
ANC	Antenatal care
ARI	Acute respiratory infections
BCG	Bacille Calmette-Guerin
BSS	Behavioral Sentinel Surveillance
CI	Confidence intervals
CRERD	Center for Research, Evaluation Resources, and Development
CV	Community volunteer
DTP3	Diphtheria-tetanus-pertussis
HC3	Health Communication Capacity Collaborative
IPTp	Intermittent preventive treatment for malaria during pregnancy
IRB	Institutional Review Board
JHU CCP	Johns Hopkins Center for Communication Programs
LGA	Local government area
LLIN	Long-lasting insecticidal net
MMR	Maternal mortality ratio
MNCH+N	Maternal, newborn, and child health plus nutrition
NDHS	Nigeria Demographic and Health Survey
NHREC	National Health Research Ethics Committee
NURHI	Nigerian Urban Reproductive Health Initiative
ORS	Oral rehydration solutions
OVC	Orphaned and vulnerable children
PHC	Primary health care
PMI	President's Malaria Initiative
SBC	Social and behavior change
TFR	Total fertility rate
U5MR	Under-5 mortality rate
USAID	United States Agency for International Development

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Executive Summary

This technical report presents results of the baseline Behavioral Sentinel Surveillance (BSS) survey undertaken by Breakthrough RESEARCH/Nigeria between September and October 2019. From 2019 to 2021, baseline, midline, and endline waves of the BSS will be used to assess the effectiveness of the Breakthrough ACTION/Nigeria integrated social and behavior change (SBC) activities for malaria; family planning; and maternal, newborn, and child health plus nutrition (MNCH+N) in Kebbi and Sokoto states relative to Breakthrough ACTION/Nigeria's malaria-only SBC activities in Zamfara State.

Breakthrough ACTION/Nigeria uses three primary SBC approaches that span across societal levels including: 1) advocacy outreach to opinion leaders and community influencers at state and local government area (LGA) level, 2) direct engagement of community members through community dialogues and group meetings that includes referrals for services, and 3) complementary SBC messaging through mass and mid-media. The official launch of integrated SBC activities in Kebbi and Sokoto occurred on 19 September 2019, although staged implementation rolled out across these states between early and late September, which coincided with BSS baseline survey fieldwork. The *Albishirin Ku!* radio program began airing in integrated states at the end of August 2019. Malaria-only SBC activities were initiated in Zamfara in October 2019.

This technical report presents detailed baseline results, including comparisons of results for the Breakthrough ACTION/Nigeria integrated (Kebbi/Sokoto) versus malaria-only program areas (Zamfara). The report also presents findings regarding the contextual factors and drivers that influence health behavior and service utilization outcomes, as these results have important and direct implications for Breakthrough ACTION/Nigeria SBC program adaption and scale-up.

About the BSS

The BSS is unique in its focus on the drivers of behavioral outcomes in the areas of family planning, malaria, and MNCH+N. Measures of these drivers are reflected in questions about the psychosocial influences—across cognitive, emotional, and social domains—that have been posited by various theories as intermediate determinants of behavioral outcomes. Indeed, as these theories suggest, a person's actions are strongly influenced by their beliefs, feelings, and sense of self-efficacy, and changing these perceptions may lead to future positive behavioral change.

The BSS focuses on women aged 15 to 49 years who are currently pregnant or with a child under 2 years living

in areas targeted for integrated (Kebbi/Sokoto) and malaria-only (Zamfara) Breakthrough ACTION/Nigeria SBC programming. This subset of women is the primary target audience for Breakthrough ACTION/Nigeria's programming. A total of 3,026 pregnant women and 3,040 women with a child under 2 years from randomly selected locations in the Breakthrough ACTION/Nigeria program areas were included in the BSS baseline survey. Study populations are referred to as "respondents" throughout this report. Female interviewers used a structured questionnaire to collect information across a wide variety of health areas. The BSS asks respondents about current health behaviors and key behavioral determinants, including: (cognitive) knowledge, attitudes, beliefs, and perceived risk; (emotional) empathy, self-efficacy, and emotional response; and (social) subjective

norms, social support, social influence, and interpersonal communication. By understanding these key behavioral determinants, the BSS provides new and important evidence that will directly inform programs in Nigeria to tailor messaging and promote activities that address the psychosocial influences that promote behavior change.

Such evidence is critical to inform Breakthrough ACTION/Nigeria's SBC program, which works across multiple societal levels and through various communication channels to promote positive normative and behavioral change across family planning, malaria, and MNCH+N. The BSS results also complement findings from the recent Nigeria Demographic and Health Survey (NDHS) 2018. While the NDHS 2018 reports on a wide range of health and demographic outcomes across Nigeria, the BSS collects additional program-relevant evidence on behavioral determinants. Such evidence will inform programs about pregnant women's and mothers of young children's beliefs or perceptions that must be addressed to help improve outcomes by the next NDHS survey round.

Specifically, the BSS results presented in this report—and highlighted in this Executive Summary—answer the following unique and important program-relevant questions:

- Are respondents aware of the health behaviors that are being promoted, e.g., how to prevent or treat certain diseases?

- Are certain myths or beliefs held by respondents that could impede progress across health areas?

- How do respondents view health services in their communities and what are their main reasons for choosing certain treatment locations or for not seeking care at all? What types of difficulties, if any, have they had accessing services?

- How do health decisions get made in the household? Who mainly influences decisions and practices across health areas? How much autonomy or influence do respondents have in making family health decisions?

- What are key social norms around certain health behaviors? How prevalent are certain practices and how do respondents feel they would be perceived in their community if they took up the promoted practice?

- Do respondents feel confident in their ability to take up the promoted practice, or to negotiate with their husband/spouse about initiating the new practice?

Key Findings and Recommendations

Albishirin Ku!

Awareness of Breakthrough ACTION/Nigeria's Albishirin Ku! radio programming is already apparent even at this baseline period. In Kebbi/Sokoto, 24 percent of respondents have heard the Albishirin Ku! radio slogan, as have 13 percent in Zamfara. Albishirin Ku! radio program awareness in Kebbi and Sokoto is significantly lower among respondents in the poorest households (12%) than in the wealthiest households (42%), which is likely due to lower radio ownership in the poorest households and thus fewer opportunities to listen to radio programming. This result suggests that Breakthrough ACTION/Nigeria radio programming may not reach the poorest households that are shown to have demonstrably worse health outcomes described in this report (see below sections). Going forward, Breakthrough ACTION/Nigeria should ensure that ongoing SBC outreach efforts (e.g., household visits or community events) are targeting this population as a priority in order to raise overall rates.

Family planning

Modern contraceptive use: Non-pregnant respondents reported low modern contraceptive use, with higher use in Zamfara (15%) than in Kebbi (9%) and Sokoto (12%). Modern contraceptive use was lower among respondents in the poorest households (6% in Kebbi/Sokoto and 7% in Zamfara) than in wealthiest households (24% in Kebbi/Sokoto and 34% in Zamfara). Most respondents had heard of at least one modern method, with the most recognized methods being injectables, implants, and daily pills. Higher recall of methods was noted in Kebbi/Sokoto (30% for injectables, 38% for implants, and 33% for daily pills) than in Zamfara (16% for injectables, 23% for implants, and 19% for daily pills). Consistent with existing evidence/literature, the most common methods used were injectables (48%) and implants (25%), with similar proportions across study areas. Finally, among non-users, 15 percent intended to start contraceptive use in the next six months, which presents an opportunity to fill this latent demand among current non-users who have a stated intention to act.

Reasons for non-use, attitudes, and social norms: The most common reasons non-pregnant respondents stated for not currently using contraception were fatalism ("It's up to God") (25%), currently breastfeeding (23%), partner opposition (21%), and respondent opposition (18%). In

line with this result, approximately half (52%) of respondents agreed that they do not personally approve of using contraception for birth spacing, underscoring a critical hurdle to Breakthrough ACTION/Nigeria SBC messaging for changing family planning practices. In addition, one in five respondents believed that people in their community would call them bad names or avoid their company if others knew they were using contraception for birth spacing, which further highlights the importance of addressing social norms in family planning. About half of the respondents agreed that religious leaders should speak publicly about using modern contraceptives, which underscores an important pillar of Breakthrough ACTION/Nigeria programming.

Contraceptive myths: Common contraceptive myths also persist across study areas, with firmer belief in these myths in Kebbi/Sokoto than in Zamfara. About one in three respondents in Kebbi/Sokoto agreed that contraception could make a woman permanently infertile, harm a woman's womb, or lead to health problems, compared with about one-quarter of respondents in Zamfara. About one in five respondents in Kebbi/Sokoto believed that contraceptives cause cancer, result in deformed babies, increase promiscuity, or reduce sexual urges of women and men. SBC programming needs to actively work to dispel these specific myths going forward to help promote behavior change.

Spousal communication and decision-making: There were low rates of spousal communication about contraceptive use, although rates of spouse communication were higher in Zamfara (22%) than in Kebbi/Sokoto (6%). While approximately half of respondents across study areas reported that contraceptive use decisions were made jointly with their partner, a significant proportion—30 percent in Kebbi/Sokoto and 17 percent in Zamfara—noted that contraceptive decisions were mainly made by their partners. When respondents were asked who else influences a woman's decision about contraceptive use, the most commonly mentioned influencers were no one else (61%) and partners/spouses (30%). Self-efficacy for negotiating contraceptive use with a partner was low. Only about half of respondents across

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study areas were confident in their ability to convince their partner to use modern contraception for spacing births. These findings further underscore the need for SBC activities to engage couples in decision-making about birth spacing and to support women's agency in health decision-making to help raise contraceptive use rates.

Malaria

Malaria prevention: Overall, ownership of long-lasting insecticide nets (LLIN) was high. Approximately 75 percent and 69 percent of households surveyed in Zamfara and Kebbi/Sokoto, respectively, owned at least one LLIN. However, fewer households had the recommended ratio of at least one LLIN for every two household members, with slightly higher proportions in Kebbi/Sokoto (25%) than in Zamfara (18%). In households where there were sufficient nets (at least one LLIN for every two household members), 81 percent and 88 percent of pregnant respondents slept under an LLIN the previous night in Kebbi/Sokoto and Zamfara, with little difference across wealth quintiles or maternal education. Similarly, in households with sufficient nets, over 90 percent of children under 2 years slept under an LLIN the previous night in integrated and malaria-only areas, with limited differences across sociodemographics.

There was also extremely high overall awareness about the importance of LLINs in malaria prevention. Almost all respondents agreed that malaria was caused by mosquito bites (97%), and that sleeping under mosquito nets was an effective malaria prevention method (93%). In addition, nearly all respondents stated they were expected

to be able to get all their children under 5 years sleeping under a mosquito net every night of the year (93%). The results suggest that SBC programming to raise awareness about malaria prevention measures is not needed, but improving access, acceptability, and efficacy to use LLINs as directed may be a useful programmatic focus.

Malaria during pregnancy: Less than one in five respondents in study areas took intermittent preventive treatment as directed (three or more sulfadoxine/pyrimethamine(SP)/Fansidar doses) during their last pregnancy, with lower rates among respondents in the poorest households (10% and 12%) compared with the wealthiest (33% and 34%). Lower percentages were also observed among the less educated (15% and 14%) compared to respondents who attended at least some primary school (36% and 25%). The most common reasons for not taking SP/Fansidar during the last pregnancy were opposition by the respondent (34%) or spouse (33%), and further research is needed to understand this opposition. Moreover, the "other" category was disproportionately high and largely included the following responses: did not attend antenatal care (ANC) or facility to obtain medicines, not sick or did not have pregnancy complications, and not necessary or customary to take medications. In addition, more frequent ANC visits is also associated with a higher likelihood of IPTp uptake. BSS baseline results show that women who attended ANC four or more times during the last pregnancy were about six times more likely to receive IPTp than those attending ANC only one time.

Taken together, these responses underscore the need for SBC messaging to reinforce the importance of intermittent preventive treatment for malaria during pregnancy (IPTp) as a key component of essential antenatal care services. In addition, while 91 percent of respondents agreed that malaria in pregnancy can affect the fetus, far fewer could state the specific risks to the baby. Only about half reported fetal death (45%) or miscarriage (44%) as specific risks from malaria in pregnancy, while far fewer reported premature birth (26%) and low birth weight (17%) as specific risks. Building knowledge of malaria risks and specific health consequences for the fetus may be a driver toward greater adoption of prevention behaviors.

Malaria treatment: While there were high rates of care-seeking for children under 2 years of age with fever, 33 percent and 54 percent of those who were taken to care in Kebbi/Sokoto and Zamfara, respectively, went to

a pharmacy where poor-quality care persists. The most important reasons for choosing the treatment location for pediatric fever care were trust (36%), nearby location (33%), and effective treatment (28%). These findings underscore the importance to women of convenient, trusted, and high-quality health services provision. Importantly, respondents also reported that few of their febrile children were tested for malaria (19% and 24%), and few of their febrile children were given artemisinin-based combination therapies (ACT) (22% and 36%) in Kebbi/Sokoto and Zamfara. The low prevalence of testing may be due in large part to care-seeking from pharmacies. Nearly all respondents reported intentions to take a child with a fever to care the same/next day (92%) and to make sure the child takes the entire treatment course (92%). This finding suggests that while respondents know the recommendation and have stated intentions to act, such knowledge and intentions may still not translate to behavioral action. However, while 74 percent agreed that a blood test is the only way to know whether a person has malaria, most respondents (61%) agreed that they still worry the illness could be malaria even if the test result is negative. This implies some lack of confidence in negative malaria test results that reinforces Breakthrough ACTION/Nigeria's ongoing efforts to change malaria diagnosis perceptions and practices.

MNCH+N

Antenatal care: There is low ANC attendance across Breakthrough ACTION program areas, with approximately one-third (32% and 38%) and one-quarter (20% and 26%) of respondents attending ANC one or more or four or more times during the last pregnancy in Kebbi/Sokoto and Zamfara, respectively. The most common reasons for not attending ANC were lack of perceived need (42%), spousal opposition (25%), fatalism ("It's up to God") (20%), and perceptions that ANC is not the norm (13%). This finding suggests lack of information, poor risk perceptions, and lack of awareness about the benefits of ANC to a mother and her newborn. In addition, more than two-thirds (67%) of respondents said their spouses influence their decision to go to ANC four or more times, making spousal support or opposition a critical facilitator or barrier to uptake. The data suggest that capturing husband ideations may be important to inform future spousal communications interventions. There are also common ANC myths that persist among respondents. Overall, 48 percent and 35 percent of respondents agreed that pregnant women need ANC only when sick, and 25 percent agreed that only first-time mothers

need ANC. A significant percentage of respondents—40 percent and 30 percent in Kebbi/Sokoto and Zamfara, respectively—noted that it is better to use a traditional provider than a health facility for ANC. These perceptions point to areas for SBC messaging to improve awareness of the benefits of ANC even for healthy pregnancies that could lead to additional ANC uptake going forward. Finally, birth planning with a health worker during ANC does not appear to be standard practice, although one in three respondents reported having discussed birth plans. This suggests a strong starting point for making further inroads in this important area.

Facility delivery: Facility delivery was an uncommon practice in Kebbi/Sokoto (14%) and Zamfara (16%) among respondents during their last pregnancy. More than 80 percent of respondents delivered at their own or another home, and births are commonly assisted by family members (36%) or traditional birth attendants (29%). The most common reasons for not delivering at a facility were that they did not feel it was necessary (75% and 61%) followed by spousal opposition (15% and 36%) in Kebbi/Sokoto and Zamfara, respectively. Similar to ANC results, this finding suggests there is a critical lack of information, poor risk perceptions, and lack of awareness about the benefits of facility-based delivery to make this service feel necessary to both women and their spouses. When respondents were asked who influences the decision to have a facility delivery, partner/spouse (57%) was the most common response, making spousal opposition another critical barrier to service utilization. About half (54%) of respondents agreed that the health facility is the best place to deliver a baby, but fewer (44%) felt confident that they could get to a health facility for delivery. About half (55%) were confident that they could start a conversation with their husband about facility delivery, and a similar proportion (51%) intended to deliver their next child at a health facility. These positive intentions around facility-based delivery represent an opportunity for SBC programs to support women with interventions to make it easier for them to act in accordance with their beliefs and intentions.

Breastfeeding: Nearly all respondents (96%) reported ever breastfeeding their last-born child under 2 years. Yet initiating breastfeeding within one hour of birth was low across study areas, although the rate was higher in Zamfara (46%) than in Kebbi/Sokoto (36%). Exclusive breastfeeding for the first six months of life was low overall, with higher rates in Zamfara (46%) than in Kebbi/Sokoto (26%). This low coverage is in large part due to

high rates of giving non-breastmilk liquids to a child in the first three days after birth, with much higher practice rates in Kebbi/Sokoto (73%) than in Zamfara (50%). In relation to this practice, 23 percent of respondents also agreed that mother's breastmilk after birth (colostrum) is bad, suggesting an area for future SBC messaging. Taken together, these responses suggest ways SBC messaging may help promote exclusive breastfeeding in this area. In addition, while there was high awareness of breastfeeding and its benefits among respondents, only 55 percent of respondents felt confident to exclusively breastfeed their child for the first six months, with higher confidence in Zamfara (64%) than Kebbi/Sokoto (42%). Forty-one percent of respondents believed that most other women in their communities gave breastmilk exclusively to their infants, suggesting perceived social norms about breastfeeding. There was also higher intent to exclusively breastfeed their next child in Zamfara (59%) and Kebbi/Sokoto (46%) compared to current exclusive breastfeeding rates, indicating an opportunity to support mothers with their breastfeeding intentions, such as increasing family or social supports.

Vaccination: There was very low vaccination coverage, with only 4 percent and 8 percent of children aged 12 to 23 months in Kebbi/Sokoto and Zamfara, respectively, who were fully vaccinated (bacilli Calmette-Guerin or BCG, measles, diphtheria-tetanus-pertussis or DTP3, and polio3) by the survey interview. The most important reason for not vaccinating the child was spousal opposition (33%) followed by distance to the health facility (14%) and fear of needles (11%). Across study areas, 73 percent of respondents reported that their spouses influence their decision about child vaccinations, making spousal opposition an important barrier to vaccine uptake. The result suggests that capturing husband ideations may be important to inform future SBC interventions. While respondents generally gave positive reports about their own vaccine knowledge and attitudes, more specific questions elicited a less rosy picture. Specifically, only about half (52%) of respondents in Kebbi/Sokoto believed that health facilities frequently had vaccines available, compared with 61 percent in Zamfara. Only 47 percent of respondents in Kebbi/Sokoto and 66 percent in Zamfara believed most women in their communities took children to facilities for routine vaccination. Approximately one in four respondents (26%) agreed that vaccines contain dangerous chemicals that could harm a child's health. Few respondents knew when a child should first be vaccinated and the number of vaccinations children should receive by their first birthdays. Taken together,

results suggest relatively low vaccine knowledge, common perceptions of frequent vaccine stockouts at health facilities, spousal opposition to vaccine uptake, and the persistence of vaccine myths across the study area.

Acute respiratory infections: While there were high rates of care-seeking for children under 2 years with cough, rapid breathing, or other chest-related problems, only 49 percent and 33 percent of those who sought care were taken to a formal medical source in Kebbi/Sokoto and Zamfara. Even fewer children with these respiratory symptoms were given antibiotics (41% and 26%). The most common reasons for choosing the source of care across study areas were nearby location (40%), provider trust (36%), family/friend recommendation (30%), and effective treatment (27%), which underscores the importance to women of convenient, trusted, and high-quality health care providers in their communities. The most important reasons for not seeking care were expense/cost (33%) and symptoms not perceived as severe or home care was provided (25%). Pediatric pneumonia knowledge is low across study areas. Only 28 percent and 37 percent of respondents reported rapid or difficult breathing as a symptom of pediatric pneumonia; 45 percent and 31 percent could not report any way to help prevent a child from getting pneumonia; and 62 percent and 56 percent could not report any effective medicine to treat pneumonia in Kebbi/Sokoto and Zamfara, respectively. These results point to the need to shift care-seeking from pharmacies to formal medical sources and to improve overall pneumonia knowledge in study areas.

Diarrhea: Few children with diarrhea were given both oral rehydration solutions (ORS) and zinc, although this proportion was higher in Zamfara (27%) than in Kebbi/Sokoto (13%). Among children with diarrhea, 36 percent and 56 percent were given ORS alone in Kebbi/Sokoto and Zamfara, respectively. While there were high rates of care-seeking for children under 2 years with diarrhea, 34 percent and 56 percent of these children were taken to a pharmacy instead of the formal medical sector. The most important reasons for choosing the source of care were provider trust (39%), nearby location (29%), and effective treatment (24%), which underscores the importance to women of convenient, trusted, and high-quality health care provision in their communities. The most important reasons for not seeking care were expense/cost (32%), fatalism ("It's up to God") (29%), and symptoms not perceived as severe or care was provided at home (25%). Approximately one in four respondents (24%) had never heard of zinc across study areas. Across study areas, 63 percent of respondents reported that ORS replaces lost water in a child with diarrhea, while 44 percent incorrectly noted that it stops diarrhea. These results point to the need to shift care-seeking from pharmacies to formal medical sources in the study areas.

Background

United States Agency for International Development (USAID)/Nigeria works to increase the utilization of quality primary health care services in targeted areas and population groups. Working with the Nigerian government, USAID/Nigeria aims to improve human resources for health, deliver high-impact services, and strengthen leadership, management, governance, and accountability in order to improve a wide set of health outcomes related to family planning, malaria, and maternal, newborn, and child health plus nutrition (MNCH+N) in Nigeria.[1]

Family planning in Nigeria

Modern contraceptive use in Nigeria has been historically low, without significant increases in the past two decades.[2] In the three States of this study (Kebbi, Sokoto, and Zamfara), these indicators tend to be lower than national estimates. The 2018 Nigeria Demographic and Health Survey (NDHS) reported a persistently high total fertility rate (TFR) of 5.3 births per woman, which has been attributed to high rates of teenage pregnancy (19%), early marriage, low modern contraceptive prevalence among married women (12%), and high unmet need for family planning.[3] A high fertility rate not only affects women and children's health and survival, but also their long-term education and employment prospects. Early childbearing is common among the poor; almost 60 percent of 20- to 24-year-olds living in the poorest households have had a child before the age of 18.[4]

Misconceptions and negative perceptions about family planning use, such as beliefs that contraceptives are dangerous to a woman's health or that they can harm a woman's womb,[5,6] are common. Opposition to use and wanting more children are also the predominant reasons women typically do not use modern contraceptives.[4] Spousal communication about contraceptive use is also low: The Nigerian Urban Reproductive Health Initiative (NURHI) reported that less than 20 percent of married women discussed family planning and fertility options with their spouses within the past six months.[6]

There is ample opportunity to effect change through social and behavior change (SBC) programming since few women have heard family planning SBC messaging. Nationwide, less than one-quarter of women and less than one-third of men aged 15 to 19 years reported having heard any messages regarding family planning in the past few months, although 60 percent of young women in Lagos had heard such messages.[3] In the six cities where NURHI conducted their endline survey, nearly two out of three women reported exposure to NURHI family planning television programs, and approximately three out of four had heard NURHI family planning radio programs.[6]

MNCH+N in Nigeria

Nigeria has one of the highest child mortality rates in the world.[7] NDHS 2018 reported that the under-5 mortality rate (U5MR) was estimated at 132 deaths per 1,000 live births in the five-year period before the survey, making Nigeria the largest contributor to child deaths in the African region.[8] Moreover, the highest U5MR was found in the northern States, including Sokoto, Kebbi, and Zamfara. The leading causes of child

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deaths include neonatal conditions, pneumonia, diarrhea, and malaria. Routine immunization rates remain low in Nigeria, with only approximately 50 percent of one-year-old children receiving measles and diphtheria-tetanus-pertussis (DPT3) vaccines in 2018, with far lower rates in the northwestern region.

Appropriate treatment for common causes of childhood morbidity and mortality is low. Only 23 percent of children under 5 years with diarrhea received the recommended treatment of ORS and zinc, while only 37 percent with symptoms of pneumonia were taken to a public sector provider for care. In terms of nutrition, one-third (37%) of children under 5 years were stunted in 2018. In addition, only 29 percent of infants were exclusively breastfed for the first six months of their life in 2018.[3]

According to NDHS 2018, the Nigerian maternal mortality ratio remains among the highest in the world, at 512 maternal deaths per 100,000 live births in the seven-year period before the 2018 survey.[3] The main causes of maternal deaths include hemorrhage, hypertension, and indirect causes. In 2018, 57 percent of women attended antenatal care (ANC) at least four times during their last pregnancies, and only 39 percent of births took place in a facility, while 43 percent were attended by a skilled health professional.

Malaria in Nigeria

Based on NDHS 2018, four Nigerian States are considered high-transmission zones, including Jigawa, Kebbi, Zamfara, and Sokoto. The latter three states are the setting for the Behavioral Sentinel Surveillance (BSS) study. In the north, transmission is year-round with seasonal peaks within a four-month window from June to September. *Plasmodium falciparum* is the principal malaria species, and *Anopheles (An.) gambiae* is the predominant mosquito vector.

While there has been great progress over the past decade in malaria control activities, the availability of key prevention tools and engagement in malaria preventive behaviors remains sub-optimal. Only 61 percent of households owned at least one long-lasting insecticidal net (LLIN), although this represents significant improvements, given that only 8 percent reported the same in NDHS 2008 and 50 percent in NDHS 2013. Approximately 58 percent of pregnant women reported sleeping under an LLIN in 2018, and only 17 percent received intermittent preventive treatment during pregnancy (IPTp) to prevent malaria.[9] Exposure to malaria messaging—generally through radio, community drama, printed materials, community and religious leaders, community support groups, and household visits—has led to high levels of knowledge of malaria interventions, but misconceptions about the causes of and ways to manage malaria still remain.[10]

Breakthrough ACTION in Nigeria

Breakthrough ACTION/Nigeria is the follow-up project to the Johns Hopkins Center for Communications Programs (JHU CCP) Health Communication Capacity Collaborative (HC3) project (2014–2018), which operated in three northern states (Bauchi, Ebonyi, and Sokoto). HC3 used a selection of SBC approaches to promote positive birth spacing and use of family planning methods by women of reproductive age. In the states supported by the President's Malaria Initiative (PMI), HC3 also used SBC approaches to support the government of Nigeria's goal of attaining 80 percent of the population practicing appropriate malaria prevention and management by 2020.

Under HC3, an ideational theory of change for birth spacing was posited (see next section for a full description of this theory).[11] Three primary SBC approaches were implemented across socio-ecological levels: 1) advocacy outreach to opinion leaders and community influencers at state and local government area (LGA) level, 2) direct engagement of community members through community dialogues and group meetings that included referrals for services, and 3) complementary SBC messaging through mass and mid-media.[12] The reported impact of HC3 efforts was positive normative change supporting birth spacing, acceptability of contraception to achieve optimal birth spacing, and sizable increases in the utilization of family planning methods reported by health facilities in program areas. For malaria, the combination of advocacy visits, community dialogues, and training of community health workers allowed HC3 to reach more than 8,000 opinion leaders in Zamfara State alone. Furthermore, in an analysis in four of the five states in which HC3 malaria SBC activities were undertaken, exposure to malaria SBC messaging was associated with an approximately two-fold increase in the percent of respondents who slept under an LLIN.

Breakthrough ACTION/Nigeria, led by JHU CCP, leverages and expands the HC3 activities in Nigeria (**Figure A-1**). In particular, advocacy outreach expanded from state to LGA levels, and integrated MNCH+N and malaria messaging using a life-stage approach is embedded with family planning SBC messaging and expanded to additional wards and LGAs in three targeted states (Bauchi, Sokoto, and Kebbi). The official launch of these expanded, integrated SBC activities in the targeted states occurred on 19 September 2019, in Abuja, although staged implementation rolled out between early and late September in LGAs/wards across the three states.

Table A-1 describes the key objectives of each life stage messaging within the Breakthrough ACTION/Nigeria approach used in those three states. This approach was based on extensive formative research conducted by Breakthrough ACTION/Nigeria to develop messaging materials for communities within these states. Based on this formative research, Breakthrough ACTION/Nigeria MNCH+N messaging has focused on gateway and/or multiplier effect behaviors, such as ANC and routine immunization. In addition, Breakthrough ACTION/Nigeria continues to support SBC messaging that promotes the use of malaria control interventions, including IPTp, LLINs, and seasonal malaria chemoprevention. Breakthrough ACTION/Nigeria also continues to implement SBC programming in support of USAID PMI malaria programming, service delivery partners, and commodities distribution.

FIGURE A-1. MAP OF BREAKTHROUGH ACTION/NIGERIA AREAS
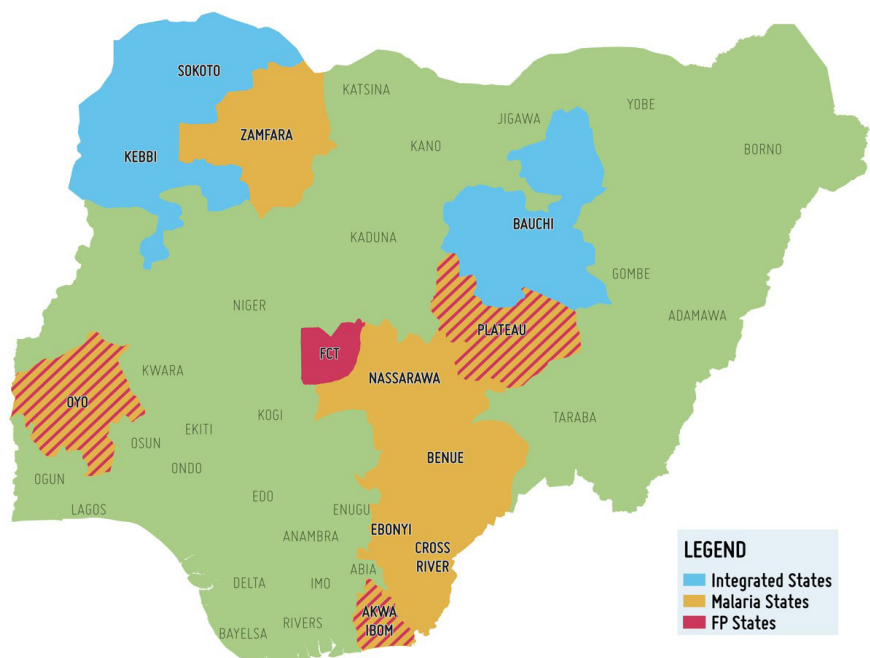
TABLE A-1. KEY OBJECTIVES OF LIFE STAGE APPROACH FOR INTEGRATED SBC PROGRAMMING AREAS

LIFE STAGE	OBJECTIVE
Life Stage 1 **SBC messaging targeted to women planning for pregnancy and those in early pregnancy**	Increase proportion of pregnant women who attend first ANC as soon as they become aware of pregnancy and at least four times during pregnancy and up to eight times
	Increase proportion of pregnant women taking three or more doses of IPTp as prescribed by health worker during ANC
	Increase proportion of pregnant women who adhere to nutrition counseling to improve dietary intake during pregnancy
	Increase proportion of pregnant women who sleep inside an insecticide-treated net
	Increase proportion of pregnant women/partners who develop a birth plan to increase intention to deliver at a health facility
	Increase proportion of pregnant women who deliver at a health facility and/or with a skilled birth attendant
	Increase proportion of pregnant women/partners who intend to use a modern contraceptive to space their children after pregnancy
Life Stage 2 **SBC messaging targeted to women in late pregnancy and those with a newborn (first 4 weeks of life)**	Increase proportion of pregnant women and their partners who develop a birth plan to increase intention to deliver at a health facility
	Increase proportion of new mothers placing their baby on their abdomen for warmth immediately after birth
	Increase proportion of new mothers who start breastfeeding within 30 minutes of giving birth
	Increase proportion of new mothers who use chlorhexidine to cleanse their baby's umbilical cord for seven days
	Increase proportion of mothers who complete all immunizations scheduled at birth per Nigerian policy
	Increase proportion of new mothers who use misoprostol to stop bleeding for post-partum hemorrhage
	Increase proportion of new mothers who adhere to nutrition counseling to improve dietary intake post-partum
	Increase proportion of new mothers and babies who sleep inside an insecticide-treated net
	Increase proportion of new mothers who attend postnatal care check-ups
	Increase proportion of pregnant women/partners using modern contraception to space births after pregnancy
Life Stage 3 **SBC messaging targeted to women with young children under 5 years**	Increase proportion of children between 12 and 23 months who are fully immunized per Nigerian policy
	Increase proportion of children under 6 months who are exclusively breastfed
	Increase proportion of children six months to 2 years whose caregivers follow recommended infant and young child feeding practices
	Increase proportion of children under 5 years who sleep inside an insecticide-treated net
	Increase proportion of children under 5 years with fever promptly taken for care and tested for malaria before treatment
	Increase proportion of malaria-positive cases that take a full course of ACT
	Increase proportion of children under 5 years with diarrhea promptly taken for care and given appropriate treatment
	Increase proportion of children between 12 and 23 months who are fully immunized per Nigerian policy
Life Stage 3 **SBC messaging targeted to male partners**	Increase proportion of men and women who use modern contraceptive methods
	Increase proportion of women who receive nutrition counseling to improve dietary intake
	Increase proportion of women, men, youth, and children who sleep inside an insecticide-treated net
	Increase proportion of women who intend to attend ANC early in their next pregnancy

Theory of Strategic Communication and Behavior Change

The BSS questionnaire was largely informed by Kincaid's Theory of Strategic Communication and Behavior Change (**Figure A-2**).[12] In this model, ideations consist of three main domains—cognitive, emotional, and social. The two defining elements of attitude are beliefs and values, which indicate the perception of either the positive or negative consequence of a health behavior. Subjective norms involve an individual's thoughts around what other individuals within their communities are doing or what they think they are expected by others to do. Self-image refers to an individual's belief about themselves in relation to a behavior, and self-efficacy measures how confident a person feels to perform a certain behavior. The social component involves interpersonal processes aimed at persuasion to adopt a behavior.

Furthermore, in this model, communication is considered an external factor impacting other variables in the model and shows how and why it impacts both intention and behavior. Communication has an indirect impact on behavior through its effect on skills and knowledge,

ideations, and environmental support and constraints. Thus, the components in this model can be described as the "cognitive, emotional, and social outcomes of communication and determinants of intention and behavior." Because these components of ideation are regarded as intermediate outcome variables impacting intention and behavior, the Kincaid model represents a causal chain of the determinants of behavior where change is interdependent, simultaneous, and interactive.

The Breakthrough ACTION Integrated Health SBC Strategy (January 2019) was informed by this theory of change model, which was used to develop the SBC multi-level approach for influencing sociocultural and environmental determinants, as well as relationships and structural factors that affect MNCH+N, malaria, and family planning behaviors. Within these domains, Breakthrough ACTION's programming expicitly recognizes the centrality of community, household, and service delivery systems to effect desired change given the strong influence of social norms on behaviors and the critical role of health providers. Breakthrough ACTION also places a strong emphasis on the supportive environment as the foundational support to behavior change. Ideational factors are central to Breakthrough ACTION's

FIGURE A-2. THEORY OF STRATEGIC COMMUNICATION AND BEHAVIOR CHANGE
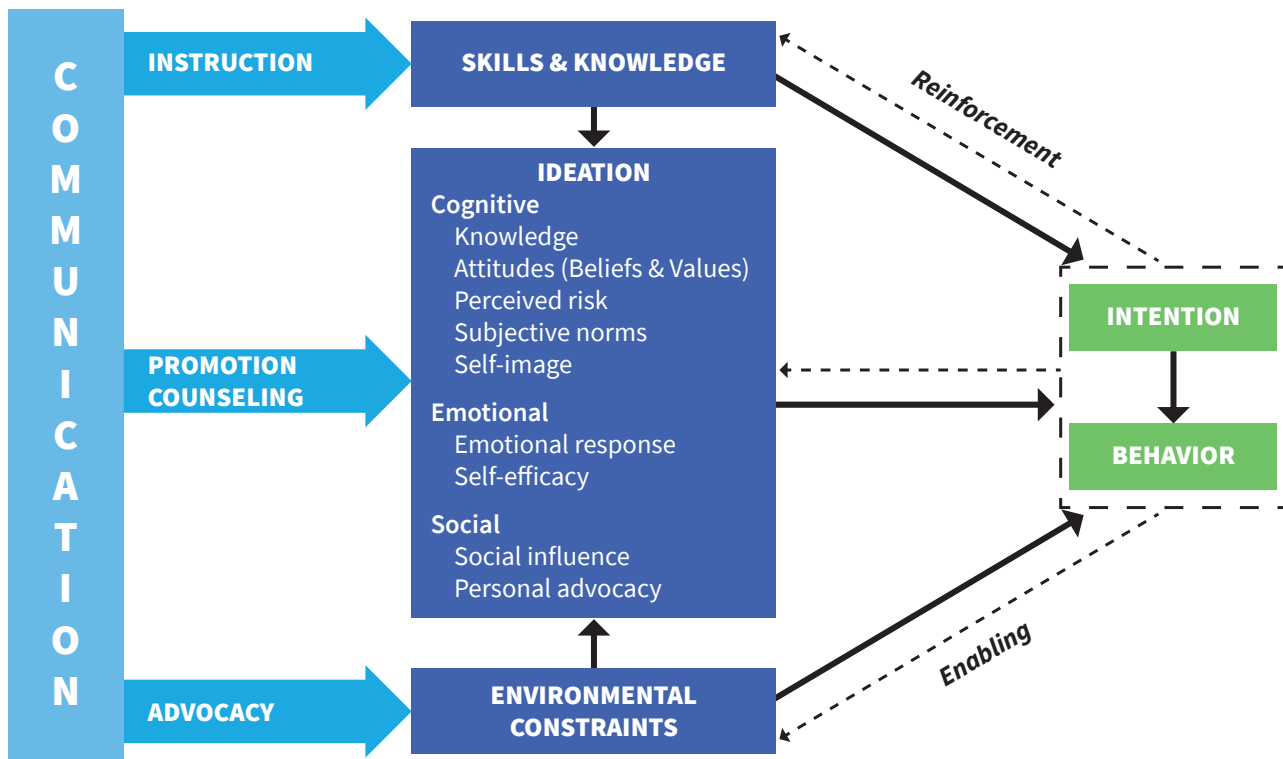
Kincaid DL, Delate R, Storey JD & Figueroa ME. (2013). Closing the gaps in practice and in theory: evaluation of the Scrutinize HIV Campaign in South Africa. In Rice R & Atkin C. (eds.) *Public Communication Campaigns*, 4th edition. Newbury Park, CA: Sage, pp. 305–319.

SBC programming to help guide priorities and messaging, including knowledge, beliefs, values, risk perceptions, self-efficacy, social norms, perceived social support from key influencers, and spousal communication, among others. The more positive ideational factors held by a person about a given behavior, the more likely they are to engage in that behavior. Breakthrough ACTION has prioritized messages and activities to shift specific, actionable ideational factors for low prevalence behaviors, such as spousal communication about contraceptive use, as detailed in their strategy document.

Integrated versus health-area-specific SBC messaging

There has been recent and growing interest in and implementation of integrated, multi-component SBC programming. These programs often operate at multiple levels of the socio-ecosystem (individual, household, and community) and span multiple health components (e.g., family planning, MNCH+N, and malaria), or may even address cross-sectoral outcomes (e.g., agriculture, health, and education). This shift has been partly motivated by the desire to meet the complex and multi-faceted needs of target populations, to effectively address underlying common causes and determinants of closely related health outcomes, and to increase cost-efficiencies. Yet there have been few systematic evaluations of integrated SBC programs and limited robust evidence on the effectiveness of integrated SBC programs in improving target health and development outcomes.[13]

Study rationale

The partnership of Breakthrough ACTION/Nigeria and Breakthrough RESEARCH/Nigeria presents a unique opportunity to dovetail rigorous research design with state-of-the-art SBC programming to identify whether or not integrated SBC programming is more effective than vertical programming in promoting select healthy family behaviors. The study focused on pregnant women and women within the 1,000-day window of opportunity, and is closely tied to the primary Breakthrough ACTION/Nigeria objective of improving key behaviors and ideations related to MNCH+N, malaria, and family planning among this target group in order to improve the lives and well-being of women and families.

Study objectives

This research exploited Breakthrough ACTION/Nigeria's variation in integrated programming in Nigeria to assess the effectiveness of integrated SBC approaches to improve healthy behaviors and ideations across the Breakthrough ACTION/Nigeria project life cycle. To date, there has been little research on best practices in SBC integration methods to promote a wide range of healthy family behaviors and outcomes. Key study objectives include:

- Objective 1: Assess the effectiveness of integrated SBC programming relative to malaria-only SBC programming focusing on pregnant women and women with a child under 2 years of age.

- Objective 2: Collect and report on a selection of ideational and priority behavioral indicators across MNCH+N, malaria, and family planning to inform Breakthrough ACTION/Nigeria implementation and scale-up.

Methodology

Tulane University and Population Council, in collaboration with the Center for Research, Evaluation Resources, and Development (CRERD), conducted the BSS baseline survey in September 2019. **Table A-2** provides an overview of the research activities, methods, and study instruments with a detailed discussion of these methods in the following sub-sections.

Study location

Three states were identified, in collaboration with USAID/Nigeria and JHU CCP, for the study setting: Kebbi and Sokoto States targeted by Breakthrough ACTION/Nigeria for integrated SBC programming and Zamfara State targeted by Breakthrough ACTION/Nigeria for malaria-only SBC programming. These three states, located in northwestern Nigeria, are contiguous and share a border with

Niger Republic, while Kebbi also borders Benin to the west. The dominant religion and ethnicity in these states are Islam and Hausa, respectively. The total populations are 5.4 million (Sokoto), 3.5 million (Kebbi), and 4.1 million (Zamfara). The northwestern region has among the highest poverty rates and poorest health outcomes in Nigeria, including under-5 mortality rates of 119 (Sokoto), 174 (Kebbi), and 210 (Zamfara) per 1,000 live births. Additionally, the maternal mortality ratio (MMR) in Nigeria was estimated at 917 maternal deaths per 100,000 live births in 2017, and is likely much higher in the northwest region.[14–16] Agriculture is the main source of income for people living in this region.[13,17–21]

TABLE A-2. STUDY OVERVIEW

Study design	A quasi-experimental and dose-response study. Women in the 1,000-day window in Breakthrough ACTION/Nigeria integrated areas (Sokoto, Kebbi) will be compared with women in Breakthrough ACTION/Nigeria vertical areas (Zamfara). Furthermore, the study will include dose-response design to compare women in high-dose integrated messaging areas (e.g., additional household visits) with women in standard-dose messaging areas. Community screening will be used to identify pregnant women to form a cohort to be followed over the life of the Breakthrough ACTION/Nigeria project. Women within the 1,000-day window will also be identified and interviewed cross-sectionally over the life of the Breakthrough ACTION/Nigeria project.
Study location	Breakthrough ACTION/Nigeria integrated implementation LGAs/wards in Kebbi and Sokoto States; LGA/wards with vertical malaria-only Breakthrough ACTION/Nigeria implementation in Zamfara State
Study population	Pregnant women and women with a child under 2 years old living within Breakthrough ACTION/Nigeria programming wards in Kebbi, Sokoto, and Zamfara States. For the purpose of this report, the study population is referred to as respondents.
Study period	June 2019 to March 2022
Sample size	6,034 respondents
Annex materials	Annex 1-a: Adult consent form Annex 1-b: Guardian consent form Annex 1-c: Adolescent consent form Annex 1-d: Adult caregiver consent form for orphaned and vulnerable children (OVC) interview Annex 2: Community screening instrument Annex 3-a: Household questionnaire Annex 3-b: Female questionnaire

Study design

The BSS survey targets pregnant women and women with a child under 2 years living in Breakthrough ACTION/Nigeria programming areas targeted for integrated SBC messaging (Kebbi/Sokoto) and targeted for malaria-only SBC messaging (Zamfara). Since Breakthrough ACTION/Nigeria covers only parts of these states, the data are representative of these populations within Breakthrough ACTION/Nigeria programming areas but not across the states at large. The BSS aims to measure changes in behaviors and ideations across family planning, malaria, and MNCH+N among this study population at baseline, midline, and endline periods of the Breakthrough ACTION/Nigeria project cycle.

The BSS will include both quasi-experimental and dose-response study design components. For the quasi-experimental design, ideational factors, behaviors, and outcomes among women in the 1,000-day window of opportunity in the integrated programming states of Kebbi and Sokoto will be measured and compared across time with those indicators for similar women in Zamfara State, which has been targeted for malaria-only SBC messaging. For the dose-response design, and to measure the effect of more intensive integrated programming in terms of household visits, wards within a subsample of Breakthrough ACTION/Nigeria program areas will be purposefully chosen with Breakthrough ACTION/Nigeria's assistance to receive additional programming (e.g., additional household visits). In previous studies, the effectiveness of SBC interventions has been shown to hinge upon the intensity of interventions.[22] **Table A-3** highlights the three study comparison arms in terms of household visit activities.

Study population

The study population includes currently pregnant women aged 15 to 49 years and women aged 15 to 49 years with a child under 2 years who are living in Breakthrough ACTION/Nigeria program areas targeted for integrated SBC messaging (Kebbi/Sokoto) and for malaria-only SBC messaging (Zamfara). The study was powered to assess Breakthrough ACTION/Nigeria SBC program impact for these two population groups, as described in the next section.

Sampling frame

The sampling frame for the study population was generated through community screening conducted in 108 clusters/wards across the three states (36 wards/clusters per state), which were selected using digital maps and grid sampling methodology (Figure A-3). Within each sampled cluster/ward, the community screening tool was used to identify all pregnant women and a random selection of women with a child under 2 years for inclusion in the BSS baseline survey using the following criteria:

1. The household must include at least one currently pregnant woman or at least one woman with a child under age 2 based on the community screening instrument.

TABLE A-3. STUDY COMPARISON ARMS

Standard-dose integrated SBC program	**36 randomly selected wards in Kebbi/Sokoto:** • Women currently in one life stage receive one household visit (with one life stage dialogue) • Women in two life stages receive two household visits (with two life stage dialogues)
High-dose integrated SBC program	**36 randomly selected wards in Kebbi/Sokoto:** • Women currently in one life stage receive two household visits (with one life stage dialogue and a second visit as a follow-up within seven days to reinforce key messages from the previous life stage dialogue and to follow-up on referrals) • Women in two life stages receive three household visits (with two different life stage dialogues given within seven days of each other, and a third visit as a follow-up within 10 to 14 days to reinforce key messages from the previous two life stage dialogues and for referral follow-up)
Malaria-only SBC program	**All wards in Zamfara:** • Women receive one household visit with standard malaria-only dialogue

FIGURE A-3. DISTRIBUTION OF BSS SAMPLING WARDS IN KEBBI, SOKOTO, AND ZAMFARA STATES
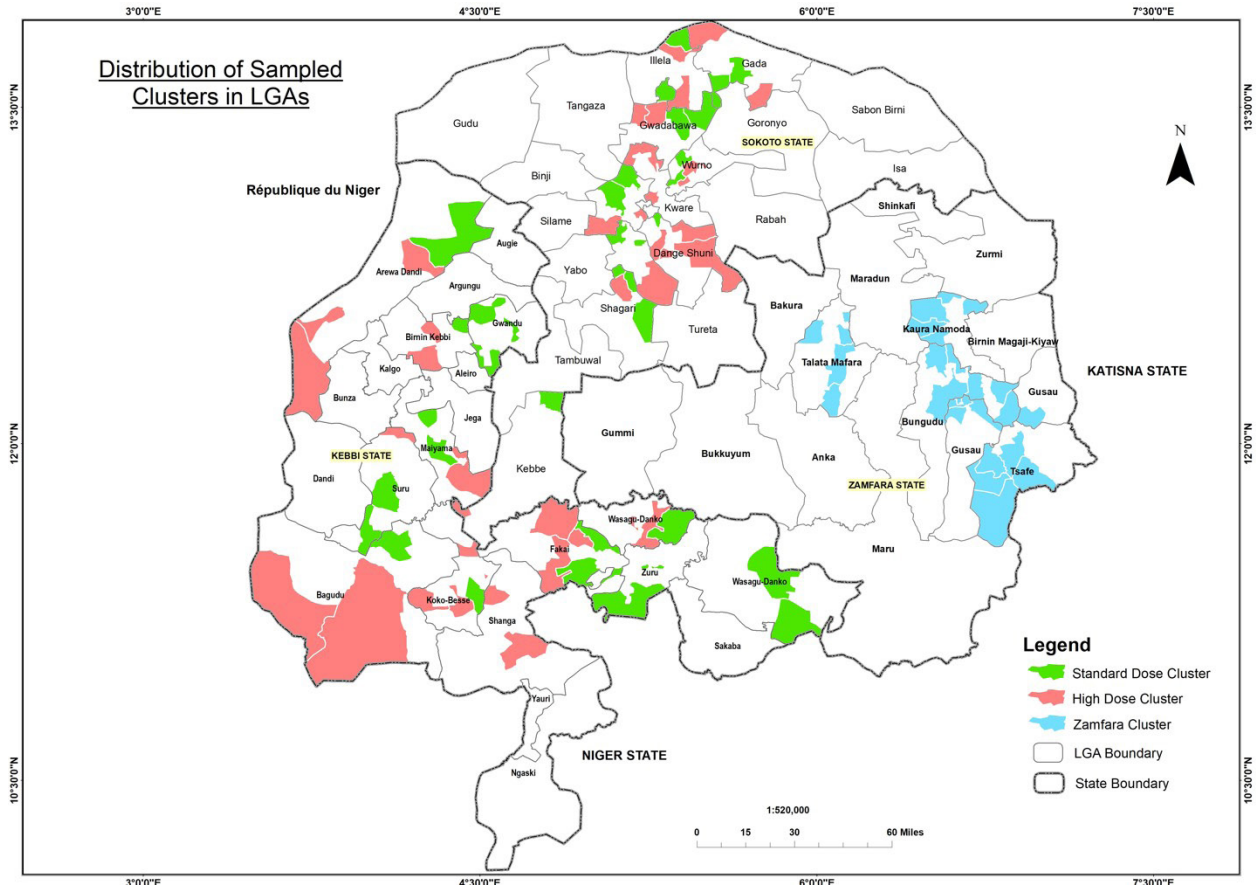
2. The woman must be between the ages of 15 and 49 years.

3. The woman must be willing and able to provide informed consent to participate.

Importantly, since only a quarter of women in the northern states attend ANC in the formal health sector, a community screening approach was necessary to prevent the omission of pregnant women who do not use formal sector care. Recruiting only women who present for ANC at health facilities would not reach all women targeted by Breakthrough ACTION/Nigeria programming and would introduce biases for understanding program effectiveness.

Sample size estimation

The sample size was estimated based on the quasi-experimental study design that contains three comparison arms: (1) high-dose intervention in integrated SBC areas, (2) standard-dose intervention in integrated SBC areas, and (3) malaria-only SBC programming. The sample was

chosen to ensure the detection of expected changes in priority behavioral outcomes across integrated and malaria-only SBC areas in the quasi-experimental design, to allow for assessment of the impact of variations in Breakthrough ACTION/Nigeria programming, and to account for potential attrition from the BSS cohort. To reduce attrition, pregnant women selected for the BSS cohort will be tracked across time by collecting detailed contact information, including name, address, GPS coordinates of dwelling, and phone numbers.

To determine the required sample size for the baseline survey, a Stata 15.0 sample size routine for cluster sampling was used.23 The parameters specified for the sample size estimation included a power criterion of 0.80, alpha coefficient of 0.05, and intra-cluster correlations that varied by key outcomes as shown below. **Table A-4** presents the minimal detectable differences for priority outcomes. Based on this estimation, a sample size of approximately 3,000 pregnant women and 3,000 women with a child under 2 years were targeted for inclusion in the baseline survey, with similar sample sizes expected in future BSS rounds.

TABLE A-4. PRIORITY INDICATORS AND MINIMAL DETECTABLE DIFFERENCES

INDICATOR	PREVALENCE	ICC	MINIMAL DETECTABLE DIFFERENCE
ANC four or more	17.5%	0.29473	12–16 pp (a)
Facility delivery	6.0%	0.15223	5–9 pp (b)
Pregnant women slept under LLINs	17.7%	0.30883	12–17 pp (c)
Measles vaccination (12–23 months)	5.2%	0.1234	4–8 pp (d)
DPT3 vaccination (12–23 months)	3.9%	0.07575	3–6 pp (e)
Modern contraceptive use	<1.0%	0.03894	pp (f)

Notes: (a) clustersampsi, binomial detectable difference p1(0.1749) k(36) m(25) rho(0.28064); (b) clustersampsi, binomial detectable difference p1(0.0599) k(36) m(25) rho(0.15223); (c) clustersampsi, binomial detectable difference p1(0.1768) k(36) m(25) rho(0.30883); (d) clustersampsi, binomial detectable difference p1(0.052) k(36) m(25) rho(0.12304); (e) clustersampsi, binomial detectable difference p1(.0389) k(36) m(25) rho(0.07575)

Sampling strategy

We used the following sampling strategy to obtain the estimated sample size. We selected all pregnant women in a cluster based on a community screening tool. If the average cluster size is 150 households, this would yield approximately 25 pregnant women per cluster. With 36 clusters per group, this yields 900 pregnant women per group. The total sample size would be 2,700 pregnant women, or 3,000 to account for 10 percent attrition. We further estimated the need to select 25 women per cluster with a child under 2 years. Again, with 36 clusters per group, this yields 900 women with a child under 2 per group, or 2,700. As before, it was planned to sample an additional 300 women with a child under 2 years to allow for 10 percent attrition.

Data collection and questionnaires

All eligible women were asked to respond to an interviewer-directed BSS questionnaire. Development of the questionnaire was done through a collaborative process involving relevant stakeholders, including: Breakthrough ACTION/Nigeria, JHU CCP, USAID Headquarters and Nigeria Mission, and PMI. The household questionnaire collected information on usual resident household members, bed net ownership and use, and household assets and characteristics. The female questionnaire asked all respondents about their demographics, reproductive history, contraceptive use, media exposure, gender norms, and ideations related to family planning, malaria, and MNCH+N. All pregnant women were specifically asked about current pregnancy behaviors, including ANC, malaria prevention in pregnancy, and nutritional practices. All women with a child under 2 years were specifically asked about behaviors for their last-born child within the past two years, including antenatal and delivery care, newborn care, breastfeeding, routine vaccination, malaria prevention and treatment, child and maternal nutrition, and childhood illness care-seeking and treatment, including for pneumonia symptoms.

Training, pre-testing and fieldwork

Fieldwork was conducted simultaneously across the three states over a four-week period from 4 September 2019 to 7 October 2019. All 168 fieldworkers (144 female interviewers and 24 supervisors) were trained together in Sokoto during a one-week period from 29 August 2019 to 2 September 2019. A training manual was produced for each fieldworker to facilitate training sessions on the study objectives and survey instruments, ethical considerations, and fieldwork procedures, with participation in a questionnaire pilot exercise. The questionnaire was translated into Hausa and pre-tested to confirm translations and skip patterns, and to assess question appropriateness and sequencing.

Fieldwork supervision and teams

CRERD supervised and managed the BSS baseline survey implementation, as described in these sections. The fieldwork team in each state consisted of a state coordinator who oversaw all the activities in the state and reported to the CRERD management team, as well as 168 fieldworkers (144 female interviewers and 24 supervisors). There were data quality assurance personnel in each state who monitored the data for each upload and who flagged any issues of concern immediately for discussion and resolution. There were five supervisors in each state, with a minimum of five and maximum of eight data collectors to one supervisor in line with the sample distribution. The management team traveled around

the states to monitor the fieldwork as it was being conducted.

Data entry and management

Survey questions were administered face-to-face by trained interviewers who entered responses into a secured handheld device (tablet). The handheld device was password-protected and the password was provided only to designated staff. Data from the handheld devices were removed from the device when uploaded to the central database. The completed data files on the handheld devices were encrypted after being completed. They were transmitted to the centralized storage in their encrypted format. Skips and data-entry checks were in place during the interview to prevent illogical data values. Survey data were uniquely identified through a numeric ID and were stored in central databases on password-protected computers that were transmitted regularly to the study investigators. All data were kept confidential and stored in a safe and secure place at Tulane and CRERD project offices.

Data quality assurance

CRERD selected the field teams based on proven integrity in data collection during a previous performance. More than 90 percent of the field team participated in previous CRERD survey activities or with their close collaborators. The following quality assurance checks were also conducted during data collection:

- Use of spatial data to ensure that the interviewer went to the assigned location for the interview. This was done based on geolocated household positioning and Google Earth maps, which show key visual features to determine whether the location of the interview was correct.

- The use of time stamps in the data (at the beginning and end of each interview) provided two important pieces of information to evaluate data quality: interview start time and duration. A typical interview should occur between 7:30am and 8pm. Any interview outside these times was flagged as suspicious. If the interview was too long or too short (and if this happened in consecutive or frequent interviews), the supervisor or interviewer was asked to explain.

- Interviewer performance dashboard allowed the CRERD management team to monitor interviewer errors, time taken for interviews, and the number of interviews completed. All of the information consolidated on a dashboard was used to monitor the progress of each interviewer. The dashboard helped the survey management team to check on field workers' productivity. It was also a tool for identifying top-performing individuals and teams for recognition.

- Field inspection allowed CRERD management and field supervisory teams to monitor all aspects of fieldwork activities. These teams inspected interviews to ensure the respondents had enough privacy, consent was obtained, and questions were clearly asked. They also ensured that interviewers behaved in a culturally sensitive way during fieldwork activities.

Uploaded data files were also reviewed for completeness, clarity, and consistency of reporting:

- **Completeness**: All data files were checked to ensure that all planned interviews were conducted. This was done by matching the number of interviews documented in the field report with what was found in the uploaded files. If there were any discrepancies, this was flagged by the data auditors, and field supervisors were asked to explain the difference and resolve the problem. We checked that the same interview was not uploaded twice, and, if duplicates occurred, the interviewer was asked to identify the correct version for upload. We also checked that all variables were properly captured, and we performed a skip analysis to ensure no incorrect skip patterns occurred within the data.

- **Clarity**: We ensured that the data variables followed the questionnaire sequence. All value and variable labels were clearly worded in a concise manner in the final dataset for ease of analysis.

- **Consistency**: To ensure that the data files made logical sense, the following checks were conducted:

  - **Review of outliers**: Using central tendency, all continuous variables were evaluated for outliers. Numbers that seemed too low or too high were communicated to the teams. These were most often typographical errors (e.g., double digits instead of a single digit).

- **Population pyramid**: We looked at the population pyramids across all three states to determine if the age and sex distributions we obtained from the household roster were realistic.

- Average household size: Since we knew the average household size of each state, we were able to flag fieldworkers who returned household rosters with too few household members. In these cases, field supervisors were asked to verify data collected and to correct any issues if found.

- Skip pattern analysis: We checked whether the skips were enforced before and after data cleaning.

Response rates

Tables A-5 and A-6 present the response rates across states for pregnant women and women with a child under 2 years, respectively.

Study sample

Table A-7 presents the final study sample in the BSS baseline survey by Breakthrough ACTION/Nigeria program areas with either integrated (Kebbi/Sokoto) or malaria-only (Zamfara) SBC programming.

Ethical approval

Ethical approval for this study was obtained from the National Health Research Ethics Committee (NHREC) in Nigeria (NHREC/01/01/2007-02/09/2019) and the Tulane University Institutional Review Board (IRB) in Louisiana, USA (2019-1047). Written informed consent to participate in the survey was obtained from all willing participants for the household and female question-naires. Each participant signed or marked her thumbprint on the consent form to signify willingness to participate..

TABLE A-7. STUDY SAMPLE

| SAMPLE | BREAKTHROUGH ACTION PROGRAM AREA | | |
	KEBBI/ SOKOTO	ZAMFARA	TOTAL
N (%) households	4,022 (66.7%)	2,012 (33.3%)	6,034 (100.0%)
N (%) currently pregnant women aged 15–49 years	2,023 (66.9%)	1,003 (33.2%)	3,026 (100.0%)
N (%) women 15 to 49 years old with a child under 2 years, or ob-servations of last-born children in the past 2 years	1,971 (64.8%)	1,069 (35.2%)	3,040 (100.0%)

TABLE A-5. RESPONSE RATES FOR PREGNANT WOMEN BY STATE

| STATE | CLUSTERS SELECTED | TOTAL HOUSEHOLDS SCREENED | PREGNANT WOMEN | | | | |
			ELIGIBLE HOUSEHOLDS	ELIGIBLE WOMEN	SELECTED	INTERVIEWED	RESPONSE RATE
Kebbi	35	6,347	1,279	1,336	980	980	100%
Sokoto	37	6,987	1,443	1,527	1,036	1,035	99%
Zamfara	36	6,931	1,722	1,833	1,008	1,007	99%
All	**108**	**20,265**	**4,444**	**4,696**	**3,024**	**3,022**	**99%**

TABLE A-6. RESPONSE RATES FOR WOMEN WITH A CHILD UNDER 2 YEARS BY STATE

| STATE | CLUSTERS SELECTED | TOTAL HOUSEHOLDS SCREENED | WOMEN WITH A CHILD UNDER 2 YEARS | | | | |
			ELIGIBLE HOUSEHOLDS	ELIGIBLE WOMEN	SELECTED	INTERVIEWED	RESPONSE RATE
Kebbi	35	6,347	2,510	3,288	980	980	100%
Sokoto	37	6,987	3,249	4,018	1,036	1,032	99%
Zamfara	36	6,931	2,989	4,112	1,008	1,008	100%
All	**108**	**20,265**	**8,748**	**11,418**	**3,024**	**3,020**	**99%**

Data analysis and results dissemination

The primary statistical comparison in the quasi-experimental study is between respondents who have been exposed to integrated SBC programming and those who have been exposed to malaria-only SBC programming. Final results, as presented in this baseline report, evaluate whether the characteristics of the samples across the study arms are statistically equivalent. All point estimates were tabulated using weights to account for unequal probabilities of selection due to over- and under-sampling. Standard error estimation accounted for data clustering in the complex survey design. All analyses were conducted in Stata 16 (STATA Corp, College Station, TX).

Information generated from the study will be shared with research communities through well-established relationships with Obafemi Awolowo University, Ile-Ife (where our research partner CRERD is housed), and other academic institutions in Nigeria and internationally. We will also present the study findings to key stakeholders including Breakthrough ACTION/Nigeria and other USAID implementing partners, governmental decision-makers, and other stakeholders. Finally, results will feed into regional presentations where applicable, and we anticipate that the rigor of this study design will evoke substantial interest in these findings from the global SBC community.

Comparison between NDHS and BSS results

Table A-8 summarizes some issues to keep in mind when comparing results from the NDHS 2018 and the BSS baseline survey. For most BSS and NDHS indicators, confidence intervals around estimates overlap, indicating no real difference in results.

TABLE A-8. NOTES ON COMPARING NDHS AND BSS BASELINE RESULTS

	BSS BASELINE	NDHS 2018	COMMENTS
Survey timing	September 2019	August–December 2018	Differences in some results may be due to programmatic activities at the time of survey collection that lead to rapid increases in coverage estimates that then could wane in subsequent months or years, e.g., LLIN distribution campaigns
Representation	Representative of wards targeted by Breakthrough ACTION for integrated SBC (Kebbi/Sokoto) and malaria-only SBC (Zamfara) programming	Representative at state level (Kebbi, Sokoto, Zamfara)	Differences in some results may be due to differences in the representativeness of BSS and NDHS estimates. Breakthrough ACTION/Nigeria works only in a subset of state LGAs.
Sample population	Women 15 to 49 years who are currently pregnant or have a child under 2 years	Women 15 to 49 years	Differences in some results may be due to different target populations from which the samples were drawn. Women 15 to 49 years old who are currently pregnant or have a child under 2 years may be different in systematic ways than the overall women 15- to 49-year-old population that is sampled for NDHS.
Confidence intervals (CI)	All point estimates have associated confidence intervals within which the "true" population value lies (if samples are repeatedly drawn from a target population, the true population value will lie within the 95% CI range in 95 of 100 times of repeated sampling). For most BSS and NDHS indicators, CIs overlap, indicating there is no real difference between our estimates.		
Indicator definitions	Most indicators in BSS and NDHS are measured using the same methods and definitions. For some indicators, there are differences in indicator definitions based on how data were collected that could lead to differences in results (e.g., exclusive breastfeeding)		

1 Demographics

Key findings

Study sample: The BSS included 6,034 households, with 4,022 (67%) in Kebbi/Sokoto and 2,012 (33%) in Zamfara. There were 3,026 currently pregnant women 15 to 49 years old, including 2,023 (67%) in Kebbi/Sokoto and 1,003 (33%) in Zamfara. There were 3,040 women 15 to 49 years old with a child under 2 years, or observations of last-born children in the past two years, including 1,971 (65%) in Kebbi/Sokoto and 1,069 (35%) in Zamfara.

Household characteristics: Among sampled households, a statistically significant higher percentage had an improved drinking water source in Zamfara (75%) than in Kebbi/Sokoto (34%). Zamfara also had a statistically significant higher percentage of households with improved sanitation facilities (48%) compared with Kebbi/Sokoto (27%). There were important differences in household wealth and assets across Kebbi/Sokoto and Zamfara. In Kebbi/Sokoto, 29 percent of households were in the poorest wealth quintile, compared with 10 percent in Zamfara. Similarly, 17 percent of households were in the wealthiest quintile in Kebbi/Sokoto, compared with 28 percent in Zamfara.

Radio ownership was statistically significant higher in Zamfara (41%) than in Kebbi/Sokoto (28%), which has important implications for Breakthrough ACTION/Nigeria radio programming going forward as a means to disseminate health messages to populations. As discussed in Chapter 9 (Media Exposure), radio listening was the most common form of media exposure among respondents compared to television, newspapers, internet, or other media forms. Mobile phone ownership was similarly higher in Zamfara (57%) and Kebbi/Sokoto (48%), which again may have implications for Breakthrough ACTION/Nigeria programming of health messages. About three-quarters of households across study areas were reported to lie within 30 minutes' travel time of a school, health center, road, or market. Less than half of households (46%) were reportedly within 30 minutes' travel time of a general hospital, which has important implications for health services utilization promoted by Breakthrough ACTION/Nigeria SBC activities.

Respondent characteristics: There were no real differences in respondents' ages across Kebbi/Sokoto and Zamfara, with more than half of respondents (55%) aged 20 to 29 years across study areas. Nearly all respondents (98%) across study areas were married, and most respondents (73%) never attended school or received Islamic education (11%), with a slightly higher proportion with no education in Kebbi/Sokoto (78%) than in Zamfara (69%). As a result, there was also high illiteracy among respondents across all areas (79%). Nearly all respondents were Muslim (>99%), and Hausa was the main ethnic group (88%) across study areas. In terms of spouse characteristics, more than half (55%) of spouses never attended school, with higher proportions in Kebbi/Sokoto (63%) than in Zamfara (51%). Spouses tended to be older, with nearly half (45%) reported to be 40 years or older across study areas. Across study areas, 66 percent of spouses had no other wife, while 24 percent had two other wives.

TABLE 1.1.1. STUDY SAMPLE

Percentage of households, pregnant women and women 15 to 49 years with a child under 2 years in the BSS baseline study sample, September–October 2019

SAMPLE	BREAKTHROUGH ACTION/NIGERIA PROGRAM AREA			
	KEBBI	SOKOTO	ZAMFARA	TOTAL
N (%) households	1,960 (32.5%)	2,062 (34.2%)	2,012 (33.3%)	6,034 (100.0%)
N (%) currently pregnant women 15 to 49 years	984 (32.5%)	1,040 (34.3%)	1,004 (33.2%)	3,028 (100.0%)
N (%) women 15 to 49 years with a child under 2 years (or observations of last-born children in the past 2 years)	893 (29.4%)	1,078 (35.4%)	1,069 (35.2%)	3,040 (100.0%)

TABLE 1.1.2. HOUSEHOLD CHARACTERISTICS

Percentage of households by characteristics, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)		CHI² VALUE
	%	%	%	%	N	
Main source of drinking water						
Improved source	44.9	23.6	74.6	33.5	3,035	1122.209
Unimproved source	55.1	76.4	25.4	66.5	2,997	17.663
Total	100.0	100.0	100.0	100.0	6,032	***
N	1,960	2,061	2,011	4,021		
Main sanitation facility						
Improved	26.1	27.0	48.0	26.6	2,340	280.414
Unimproved	73.9	73.0	52.0	73.4	3,689	5.444
Total	100.0	100.0	100.0	100.0	6,029	**
N	1,959	2,061	2,009	4,020		
Main flooring material						
Earth/sand	67.7	67.0	55.0	67.3	3,490	170.903
Ceramic tiles	2.6	3.3	6.0	3.0	297	2.190
Cement	29.6	28.3	38.4	28.9	2,188	.
Parquet/Polished wood	0.1	0.1	0.5	0.1	12	
Other	0.0	1.5	0.1	0.8	47	
Total	100.0	100.0	100.0	100.0	6,034	
N	1,960	2,062	2,012	4,022		
Main roofing material						
Thatched/Palm leaf	16.4	23.0	11.1	20.0	978	134.733
Metal/Iron sheets	83.5	74.8	87.5	78.8	4,986	1.733
Calamine/Cement fiber	0.1	1.3	0.8	0.8	42	.
Other	0.0	0.9	0.6	0.5	28	
Total	100.0	100.0	100.0	100.0	6,034	
N	1,960	2,062	2,012	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates $p<0.001$, ** indicates $p<0.05$ and * indicates $p<.01$ for the chi² statistic comparing integrated versus malaria-only study areas.

Improved drinking water sources include piped supplies and non-piped supplies (boreholes/tube wells, protected wells and springs, rainwater, packaged water, and delivered water); **unimproved drinking water sources** include unprotected wells and springs.

Improved sanitation facilities include network sanitation and on-site sanitation (flush or pour flush toilets or latrines connected to septic tanks or pits, ventilated improved pit latrines, pit latrines with slabs, composting toilets including twin pit latrines, and container-based systems; **unimproved sanitation facilities** include on-site sanitation (pit latrines without slabs, hanging latrines, bucket latrines).

TABLE 1.1.3. HOUSEHOLD WEALTH AND ASSETS

Percentage of households by wealth index quintile and asset ownership, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
Household wealth index						
Lowest	29.4	34.2	11.8	32.0	1,367	470.004
Second	21.8	20.4	19.3	21.1	1,167	5.319
Middle	18.7	20.0	20.4	19.4	1,178	***
Fourth	13.9	12.2	24.8	13.0	1,050	
Highest	16.2	13.2	23.7	14.6	1,272	
Total	100.0	100.0	100.0	100.0	6,034	
N	1,960	2,062	2,012	4,022		
Household owns						
Livestock, other farm animals, or poultry						
No	29.9	28.2	34.9	29.0	1,962	23.425
Yes	70.1	71.8	65.1	71.0	4,072	0.857
Total	100.0	100.0	100.0	100.0	6,034	
N	1,960	2,062	2,012	4,022		
Any agricultural land						
No	15.2	11.5	25.6	13.2	1,236	144.819
Yes	84.5	87.8	74.1	86.3	4,773	3.561
Don't know	0.3	0.7	0.3	0.5	25	*
Total	100.0	100.0	100.0	100.0	6,034	
N	1,960	2,062	2,012	4,022		
Radio						
No	76.5	71.0	59.3	73.5	4,090	137.896
Yes	23.6	29.0	40.7	26.5	1,944	5.937
Total	100.0	100.0	100.0	100.0	6,034	
N	1,960	2,062	2,012	4,022		
Television						
No	87.2	89.0	85.3	88.1	5,071	11.928
Yes	12.8	11.0	14.7	11.9	963	0.390
Total	100.0	100.0	100.0	100.0	6,034	
N	1,960	2,062	2,012	4,022		
Mobile phone						
No	51.3	56.0	45.0	53.8	2,965	50.904
Yes	48.8	44.0	55.0	46.2	3,069	1.538
Total	100.0	100.0	100.0	100.0	6,034	
N	1,960	2,062	2,012	4,022		
Computer						
No	99.0	97.6	97.9	98.3	5,902	7.580
Yes	1.0	2.4	2.1	1.7	132	1.325
Total	100.0	100.0	100.0	100.0	6,034	
N	1,960	2,062	2,012	4,022		
Household owns bicycle						
No	88.6	86.9	81.8	87.7	5,170	38.948
Yes	11.4	13.1	18.2	12.4	864	1.844
Total	100.0	100.0	100.0	100.0	6,034	
N	1,960	2,062	2,012	4,022		
Motorcycle or motor scooter						
No	67.7	72.0	65.8	70.0	4,129	17.002
Yes	32.3	28.0	34.2	30.0	1,905	0.965
Total	100.0	100.0	100.0	100.0	6,034	
N	1,960	2,062	2,012	4,022		
Car or truck						
No	95.2	94.3	92.9	94.7	5,625	8.680
Yes	4.8	5.7	7.1	5.3	409	0.726
Total	100.0	100.0	100.0	100.0	6,034	
N	1,960	2,062	2,012	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 1.1.4. HOUSEHOLD DISTANCES TO EDUCATION, HEALTH, AND ECONOMIC CENTERS

Percentage of households by reported distances to education, health, and economic centers, September–October 2019

	KEBBI % (N= 1,960)	SOKOTO % (N= 2,062)	MALARIA-ONLY (ZAMFARA) % (N= 2,012)	INTEGRATED (KEBBI/SOKOTO) % (N= 4,022)	N (N=6,034)	CHI² VALUE
School						
0–30 minutes	75.2	58.3	75.6	66.1	4,245	392.410
31–60 minutes	15.0	15.2	8.1	15.1	770	2.110
>60 minutes	2.2	6.4	0.0	4.5	165	.
Don't know	7.6	20.0	16.3	14.3	854	
Total	100.0	100.0	100.0	100.0	6,034	
N	1,960	2,062	2,012	4,022		
Health center						
0–30 minutes	73.4	74.3	86.2	73.9	4,672	250.750
31–60 minutes	16.0	12.7	7.1	14.2	775	1.686
>60 minutes	4.9	1.1	0.9	2.9	130	.
Don't know	5.7	11.9	5.8	9.0	457	
Total	100.0	100.0	100.0	100.0	6,034	
N	1,960	2,062	2,012	4,022		
General hospital						
0–30 minutes	40.1	42.3	46.4	41.3	2,776	218.741
31–60 minutes	35.2	29.1	37.6	31.9	2,030	1.095
>60 minutes	16.5	11.7	5.1	13.9	553	.
Don't know	8.3	16.9	11.0	12.9	675	
Total	100.0	100.0	100.0	100.0	6,034	
N	1,960	2,062	2,012	4,022		
Bank						
0–30 minutes	32.2	15.6	31.6	23.3	1,788	656.162
31–60 minutes	24.7	17.6	35.8	20.9	1,529	3.263
>60 minutes	15.9	14.0	2.9	14.9	598	**
Don't know	27.2	52.8	29.7	41.0	2,119	
Total	100.0	100.0	100.0	100.0	6,034	
N	1,960	2,062	2,012	4,022		
Tarred road						
0–30 minutes	73.3	65.7	71.0	69.2	4,526	49.014
31–60 minutes	19.2	19.9	16.9	19.6	930	0.184
>60 minutes	1.5	6.3	5.3	4.1	182	.
Don't know	6.0	8.1	6.8	7.1	396	
Total	100.0	100.0	100.0	100.0	6,034	
N	1,960	2,062	2,012	4,022		
Local market						
0–30 minutes	83.4	79.2	79.4	81.1	4,891	119.425
31–60 minutes	5.9	9.1	10.5	7.6	478	0.596
>60 minutes	4.7	2.6	0.6	3.5	153	.
Don't know	6.0	9.2	9.5	7.7	512	
Total	100.0	100.0	100.0	100.0	6,034	
N	1,960	2,062	2,012	4,022		
State capital						
0–30 minutes	10.7	12.1	26.5	11.4	1,146	448.449
31–60 minutes	10.5	24.7	25.0	18.1	1,320	2.001
>60 minutes	63.5	42.3	37.0	52.1	2,628	.
Don't know	15.4	21.0	11.6	18.4	940	
Total	100.0	100.0	100.0	100.0	6,034	
N	1,960	2,062	2,012	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas. Note: While respondents must decide for themselves how to interpret health center and general hospital in this question, we believe health center would mainly be interpreted by respondents as PHC while general hospital would be interpreted as nearest referral or general hospital.

TABLE 1.1.5. RESPONDENT CHARACTERISTICS

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years by sociodemographic characteristics, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI^2 VALUE
	%	%	%	%		
Education (highest level attended)						
None	75.4	80.2	69.4	78.0	4,411	81.408
Primary	4.8	4.8	5.2	4.8	319	1.133
Secondary or higher	9.4	4.6	13.8	6.8	692	.
Islamic	10.5	10.3	11.6	10.4	611	
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Age (in years)						
15–24 years	41.0	46.8	41.8	44.1	2,715	3.688
25–34 years	45.0	41.7	44.4	43.2	2,575	0.436
35–49 years	14.0	11.6	13.8	12.7	743	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Ethnicity						
Hausa	72.9	91.1	92.2	82.7	5,067	188.541
Fulani	10.3	5.7	5.6	7.8	466	4.061
Badakare/Dakarkari	4.2	0.0	0.0	1.9	101	**
Other	12.6	3.2	2.2	7.5	399	
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Literacy						
Cannot read at all	84.9	75.2	78.8	79.7	4,668	138.322
Able to read only parts of sentence	6.4	4.7	9.9	5.5	489	3.169
Able to read whole sentence	6.1	4.6	7.7	5.3	473	*
Blind/visually impaired	0.1	0.0	0.2	0.1	8	
Unable to read the language of the card	2.4	15.5	3.4	9.4	395	
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Religion						
Islam	99.4	99.8	99.8	99.6	6,013	3.069
Christianity	0.6	0.2	0.2	0.4	19	1.184
Traditional religion	0.0	0.0	0.0	0.0	1	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Occupation						
No work outside home	42.4	52.2	42.8	47.6	2,726	26.298
Work outside home	54.4	44.1	51.3	48.9	2,966	0.401
Student	0.4	0.9	0.9	0.6	51	.
Other	2.9	2.8	5.0	2.8	218	
Total	100.0	100.0	100.0	100.0	5,961	
N	1,942	2,042	1,977	3,984		
Marital status						
Married or living together to one person	96.6	95.2	91.8	95.8	5,765	55.561
Married to more than one person	2.7	4.0	5.8	3.4	196	1.875
Divorced/separated	0.6	0.5	0.5	0.5	32	.
Widowed	0.2	0.3	1.9	0.2	37	
Never married and never lived together	0.1	0.0	0.0	0.0	3	
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011			

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi^2 statistic comparing integrated versus malaria-only study areas.

TABLE 1.1.6. SPOUSE/PARTNER CHARACTERISTICS

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years by partner/spouse sociodemographic characteristics, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
Age						
<20 years	0.5	0.6	0.9	0.5	42	4.023
20–24 years	3.0	2.3	2.1	2.7	163	***
25–29 years	9.8	12.2	9.3	11.1	715	
30–34 years	17.7	20.3	18.8	19.1	1,182	
35–39 years	17.6	17.0	14.6	17.3	990	
40–44 years	16.0	19.4	20.0	17.8	1,075	
45+ years	20.5	20.7	30.1	20.6	1,348	
No spousal information	0.8	0.8	2.5	0.8	73	
Don't know	14.1	6.6	1.8	10.1	446	366.304
Total	100.0	100.0	100.0	100.0	6,034	
N	1,960	2,062	2,012	4,022		
Education, highest school level attended						
No education	60.2	64.9	51.3	62.7	3,390	144.893
Primary	5.9	6.0	5.8	5.9	360	1.154
Secondary or higher	21.5	16.4	30.3	18.7	1,571	.
Islamic education	11.7	12.0	10.2	11.8	640	
No spousal information	0.8	0.8	2.5	0.8	73	
Total	100.0	100.0	100.0	100.0	6,034	
N	1,960	2,062	2,012	4,022		
Occupation						
No work outside home	4.6	4.0	4.4	4.2	265	61.192
Works outside home	93.6	91.1	88.2	92.2	5,457	1.330
Student	0.2	0.7	0.5	0.5	35	.
No spousal information	0.8	0.8	2.5	0.8	73	
Other	0.9	3.4	4.5	2.3	204	
Total	100.0	100.0	100.0	100.0	6,034	
N	1,960	2,062	2,012	4,022		
Total wives						
No other wife	68.8	75.1	61.6	72.2	4,324	171.543
Yes, 1 other wife	1.5	1.6	2.1	1.6	92	3.306
Yes, 2 other wives	22.8	19.6	26.5	21.1	1,247	**
Yes, 3 other wives	3.5	2.1	6.1	2.8	200	
Yes, 4 other wives	0.3	0.1	0.9	0.2	26	
No spousal information	0.8	0.8	2.5	0.8	73	
Don't know	2.3	0.7	0.3	1.4	69	
Total	100.0	100.0	100.0	100.0	6,031	
N	1,960	2,062	2,009	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates $p<0.001$, ** indicates $p<0.05$ and * indicates $p<.0.01$ for the chi² statistic comparing integrated versus malaria-only study areas.

2 Malaria

Key findings

Malaria prevention: Overall, ownership of long-lasting insecticide nets (LLIN) was high. Approximately 75 percent and 69 percent of households in Zamfara and Kebbi/Sokoto, respectively, own at least one LLIN. However, fewer households had the recommended ratio of at least one LLIN for every two household members, with slightly higher proportions in Kebbi/Sokoto (25%) than in Zamfara (18%). In households where there were sufficient nets (at least one LLIN for every two household members), 81 percent and 88 percent of pregnant respondents slept under an LLIN the previous night in Kebbi/Sokoto and Zamfara, with little difference across wealth quintiles or maternal education. Similarly, in households with sufficient nets, over 90 percent of children under 2 years slept under an LLIN the previous night in integrated and malaria-only areas, with limited differences across socio-demographic characteristics.

There was also extremely high overall awareness about the importance of LLINs in malaria prevention. Almost all respondents agreed that malaria was caused by mosquito bites (97%), and that sleeping under mosquito nets was an effective malaria prevention method (93%). In addition, nearly all respondents stated they were likely to get all their children under 5 sleeping under a mosquito net every night of the year (93%). The results suggest that SBC programming to raise awareness about malaria prevention measures is not needed, but improving access, acceptability, and efficacy to use LLINs as directed may be a useful programmatic focus.

Malaria during pregnancy: Less than one in five respondents in study areas who attended any ANC visit received intermittent preventive treatment (three or more doses of SP/Fansidar) to protect against malaria during their last pregnancy, with significantly lower rates among respondents in the poorest households (10% and 12%) and among less-educated respondents (15% and 14%) in Kebbi/Sokoto and in Zamfara compared with their wealthiest counterparts (33% and 34%) and those with at least primary education (36% and 25%). Doses of sulfadoxine/pyrimethamine (SP/Fansidar) were administered almost exclusively during ANC visits (74% in Kebbi/

Sokoto and 84% in Zamfara). In addition, more frequent ANC visits is also associated with a higher likelihood of IPTp uptake. BSS baseline results show that women who attended ANC four or more times during the last pregnancy were about six times more likely to receive IPTp than those attending ANC only one time.

The most common reasons for not taking SP/Fansidar during pregnancy were opposition by respondent (27%) or spouse (22%). There were also many "other" responses that largely consisted of the following responses: did not attend ANC or facility to collect medicines, did not get sick during pregnancy or have pregnancy complications, not customary or not necessary to take medications. Among respondents attending any ANC visit, few (21% in Kebbi/Sokoto and 36% in Zamfara) were given a mosquito net during ANC. While 91 percent reported that malaria in pregnancy can affect the fetus, few respondents were able to report specific risks to the baby, with only about half reporting fetal death (45%) or miscarriage (44%), and even fewer reporting premature birth (26%) and low birth weight (17%). This suggests areas for future SBC programming to raise awareness about the specific and serious risks of malaria in pregnancy to the unborn child.

Pediatric fever prevalence and care-seeking: Among last-born children in the past two years, one in five were reported to have had a fever in the previous two weeks. Among these children, 68 percent and 74 percent were taken for advice or treatment from any source in Kebbi/Sokoto and Zamfara, and most respondents who sought advice from any source for the febrile child went the same or next day. However, 32 percent and 54 percent of febrile children who were taken to any care were brought to a pharmacy in Kebbi/Sokoto and Zamfara instead of formal medical care.

Reasons for source of care or not seeking care for pediatric fevers: The most important reasons for choosing the source of care were trust in provider (36%), nearby location (33%), and effective treatment (28%) across study areas. This result underscores the importance to respondents in this community of convenient, trusted, and high-quality health care provision for effective treatment of their sick children. The most important reasons for not seeking care included fatalism ("It's up to God") (33%),

expense or cost (31%), and symptoms were not perceived as severe or home care was provided (21%).

Diagnosis and treatment of pediatric fevers: Among febrile children under 2 years, few were tested for malaria (19% and 24%) and few were given artemisinin-based combination therapies (ACT) treatment (22% and 36%) in Kebbi/Sokoto and Zamfara, respectively. Similar to other priority behavioral outcomes, there was lower testing and ACT treatment among febrile children living in the poorest households and with less-educated mothers as compared with their wealthier and better-educated counterparts. There was strong intent to take a child with a fever to care the same/next day (92%) and to make sure the child takes the entire treatment course (92%). However, while 74 percent agreed that a blood test is the only way to know if a person has malaria, most respondents (61%) said they still worry the illness could be malaria even if the test result is negative, which implies a lack of confidence in negative malaria test results.

2.1 Malaria prevention

TABLE 2.1.A. LLIN AVAILABILITY IN HOUSEHOLD (AT LEAST ONE) BY SOCIODEMOGRAPHIC CHARACTERISTICS

Percentage of households with at least one LLIN, September–October 2019

	KEBBI		SOKOTO		MALARIA-ONLY (ZAMFARA)		INTEGRATED (KEBBI/SOKOTO)	
	%	N	%	N	%	N	%	N
Total	68.0	1,960	68.9	2,062	74.8	2,012	68.5	4,022
Household wealth								
Lowest	67.1	541	67.3	618	62.9	208	67.2	1,159
Second	60.8	419	70.1	407	74.7	341	65.7	826
Middle	68.8	363	71.5	408	75.5	407	70.4	771
Fourth	72.9	276	76.6	286	74.1	488	74.8	562
Highest	74.3	361	60.2	343	81.1	568	68.5	704
Maternal age (in years)								
15–24 years	63.9	866	70.4	1015	78.5	834	67.6	1,881
25–34 years	70.3	850	67.9	837	74.2	888	69.0	1,687
35–49 years	73.3	244	66.5	210	65.6	289	69.9	454
Maternal education (highest level attended)								
None	65.9	1,487	69.3	1624	71.8	1,300	67.8	3,111
Primary	76.0	99	74.6	101	82.6	119	75.2	200
Secondary or higher	82.3	210	46.9	141	80.7	341	69.4	351
Islamic	66.5	164	73.9	196	81.5	251	70.5	360

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi[2] statistic comparing integrated versus malaria-only study areas.

TABLE 2.1.B. LLIN AVAILABILITY IN HOUSEHOLD (AT LEAST ONE FOR EVERY TWO HOUSEHOLD MEMBERS) BY SOCIODEMOGRAPHIC CHARACTERISTICS

Percentage of households with at least one LLIN for every two household members, September–October 2019

	KEBBI		SOKOTO		INTEGRATED (KEBBI/SOKOTO)		MALARIA-ONLY (ZAMFARA)	
	%	N	%	N	%	N	%	N
Total	26.4	1,960	23.6	2,062	24.9	4,022	17.7	2,012
Household wealth								
Lowest	25.7	541	29.1	618	27.7	1,159	8.8	208
Second	19.9	419	21.8	407	20.9	826	18.8	341
Middle	24.0	363	19.5	408	21.4	771	15.0	407
Fourth	29.7	276	26.0	286	27.8	562	20.3	488
Highest	36.3	361	17.3	343	27.1	704	21.2	568
Maternal age (in years)								
15–24 years	31.5	866	29.4	1015	30.3	1,881	25.6	834
25–34 years	23.6	850	19.5	837	21.5	1,687	14.0	888
35–49 years	19.8	244	5.2	210	17.2	454	5.2	289
Maternal education (highest level attended)								
None	24.1	1,487	22.1	1,624	23.0	3,111	16.5	1,300
Primary	33.1	99	23.4	101	27.8	200	19.2	119
Secondary or higher	42.0	210	20.3	141	34.0	351	23.5	341
Islamic	26.2	164	37.8	196	32.6	360	16.9	251

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates $p<0.001$, ** indicates $p<0.05$ and * indicates $p<.0.01$ for the chi^2 statistic comparing integrated versus malaria-only study areas.

TABLE 2.1.C. LLIN USE AMONG PREGNANT WOMEN LIVING IN A HOUSEHOLD WITH AT LEAST ONE LLIN FOR EVERY TWO HOUSEHOLD MEMBERS, BY SOCIODEMOGRAPHIC CHARACTERISTICS

Percentage of pregnant women living in households with at least one LLIN for every two people who slept under an LLIN the previous night, September–October 2019

	KEBBI		SOKOTO		MALARIA-ONLY (ZAMFARA)		INTEGRATED (KEBBI/SOKOTO)	
	%	N	%	N	%	N	%	N
Total	86.7	284	76.7	323	88.4	259	81.2	607
Household wealth								
Lowest	92.6	78	78.7	90	100.0	10	84.3	168
Second	92.2	49	76.0	63	85.0	33	83.1	112
Middle	83.0	49	79.2	61	82.0	53	80.8	110
Fourth	78.6	41	74.0	60	90.7	73	75.8	101
Highest	84.3	67	72.5	49	90.2	90	79.7	116
Maternal age (in years)								
15–24 years	88.8	157	78.5	218	87.4	177	82.6	375
25–34 years	84.7	101	76.4	86	91.3	76	80.8	187
35–49 years	82.7	26	53.5	19	86.0	6	71.0	45
Maternal education (highest level attended)								
None	89.5	199	77	255	88.6	150	82.4	454
Primary	81.8	18	70.1	13	91.0	22	76.4	31
Secondary or higher	77.9	55	63.3	25	94.0	59	73.4	80
Islamic	80.3	12	82.9	30	78.0	28	82.2	42

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates $p<0.001$, ** indicates $p<0.05$ and * indicates $p<.0.01$ for the chi^2 statistic comparing integrated versus malaria-only study areas.

TABLE 2.1.D. LLIN USE AMONG UNDER-TWOS LIVING IN A HOUSEHOLD WITH AT LEAST ONE LLIN FOR EVERY TWO HOUSEHOLD MEMBERS, BY SOCIODEMOGRAPHIC CHARACTERISTICS

Percentage of last-born children under 2 years living in households with at least one LLIN for every two people who slept under an LLIN the previous night, September–October 2019

	KEBBI		SOKOTO		MALARIA-ONLY (ZAMFARA)		INTEGRATED (KEBBI/SOKOTO)	
	%	N	%	N	%	N	%	N
Total	97.6	158	89.0	113	92.8	124	94.2	271
Household wealth								
Lowest	98.6	99	95.4	62	100.0	2	97.5	161
Second	100.0	11	86.0	24	100.0	26	89.7	35
Middle	92.7	9	100.0	15	93.0	27	98.2	25
Fourth	90.6	4	50.0	12	100.0	32	64.0	17
Highest	96.5	31	0	0	80.5	37	96.5	33
Maternal age (in years)								
15–24 years	96.1	92	88.5	66	99.1	61	93.0	158
25–34 years	99.3	61	85.0	35	88.6	63	94.5	96
35–49 years	100.0	5	100.0	12	0.0	0	100.0	17
Maternal education (highest level attended)								
None	98.6	141	87.4	98	98.2	82	94.2	239
Primary	94.2	7	0.0	0	100.0	4	94.2	7
Secondary or higher	81.3	10	0.0	0	79.6	38	81.3	10
Islamic	0.0	0	100.0	15	0.0	0	100.0	15

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi^2 statistic comparing integrated versus malaria-only study areas.

2.2 Malaria in pregnancy

TABLE 2.2. IPTp DURING LAST PREGNANCY BY SOCIODEMOGRAPHIC CHARACTERISTICS

Percentage of women 15 to 49 years with a child under 2 years who received IPTp (three or more doses SP/Fansidar) during pregnancy for their last-born child by sociodemographic characteristics, September–October 2019

	KEBBI		SOKOTO		MALARIA-ONLY (ZAMFARA)		INTEGRATED (KEBBI/SOKOTO)	
	%	N	%	N	%	N	%	N
Total	23.7	892	14.9	1,078	19.1	1,069	18.6	1,971
Household wealth								
Lowest	8.4	264	11.6	341	11.8	111	10.3	606
Second	29.0	192	10.2	229	11.6	183	18.4	421
Middle	27.6	157	11.7	220	14.5	223	18.1	377
Fourth	34.8	113	23.5	135	17.5	248	28.8	249
Highest	33.3	166	32.0	153	33.8	304	32.6	318
Maternal age (in years)								
15–24 years	18.2	367	14.7	485	15.9	423	16.0	852
25–34 years	23.1	412	14.8	478	20.7	486	18.6	890
35–49 years	40.7	113	16.0	115	23.1	160	27.5	229
Maternal education (highest level attended)								
None	20.1	675	11.3	855	13.9	698	14.9	1,530
Primary	33.8	47	37.1	57	25.0	60	35.6	104
Secondary or higher	28.5	95	53.1	60	43.4	180	37.3	155
Islamic	38.8	75	18.2	106	20.2	131	27.3	182

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi^2 statistic comparing integrated versus malaria-only study areas.

TABLE 2.2.1. IPTp FOR MALARIA DURING LAST PREGNANCY

Percentage of women 15 to 49 years who received IPTp (three or more doses SP/Fansidar) for malaria during pregnancy for their last-born child in past two years, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
During your pregnancy with child, did you take SP/Fansidar to keep you from getting malaria						
No	45.8	59.4	45.2	53.5	1,462	72.309
Yes	48.6	38.1	54.3	42.6	1,498	4.011
Don't know	5.6	2.5	0.6	3.8	79	*
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
How many months pregnant were you at your first dose of SP/Fansidar?						
0-3 months	33.4	15.9	20.3	24.5	334	5.772
4–6 months	50.3	68.6	64.3	59.6	916	0.437
7+ months	13.3	12.4	13.5	12.8	205	.
Don't know	3.0	3.1	1.9	3.1	43	
Total	100.0	100.0	100.0	100.0	1,498	
N	435	460	603	895		
How many times did you take SP/Fansidar during your last pregnancy?						
None	0.6	0.0	0.0	0.3	3	23.866
1	22.3	30.6	25.4	26.5	389	1.745
2	20.2	28.1	35.4	24.2	429	.
3 or more	48.7	39.1	35.2	43.8	598	
Don't know	8.2	2.2	4.1	5.2	79	
Total	100.0	100.0	100.0	100.0	1,498	
N	435	460	603	895		
Where did you get SP/Fansidar?						
Antenatal care visit						
No	23.0	28.6	15.6	25.8	315	22.864
Yes	77.0	71.4	84.4	74.2	1,183	3.112
Total	100.0	100.0	100.0	100.0	1,498	
N	435	460	603	895		
Another visit to a health facility						
No	92.6	94.5	97.4	93.6	1,431	12.847
Yes	7.4	5.5	2.7	6.5	67	4.466
Total	100.0	100.0	100.0	100.0	1,498	
N	435	460	603	895		
Pharmacy						
No	91.5	81.0	90.6	86.1	1,329	6.838
Yes	8.5	19.0	9.4	13.9	169	1.093
Total	100.0	100.0	100.0	100.0	1,498	
N	435	460	603	895		
Market/store						
No	87.3	93.4	96.9	90.4	1,394	28.443
Yes	12.7	6.6	3.1	9.6	104	4.590
Total	100.0	100.0	100.0	100.0	1,498	
N	435	460	603	895		
Itinerant drug seller						
No	99.1	99.0	98.6	99.1	1,486	0.628
Yes	0.9	1.0	1.4	1.0	12	0.186
Total	100.0	100.0	100.0	100.0	1,498	
N	435	460	603	895		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 2.2.2. REASONS FOR NO IPTp FOR MALARIA DURING LAST PREGNANCY

Percentage of women 15 to 49 years who did not receive IPTp for their last-born child in past two years by reason, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
None available at facility						
No	88.4	98.1	89.1	94.5	1,353	13.762
Yes	11.6	1.9	10.9	5.5	109	2.418
Total	100.0	100.0	100.0	100.0	1,462	
N	410	593	459	1,003		
Provider did not offer medicine						
No	88.2	89.4	93.7	89.0	1,343	10.471
Yes	11.8	10.6	6.3	11.0	119	2.946
Total	100.0	100.0	100.0	100.0	1,462	
N	410	593	459	1,003		
Afraid of side effects						
No	92.8	96.6	96.8	95.2	1,395	2.598
Yes	7.2	3.4	3.2	4.8	67	0.237
Total	100.0	100.0	100.0	100.0	1,462	
N	410	593	459	1,003		
Too costly						
No	90.5	95.9	95.3	93.9	1,376	1.312
Yes	9.5	4.1	4.7	6.1	86	0.218
Total	100.0	100.0	100.0	100.0	1,462	
N	410	593	459	1,003		
Respondent opposes						
No	83.1	71.4	70.6	75.7	1,051	4.730
Yes	16.9	28.6	29.4	24.3	411	0.444
Total	100.0	100.0	100.0	100.0	1,462	
N	410	593	459	1,003		
Husband/partner opposes						
No	79.9	88.0	72.1	85.1	1,163	34.713
Yes	20.1	12.0	27.9	15.0	299	3.397
Total	100.0	100.0	100.0	100.0	1,462	
N	410	593	459	1,003		
Religious/community leaders oppose						
No	99.3	98.8	99.7	99.0	1,446	2.745
Yes	0.7	1.2	0.4	1.1	16	1.219
Total	100.0	100.0	100.0	100.0	1,462	
N	410	593	459	1,003		
Other						
No	79.8	69.0	76.2	73.0	1,130	1.975
Yes	20.2	31.0	23.8	27.0	332	0.201
Total	100.0	100.0	100.0	100.0	1,462	
N	410	593	459	1,003		
Don't know						
No	85.3	81.1	86.7	82.6	1,219	4.609
Yes	14.8	18.9	13.3	17.4	243	0.491
Total	100.0	100.0	100.0	100.0	1,462	
N	410	593	459	1,003		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 2.2.3. WHAT ARE SOME RISKS TO THE BABY IF A WOMAN GETS MALARIA DURING PREGNANCY?

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years who report risks (unprompted) to the baby if a woman gets malaria during pregnancy by type of risk, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI^2 VALUE
	%	%	%	%		
Fetal death						
No	62.2	69.3	46.9	66.0	3,629	213.871
Yes	37.8	30.7	53.1	34.0	2,405	8.224
Total	100.0	100.0	100.0	100.0	6,034	
N	1,960	2,062	2,012	4,022		
Premature birth						
No	74.2	81.8	70.7	78.3	4,547	42.927
Yes	25.8	18.3	29.3	21.7	1,487	1.637
Total	100.0	100.0	100.0	100.0	6,034	
N	1,960	2,062	2,012	4,022		
Low birth weight						
No	86.5	88.9	79.1	87.8	5,114	76.631
Yes	13.5	11.1	20.9	12.2	920	2.936
Total	100.0	100.0	100.0	100.0	6,034	
N	1,960	2,062	2,012	4,022		
Miscarriage						
No	65.6	65.4	49.4	65.5	3,595	152.659
Yes	34.4	34.6	50.6	34.5	2,439	6.114
Total	100.0	100.0	100.0	100.0	6,034	
N	1,960	2,062	2,012	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.01 for the chi^2 statistic comparing integrated versus malaria-only study areas.

2.3 Fever care and treatment

TABLE 2.3.A. DIAGNOSIS FOR PEDIATRIC FEVERS BY SOCIODEMOGRAPHIC CHARACTERISTICS

Percentage of last-born children under 2 years with fever in the past two weeks who received a finger or heel stick for testing by sociodemographic characteristics, September–October 2019

	KEBBI		SOKOTO		MALARIA-ONLY (ZAMFARA)		INTEGRATED (KEBBI/SOKOTO)	
	%	N	%	N	%	N	%	N
Total	22.8	200	16.8	285	24.0	188	19.0	485
Household wealth								
Lowest	14.9	48	10.1	81	(..)	20	11.9	129
Second	22.6	51	17.6	51	17.1	27	19.9	102
Middle	8.0	35	16.6	70	9.7	49	14.5	105
Fourth	60.4	24	23.4	45	25.5	43	36.3	69
Highest	22.5	42	26.5	38	42.7	49	24.4	80
Maternal age (in years)								
15–24 years	24.8	69	18.4	119	23.4	76	20.6	188
25–34 years	19.7	98	15.5	135	24.9	81	17.1	233
35–49 years	27.9	33	16.4	31	23.2	31	21.6	64
Maternal education (highest level attended)								
None	19.0	158	15.0	245	15.8	114	16.4	403
Primary	(..)	13	(..)	18	(..)	11	27.4	31
Secondary or higher	(..)	20	(..)	10	43.4	25	46.3	30
Islamic	(..)	9	(..)	12	38.9	38	25.6	21

(..) Value not shown due to low number of observations. Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.01 for the chi^2 statistic comparing integrated versus malaria-only study areas.

TABLE 2.3.B. ACT TREATMENT FOR PEDIATRIC FEVERS BY SOCIODEMOGRAPHIC CHARACTERISTICS

Percentage of last-born children under 2 years with fever in the past two weeks who received ACT treatment by socio-demographic characteristics, September–October 2019

	KEBBI		SOKOTO		MALARIA-ONLY (ZAMFARA)		INTEGRATED (KEBBI/SOKOTO)	
	%	N	%	N	%	N	%	N
Total	28.8	200	17.9	285	36.1	188	22.0	485
Household wealth								
Lowest	21.6	48	12.2	81	(..)	20	15.7	129
Second	31.3	51	21.1	51	29.6	27	25.7	102
Middle	22.7	35	17.1	70	34.9	49	18.5	105
Fourth	38.5	24	19.6	45	28.8	43	26.2	69
Highest	36.0	42	29.6	38	53.9	49	32.9	80
Maternal age (in years)								
15–24 years	27.6	69	(..)	19	23.4	76	23.7	188
25–34 years	25.3	98	18.8	135	45.1	81	21.3	233
35–49 years	41.0	33	3.3	31	47.3	31	20.1	64
Maternal education (highest level attended)								
None	31.0	158	16.7	245	31.2	114	21.7	403
Primary	27.7	13	(..)	18	(..)	11	34.1	31
Secondary or higher	(..)	20	(..)	10	46.8	25	22.5	30
Islamic	(..)	9	(..)	12	51.8	38	11.2	21

(..) Value not shown due to low number of observations. Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi^2 statistic comparing integrated versus malaria-only study areas.

TABLE 2.3.1. DIAGNOSIS AND CARE-SEEKING FOR PEDIATRIC FEVERS

Percentage of last-born children under 2 years with fever in the past two weeks who were tested for malaria and sought any advice or treatment, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Has the child had an illness with a fever at any time in the last 2 weeks?						
No	78.0	71.7	83.3	74.4	2,344	36.039
Yes	21.8	27.5	16.4	25.0	673	4.021
Don't know	0.2	0.9	0.3	0.6	22	*
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
At any time during the illness did child have blood taken for testing?						
No	76.7	82.6	76.0	80.4	533	4.210
Yes	22.8	16.8	24.0	19.0	135	1.199
Don't know	0.5	0.6	0.0	0.6	5	.
Total	100.0	100.0	100.0	100.0	673	
N	200	285	188	485		
Did you seek advice or treatment from any source for child's fever?						
No	16.2	41.5	25.6	32.0	187	3.450
Yes	83.8	58.5	74.5	68.0	486	1.089
Total	100.0	100.0	100.0	100.0	673	.
N	200	285	188	485		
How many days after illness started was treatment sought?						
Same/next day	61.7	64.5	70.9	63.2	314	3.849
2 days later	24.7	25.9	21.7	25.3	114	0.670
3+ days later	13.6	9.6	7.4	11.5	58	.
Total	100.0	100.0	100.0	100.0	486	
N	167	174	145	341		
Among children who were taken to any care, did child have blood taken for testing?						
No	72.2	70.8	68.4	71.5	314	3.849
Yes	27.2	28.7	31.6	28.0	114	0.670
Don't know	0.5	0.5	0.0	0.5	58	.
Total	100.0	100.0	100.0	100.0	486	
N	167	174	145	341		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 2.3.2. CARE-SEEKING FOR PEDIATRIC FEVERS

Percentage of last-born children under 2 years with fever in the past two weeks who sought any advice or treatment by source of care, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Government hospital						
No	62.7	89.8	79.4	77.3	374	0.325
Yes	37.3	10.2	20.6	22.7	112	0.054
Total	100.0	100.0	100.0	100.0	486	.
N	167	174	145	341		
Governmental PHC						
No	78.9	67.6	79.0	72.8	367	2.547
Yes	21.1	32.4	21.0	27.2	119	0.597
Total	100.0	100.0	100.0	100.0	486	.
N	167	174	145	341		
Dispensary/health post						
No	97.9	91.0	95.9	94.2	456	0.763
Yes	2.1	9.0	4.1	5.8	30	0.124
Total	100.0	100.0	100.0	100.0	486	.
N	167	174	145	341		
Community health outreach post						
No	92.7	99.6	100.0	96.4	473	9.270
Yes	7.3	0.4	0.0	3.6	13	3.423
Total	100.0	100.0	100.0	100.0	486	.
N	167	174	145	341		
Private hospital/clinic						
No	98.2	93.1	98.8	95.5	470	4.927
Yes	1.8	6.9	1.2	4.5	16	1.788
Total	100.0	100.0	100.0	100.0	486	.
N	167	174	145	341		
Pharmacy/chemist						
No	70.9	66.0	45.7	68.3	298	25.316
Yes	29.1	34.0	54.4	31.7	188	7.456
Total	100.0	100.0	100.0	100.0	486	**
N	167	174	145	341		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 2.3.3. REASONS FOR CHOOSING SOURCE OF CARE FOR PEDIATRIC FEVERS

Percentage of last-born children under 2 years with fever in the past two weeks taken to any source of care by reason for choosing treatment location, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
Free or inexpensive						
No	91.6	82.2	92.5	86.5	436	33.859
Yes	8.4	17.8	7.5	13.5	47	0.794
Total	100.0	100.0	100.0	100.0	483	.
N	166	172	145	338		
Nearby/transport available						
No	61.9	62.1	71.1	62.0	325	32.807
Yes	38.1	37.9	28.9	38.0	158	0.576
Total	100.0	100.0	100.0	100.0	483	.
N	166	172	145	338		
Medicines often in stock						
No	93.2	86.9	94.3	89.8	447	25.198
Yes	6.9	13.1	5.7	10.2	36	1.421
Total	100.0	100.0	100.0	100.0	483	.
N	166	172	145	338		
Respectful care						
No	94.8	88.5	83.4	91.4	431	49.790
Yes	5.3	11.5	16.6	8.6	52	2.770
Total	100.0	100.0	100.0	100.0	483	.
N	166	172	145	338		
Trust to care for my child						
No	63.3	73.8	59.6	68.9	307	32.930
Yes	36.7	26.2	40.4	31.1	176	1.081
Total	100.0	100.0	100.0	100.0	483	.
N	166	172	145	338		
Effective treatment						
No	80.1	75.2	68.1	77.5	358	38.892
Yes	19.9	24.8	31.9	22.5	125	1.562
Total	100.0	100.0	100.0	100.0	483	.
N	166	172	145	338		
Short wait time						
No	92.0	91.3	86.0	91.6	428	27.473
Yes	8.0	8.7	14.0	8.4	55	0.906
Total	100.0	100.0	100.0	100.0	483	.
N	166	172	145	338		
Privacy						
No	99.7	98.9	98.5	99.2	477	4.712
Yes	0.3	1.1	1.6	0.8	6	0.440
Total	100.0	100.0	100.0	100.0	483	.
N	166	172	145	338		
Family/friends						
No	90.0	88.3	80.9	89.1	414	46.131
Yes	10.0	11.7	19.1	10.9	69	1.687
Total	100.0	100.0	100.0	100.0	483	.
N	166	172	145	338		
Recommended by religious or community leader						
No	84.9	100.0	100.0	93.0	453	133.310
Yes	15.1	0.0	0.0	7.0	30	1.507
Total	100.0	100.0	100.0	100.0	483	.
N	166	172	145	338		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 2.3.4. REASONS FOR NOT SEEKING CARE FOR PEDIATRIC FEVERS

Percentage of last-born children under 2 years with fever in the past two weeks not taken to any source of care by reasons for no care-seeking, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
Too expensive/could not find money						
No	63.7	73.0	66.0	71.2	130	0.574
Yes	36.3	27.0	34.0	28.8	57	0.154
Total	100.0	100.0	100.0	100.0	187	.
N	33	111	43	144		
Facility closed/no one there						
No	94.4	100.0	100.0	98.9	185	0.884
Yes	5.6	0.0	0.0	1.1	2	1.350
Total	100.0	100.0	100.0	100.0	187	.
N	33	111	43	144		
Distance/transportation not available						
No	100.0	94.8	97.9	95.8	181	0.652
Yes	0.0	5.2	2.1	4.2	6	0.377
Total	100.0	100.0	100.0	100.0	187	.
N	33	111	43	144		
Medicine often not available						
No	93.5	99.0	100.0	98.0	184	1.696
Yes	6.5	1.0	0.0	2.0	3	1.827
Total	100.0	100.0	100.0	100.0	187	.
N	33	111	43	144		
Poor quality service						
No	100.0	99.2	98.0	99.3	185	0.636
Yes	0.0	0.8	2.0	0.7	2	0.682
Total	100.0	100.0	100.0	100.0	187	.
N	33	111	43	144		
Symptoms not severe/provided home care						
No	74.2	76.5	83.3	76.1	146	1.473
Yes	25.8	23.5	16.7	23.9	41	0.505
Total	100.0	100.0	100.0	100.0	187	.
N	33	111	43	144		
Husband/partner oppose						
No	93.9	93.7	85.4	93.7	170	3.572
Yes	6.1	6.3	14.6	6.3	17	2.004
Total	100.0	100.0	100.0	100.0	187	.
N	33	111	43	144		
Unable to leave work/home						
No	100.0	99.2	100.0	99.3	186	0.555
Yes	0.0	0.8	0.0	0.7	1	0.885
Total	100.0	100.0	100.0	100.0	187	.
N	33	111	43	144		
Up to God						
No	84.7	66.1	63.3	69.6	126	0.842
Yes	15.3	33.9	36.7	30.4	61	0.183
Total	100.0	100.0	100.0	100.0	187	.
N	33	111	43	144		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates $p<0.001$, ** indicates $p<0.05$ and * indicates $p<.0.01$ for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 2.3.5. ANTI-MALARIAL TREATMENT FOR PEDIATRIC FEVERS

Percentage of last-born children under 2 years with fever in the past two weeks given anti-malarials by type, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
At any time during the illness, did child take any medicines for the illness?						
No	6.4	25.9	18.6	18.6	121	0.000
Yes	93.6	74.1	81.4	81.4	552	0.000
Total	100.0	100.0	100.0	100.0	673	.
N	200	285	188	485		
What medicines did the child take?						
Any ACT						
No	71.2	82.1	63.9	78.0	499	16.288
Yes	28.8	17.9	36.1	22.0	174	3.951
Total	100.0	100.0	100.0	100.0	673	*
N	200	285	188	485		
ACT						
No	74.8	84.7	72.7	81.0	532	6.459
Yes	25.2	15.3	27.3	19.0	141	1.649
Total	100.0	100.0	100.0	100.0	673	.
N	200	285	188	485		
SP/Fansidar						
No	83.5	96.4	88.3	91.6	604	2.005
Yes	16.5	3.6	11.7	8.4	69	0.254
Total	100.0	100.0	100.0	100.0	673	.
N	200	285	188	485		
Chloroquine						
No	79.1	91.8	93.1	87.1	589	6.900
Yes	20.9	8.2	6.9	12.9	84	1.300
Total	100.0	100.0	100.0	100.0	673	.
N	200	285	188	485		
Amodiaquine						
No	95.3	97.1	99.2	96.4	649	6.013
Yes	4.7	2.9	0.8	3.6	24	3.752
Total	100.0	100.0	100.0	100.0	673	.
N	200	285	188	485		
Quinine pills						
No	98.4	100.0	96.8	99.4	664	6.147
Yes	1.6	0.0	3.2	0.6	9	6.362
Total	100.0	100.0	100.0	100.0	673	*
N	200	285	188	485		
Quinine injection						
No	93.7	98.2	98.3	96.5	647	2.039
Yes	6.3	1.8	1.7	3.5	26	1.357
Total	100.0	100.0	100.0	100.0	673	.
N	200	285	188	485		
Artesunate rectal						
No	99.3	98.4	93.9	98.7	655	11.158
Yes	0.7	1.6	6.1	1.3	18	5.438
Total	100.0	100.0	100.0	100.0	673	*
N	200	285	188	485		
Artesunate injection						
No	96.4	97.4	95.4	97.0	646	1.219
Yes	3.6	2.6	4.6	3.0	27	0.935
Total	100.0	100.0	100.0	100.0	673	.
N	200	285	188	485		
Other anti-malarial						
No	99.5	99.4	99.5	99.4	669	0.021
Yes	0.6	0.6	0.5	0.6	4	0.017
Total	100.0	100.0	100.0	100.0	673	.
N	200	285	188	485		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 2.3.6. ANTI-MALARIAL CARE-SEEKING TIMING AND COMPLETION OF ACT COURSE FOR PEDIATRIC FEVERS

Percentage of last-born children under 2 years with fever in the past two weeks who sought treatment and went same/next day, September–October 2019; Percentage of last-born children under 2 years with fever in the past two weeks who received ACT and completed the dose, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
How many days after illness started was treatment sought?						
Same/next day	69.6	72.0	74.7	70.8	103	1.964
2 days later	21.1	18.6	13.2	19.9	22	0.548
3+ days later	7.6	9.5	8.7	8.5	13	.
Don't know	1.7	0.0	3.4	0.9	3	
Total	100.0	100.0	100.0	100.0	141	
N	42	46	53	88		
Did child finish the complete ACT dose?						
No	37.8	18.2	19.3	27.9	32	2.318
Yes	62.2	81.8	79.0	72.1	108	0.665
Don't know	0.0	0.0	1.7	0.0	1	.
Total	100.0	100.0	100.0	100.0	141	
N	42	46	53			

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates $p<0.001$, ** indicates $p<0.05$ and * indicates $p<.0.01$ for the chi² statistic comparing integrated versus malaria-only study areas.

2.4 Malaria ideations

TABLE 2.4.1. REPORTED CAUSES OF MALARIA IN CHILDREN

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years reporting the causes of malaria in children, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Mosquito bites						
No	8.7	5.9	0.6	7.2	324	200.709
Yes	91.3	94.1	99.4	92.8	5,710	52.808
Total	100.0	100.0	100.0	100.0	6,034	***
N	1,960	2,062	2,012	4,022		
Eating dirty food						
No	84.9	95.6	94.9	90.6	5,549	42.821
Yes	15.2	4.4	5.1	9.4	485	1.268
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Drinking dirty water						
No	80.7	96.1	89.4	89.0	5,397	0.289
Yes	19.3	4.0	10.6	11.1	637	0.006
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Dirty surroundings						
No	72.5	93.7	78.6	83.9	4,876	26.187
Yes	27.5	6.4	21.4	16.1	1,158	0.824
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Getting soaked with rain						
No	93.3	95.8	97.4	94.7	5,744	30.055
Yes	6.7	4.2	2.6	5.3	290	1.869
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Cold or changing weather						
No	92.7	93.9	92.8	93.3	5,610	0.574
Yes	7.3	6.2	7.2	6.7	424	0.021
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Don't know						
No	97.0	95.7	99.7	96.3	5,880	103.990
Yes	3.0	4.3	0.3	3.7	154	21.329
Total	100.0	100.0	100.0	100.0	6,034	***
N	1,960	2,062	2,012	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 2.4.2. REPORTED WAYS TO PREVENT MALARIA IN CHILDREN

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years reporting ways to prevent malaria in children, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
Sleep under a mosquito net						
No	8.9	9.7	5.0	9.3	522	43.044
Yes	91.1	90.3	95.0	90.7	5,512	2.902
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Avoid mosquito bites						
No	45.6	49.8	39.3	47.9	2,733	44.042
Yes	54.4	50.2	60.8	52.1	3,301	1.311
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Take preventative medication						
No	84.8	86.7	74.3	85.8	4,921	117.098
Yes	15.3	13.3	25.8	14.2	1,113	4.030
Total	100.0	100.0	100.0	100.0	6,034	*
N	1,960	2,062	2,012	4,022		
Spray house with insecticide						
No	77.4	86.7	78.8	82.4	4,854	11.896
Yes	22.6	13.3	21.2	17.6	1,180	0.347
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Cut grass around house						
No	74.2	90.7	81.9	83.1	4,946	1.551
Yes	25.8	9.3	18.1	16.9	1,088	0.045
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Fill puddles/stagnant water						
No	88.9	97.0	94.1	93.3	5,621	1.634
Yes	11.1	3.0	5.9	6.8	413	0.060
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Keep house surroundings clean						
No	77.7	90.7	78.8	84.7	4,929	33.155
Yes	22.3	9.3	21.2	15.3	1,105	1.095
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Burn leaves						
No	93.8	96.8	92.4	95.4	5,684	21.842
Yes	6.2	3.2	7.6	4.6	350	0.666
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Don't know						
No	96.5	96.1	99.7	96.3	5,878	102.223
Yes	3.5	3.9	0.3	3.7	156	20.041
Total	100.0	100.0	100.0	100.0	6,034	***
N	1,960	2,062	2,012	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 2.4.3. MALARIA-RELATED BELIEFS, INTENTIONS, AND SELF-EFFICACY

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years reporting malaria beliefs, intentions or self-efficacy, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
When a child has fever it's almost always caused by malaria						
Agree	86.6	85.3	85.5	85.9	5,180	60.563
Disagree	6.5	10.3	12.3	8.6	572	1.192
Don't know	6.9	4.3	2.3	5.5	281	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Blood test is only way to know if a person has malaria						
Agree	74.8	60.6	79.4	67.2	4,364	115.751
Disagree	15.5	23.5	11.8	19.8	1,000	2.026
Don't know	9.7	16.0	8.8	13.1	669	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Even if blood test is negative, I still worry about malaria						
Agree	66.2	53.8	61.8	59.5	3,665	47.656
Disagree	24.3	27.5	29.4	26.0	1,611	0.808
Don't know	9.5	18.8	8.9	14.5	757	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Children under-5 should sleep under a net every night of the year						
Agree	91.1	85.3	97.3	88.0	5,478	206.111
Disagree	5.7	10.3	1.9	8.2	383	6.801
Don't know	3.3	4.4	0.9	3.9	172	**
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Pregnant women should sleep under a net every night of the year						
Agree	90.9	86.8	97.4	88.7	5,495	195.660
Disagree	5.6	9.0	2.0	7.5	380	7.864
Don't know	3.5	4.2	0.6	3.9	158	***
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
When a pregnant woman gets malaria, it can affect the fetus						
Agree	88.0	84.7	94.0	86.2	5,328	117.767
Disagree	4.1	5.1	2.9	4.6	263	3.222
Don't know	7.9	10.2	3.1	9.1	442	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Medicine given to pregnant women to prevent malaria works well						
Agree	88.0	83.8	91.3	85.8	5,277	66.662
Disagree	3.9	3.4	3.7	3.7	228	1.770
Don't know	8.1	12.7	5.0	10.6	528	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		

Likelihood to seek treatment for febrile child the same/next day						
Likely	89.3	84.5	96.0	86.7	5,449	192.218
Unlikely	5.5	10.9	3.3	8.4	372	4.114
Don't know	5.2	4.6	0.7	4.9	212	*
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Likelihood to get all children under-5 sleeping under net every night						
Likely	89.7	84.2	96.6	86.7	5,397	208.749
Unlikely	7.3	11.3	2.8	9.4	475	6.295
Don't know	3.0	4.6	0.7	3.8	161	**
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Likelihood to get child to take entire course of malaria medicine						
Likely	86.9	87.5	95.1	87.2	5,422	139.727
Unlikely	9.2	7.1	4.0	8.1	420	3.381
Don't know	3.9	5.4	0.9	4.7	191	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. ** indicates p<0.05 and * indicates p<.0.01 for the chi^2 statistic

3 Family planning

Key findings

Contraceptive use: There was overall low modern contraceptive use among non-pregnant respondents across study areas, with slightly higher use in Zamfara (17%) than in Kebbi/Sokoto (11%). Modern contraceptive use was lower among respondents in the poorest households (6% and 7%) than in the wealthiest households (24% and 34%), as well as among respondents with no schooling (8% and 10%) compared with respondents with at least primary school education (18% and 29%) in Kebbi/Sokoto and Zamfara, respectively. There was also low modern contraceptive use among postpartum respondents (birth in the past 12 months) at 10 percent (Kebbi/Sokoto) and 14 percent (Zamfara), with similar patterns by sociodemographic characteristics across study areas.

Contraceptive methods and access issues: Most respondents had heard of at least one modern contraceptive method, with the most recognized methods being injectables, implants, and daily pills. There was significantly lower awareness in Kebbi/Sokoto (71% for injectables, 62% for implants, 67% for daily pills) than in Zamfara (85% for injectables, 77% for implants, 81% for daily pills) of these three methods. The most common methods used were injectables (48%) and implants (25%) among non-pregnant respondents currently using contraception. Most contraceptive users reported obtaining their current method the last time at a government hospital or government primary health care (PHC), and few respondents (4%) reported difficulties in obtaining the method the last time. The most common reasons for not using contraception among current non-users were fatalism ("It's up to God") (25%), current breastfeeding (23%), partner opposition (21%), or respondent opposition (18%). Among non-users, only 15 percent reported intentions to start contraceptive use in the next six months.

Contraceptive beliefs and attitudes: All respondents were asked about their personal beliefs, attitudes, and perceptions of contraception. Across study areas, approximately half (52%) of respondents agreed that they do not personally approve of using contraception for birth spacing, underscoring a critical hurdle to Breakthrough ACTION/Nigeria SBC messaging for changing family

planning practices. Approximately one in five respondents believed that people in their community would call them bad names or avoid their company if others knew they were using contraception for birth spacing, which further highlights the importance of social norms related to family planning practices. About half of the respondents agreed that religious leaders should speak publicly about using modern contraceptives, which is a main component of Breakthrough ACTION/Nigeria SBC activities. Self-efficacy for negotiating contraceptive use with a partner was low. Only half of the respondents reported confidence in their ability to convince their partner to use modern contraception for birth spacing across study areas. Nevertheless, respondents were asked about perceived benefits of contraception use for birth spacing for both themselves and their children. The most commonly reported benefit for themselves was rest after giving birth (61% and 71%), while for children it was better growth (55% and 63%) in Kebbi/Sokoto and Zamfara, respectively.

Contraceptive myths: A large proportion of respondents agreed with various contraceptive myths in Kebbi/Sokoto and Zamfara. About one-third of respondents in Kebbi/Sokoto agreed that contraception could make a woman permanently infertile, harm a woman's womb, and lead to health problems, compared with about one-quarter of respondents agreeing with those myths in Zamfara. About one in five respondents in Kebbi/Sokoto agreed that contraceptives cause cancer, can result in deformed babies, and can increase promiscuity or reduce sexual urges among women and men. In Zamfara, belief in these myths was lower at around one in 10 respondents, though 16 percent of respondents believed that contraception could cause cancer or deformed babies.

Spousal communication and decision-making: There were overall low rates of spousal communication about contraceptive use, although it was much higher in Zamfara (22%) than in Kebbi/Sokoto (6%). Unsurprisingly, respondents also reported that contraceptive use decisions were mainly made by their partners, with higher reports in Kebbi/Sokoto (30%) than in Zamfara (17%). When respondents were asked who else influences a woman's decision about contraception use, the most commonly mentioned influencers were no one else (61%) and partners/spouses (30%) across study areas.

3.1 Contraception: current use, knowledge, and access issues

TABLE 3.1.A. CONTRACEPTIVE PREVALENCE RATE BY SOCIODEMOGRAPHIC CHARACTERISTICS

Percentage of non-pregnant women aged 15 to 49 years with a child under 2 years who are using any modern contraceptive method by sociodemographic characteristics, September–October 2019

	KEBBI		SOKOTO		MALARIA-ONLY (ZAMFARA)		INTEGRATED (KEBBI/SOKOTO)	
	%	N	%	N	%	N	%	N
Total	9.1	974	11.9	1,021	15.2	1,007	10.6	1,999
Household wealth								
Lowest	2.4	284	9.2	324	7.6	107	6.3	609
Second	8.3	213	7.8	208	4.8	176	8.0	422
Middle	6.1	170	9.3	208	4.9	205	7.9	379
Fourth	19.8	131	13.1	126	17.8	233	16.5	257
Highest	18.0	176	30.5	155	33.8	286	24.0	332
Maternal age (in years)								
15–24 years	7.0	392	14.1	453	13.6	388	11.0	847
25–34 years	8.8	454	10.3	450	17.3	461	9.6	906
35–49 years	15.4	128	9.9	118	13.0	158	12.7	246
Maternal education (highest level attended)								
None	6.2	739	9.5	85	9.5	667	8.1	1546
Primary	12.0	47	23.0	56	29.1	50	18.2	103
Secondary or higher	3.0	102	39.8	58	42.5	170	33.1	161
Islamic	9.7	86	14.7	102	12.2	120	12.3	189

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 3.1.B. POSTPARTUM CONTRACEPTIVE PREVALENCE RATE BY SOCIODEMOGRAPHIC CHARACTERISTICS

Percentage of postpartum non-pregnant women aged 15 to 49 years (with a child under 1 year) who are using any modern contraceptive method by sociodemographic characteristics, September–October 2019

	KEBBI		SOKOTO		MALARIA-ONLY (ZAMFARA)		INTEGRATED (KEBBI/SOKOTO)	
	%	N	%	N	%	N	%	N
Total	9.2	473	9.7	546	13.6	528	9.5	1,021
Household wealth								
Lowest	3.3	136	5.9	162	4.8	47	4.9	299
Second	7.5	95	8.0	126	2.5	81	7.7	222
Middle	5.0	4	6.9	110	4.3	124	6.1	194
Fourth	22.9	65	11.5	70	1.7	106	17.0	135
Highest	15.0	93	27.2	78	34.1	170	20.8	171
Maternal age (in years)								
15–24 years	4.7	186	11.9	251	10.8	216	9.2	438
25–34 years	8.8	231	8.0	230	17.1	231	8.4	462
35–49 years	23.4	56	7.3	65	11.3	81	13.9	121
Maternal education (highest level attended)								
None	6.7	361	8.0	465	6.8	367	7.5	827
Primary	21.5	25	28.0	24	30.1	30	24.9	49
Secondary or higher	30.7	47	33.3	28	44.1	94	31.6	75
Islamic	4.6	40	7.9	29	12.1	37	6.0	70

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 3.1.1. CURRENT USE OF MODERN CONTRACEPTIVE METHODS

Percentage of non-pregnant women aged 15 to 49 years with a child under 2 years who are using any modern contraceptive method, September–October 2019; Percentage of non-pregnant women aged 15 to 49 years who are postpartum (birth in the past 12 months) who are using any modern contraceptive method, September–October 2019

	KEBBI	SOKOTO	INTEGRATED (KEBBI/SOKOTO)	MALARIA-ONLY (ZAMFARA)	N	CHI^2 VALUE
	%	%	%	%		
Non-pregnant women						
No	90.9	88.1	89.4	84.8	2,607	13.372
Yes	9.1	11.9	10.6	15.2	393	1.703
Total	100.0	100.0	100.0	100.0	3,000	.
N	974	1,021	1,995	1,005		
Postpartum non-pregnant women						
No	90.8	90.3	90.5	86.4	1,359	23.415
Yes	9.2	9.7	9.5	13.6	186	1.252
Total	100.0	100.0	100.0	100.0	1,545	.
N	473	546	1,019	526		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi^2 statistic comparing integrated versus malaria-only study areas.

TABLE 3.1.2. CURRENT USE OF CONTRACEPTION BY METHOD TYPE

Percentage of non-pregnant women aged 15 to 49 years with a child under 2 years who are currently using contraception by method type, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Are you or your partner currently using any method of contraception?						
No	90.1	87.1	82.9	88.5	2,571	18.060
Yes	9.9	12.9	17.1	11.5	429	2.410
Total	100.0	100.0	100.0	100.0	3,000	.
N	974	1,021	1,005	1,995		
Which method are you using?						
IUD						
No	98.5	99.6	92.4	99.2	412	8.383
Yes	1.5	0.4	7.6	0.8	17	9.120
Total	100.0	100.0	100.0	100.0	429	**
N	90	145	194	235		
Injectables						
No	44.6	53.6	52.4	50.1	224	0.194
Yes	55.4	46.4	47.7	49.9	205	0.083
Total	100.0	100.0	100.0	100.0	429	.
N	90	145	194	235		
Implants						
No	75.0	67.1	77.2	70.3	311	2.423
Yes	25.0	32.9	22.8	29.8	118	1.105
Total	100.0	100.0	100.0	100.0	429	.
N	90	145	194	235		
Daily pill						
No	89.0	84.1	81.3	86.1	356	1.508
Yes	11.0	15.9	18.7	13.9	73	1.109
Total	100.0	100.0	100.0	100.0	429	.
N	90	145	194	235		
Male condom						
No	97.6	100.0	97.7	99.1	421	0.918
Yes	2.4	0.0	2.3	0.9	8	1.009
Total	100.0	100.0	100.0	100.0	429	.
N	90	145	194	235		
Withdrawal						
No	96.8	98.4	95.3	97.8	412	1.475
Yes	3.2	1.6	4.7	2.2	17	0.884
Total	100.0	100.0	100.0	100.0	429	.
N	90	145	194	235		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 3.1.3. HAVE YOU EVER HEARD OF THE FOLLOWING CONTRACEPTION METHODS?

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years who have ever heard of contraceptive methods by type, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
Male condom						
Mentioned spontaneously	8.2	8.9	14.6	8.6	702	52.844
Recognised upon listening	25.5	17.3	21.7	21.1	1,341	1.033
Neither mentioned nor recognised	66.3	73.8	63.7	70.3	3,990	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Female sterilization/ tubal ligation						
Mentioned spontaneously	13.3	4.5	8.0	8.5	497	8.398
Recognised upon listening	16.8	15.8	19.1	16.2	1,091	0.126
Neither mentioned nor recognised	69.9	79.8	72.9	75.2	4,445	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Male sterilization/vasectomy						
Mentioned spontaneously	7.6	3.9	6.2	5.6	371	23.283
Recognised upon listening	10.6	3.7	10.3	6.9	517	0.409
Neither mentioned nor recognised	81.8	92.4	83.4	87.5	5,145	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
IUD						
Mentioned spontaneously	10.6	9.4	18.7	10.0	825	87.544
Recognised upon listening	15.5	15.9	14.7	15.7	970	1.781
Neither mentioned nor recognised	73.9	74.7	66.6	74.3	4,238	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Injectables or injections						
Mentioned spontaneously	35.3	49.3	63.5	42.9	2,983	269.317
Recognised upon listening	33.0	23.3	20.6	27.8	1,515	4.009
Neither mentioned nor recognised	31.7	27.4	15.9	29.4	1,535	*
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Implants/Implanon/Jadelle						
Mentioned spontaneously	24.8	36.0	58.4	30.8	2,400	443.199
Recognised upon listening	37.3	26.2	18.5	31.3	1,586	7.901
Neither mentioned nor recognised	37.9	37.8	23.2	37.9	2,047	***
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Daily pill						
Mentioned spontaneously	35.5	38.4	56.0	37.1	2,633	236.584
Recognised upon listening	32.4	27.0	24.6	29.5	1,620	3.830
Neither mentioned nor recognised	32.1	34.6	19.4	33.5	1,780	*
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Female condom						
Mentioned spontaneously	3.6	4.1	4.9	3.9	289	4.193
Recognised upon listening	11.4	8.9	10.4	10.1	663	0.110
Neither mentioned nor recognised	85.1	87.0	84.7	86.1	5,081	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		

Emergency contraception/morning after pill/postinor 2						
Mentioned spontaneously	3.3	4.9	7.6	4.2	363	44.362
Recognised upon listening	13.9	8.4	7.8	10.9	609	1.038
Neither mentioned nor recognised	82.9	86.7	84.6	84.9	5,061	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Standard days/cycle beads						
Mentioned spontaneously	5.0	3.3	3.3	4.1	261	6.174
Recognised upon listening	16.5	5.8	12.4	10.7	700	0.203
Neither mentioned nor recognised	78.5	90.9	84.3	85.2	5,072	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Lactational amenorrhea (LAM)						
Mentioned spontaneously	11.6	4.9	9.9	8.0	536	7.940
Recognised upon listening	29.1	19.9	22.3	24.2	1,372	0.117
Neither mentioned nor recognised	59.3	75.2	67.9	67.9	4,125	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Rhythm method						
Mentioned spontaneously	5.9	1.6	1.5	3.6	195	29.511
Recognised upon listening	16.6	4.5	10.7	10.1	641	1.055
Neither mentioned nor recognised	77.6	93.9	87.8	86.3	5,197	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Withdrawal						
Mentioned spontaneously	8.8	7.9	10.0	8.3	543	18.484
Recognised upon listening	29.5	17.8	18.9	23.2	1,262	0.285
Neither mentioned nor recognised	61.8	74.4	71.1	68.6	4,228	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Spermicide						
Mentioned spontaneously	3.4	1.2	0.6	2.2	126	31.253
Recognised upon listening	6.4	2.7	4.2	4.4	293	1.384
Neither mentioned nor recognised	90.1	96.2	95.2	93.4	5,614	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Diaphragm						
Mentioned spontaneously	3.8	1.3	0.4	2.5	139	49.552
Recognised upon listening	5.9	2.4	4.5	4.0	273	2.616
Neither mentioned nor recognised	90.4	96.3	95.1	93.5	5,621	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Sayana Press						
Mentioned spontaneously	5.6	1.9	3.0	3.6	247	30.061
Recognised upon listening	8.3	5.4	3.7	6.8	376	0.463
Neither mentioned nor recognised	86.1	92.7	93.2	89.6	5,410	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi^2 statistic comparing integrated versus malaria-only study areas.

TABLE 3.1.4. WHERE DID YOU OBTAIN THE [CURRENT METHOD] THE LAST TIME?

Percentage of non-pregnant women aged 15 to 49 years with a child under 2 years using any contraception method by location obtained the last time, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Other private sector	4.7	0.0	1.2	1.9	4	.
Other public sector	0.0	0.4	0.0	0.2	1	
Government hospital	33.8	33.6	47.8	33.7	194	
Governmental PHC	43.6	28.8	20.6	34.6	102	
Dispensary/health post	2.3	12.3	2.0	8.3	24	
Community health outreach post	1.2	0.8	1.3	0.9	4	
Nursing/maternity home	2.9	0.4	1.9	1.4	9	
Private hospital/clinic	3.5	2.3	1.4	2.8	10	
Pharmacy/chemist	7.0	10.4	9.0	9.1	38	
Don't know	0.0	0.0	1.3	0.0	3	27.880
Other	1.0	11.3	13.6	7.2	40	1.329
Total	100.0	100.0	100.0	100.0	429	
N	90	145	194	235		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic

TABLE 3.1.5. DIFFICULTIES FACED OBTAINING [CURRENT METHOD] THE LAST TIME?

Percentage of non-pregnant women aged 15 to 49 years with a child under 2 years using any contraception method by difficulties faced in obtaining method last time, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
Have you or your partner had any difficulties in obtaining CURRENT METHOD?						
No	94.1	86.2	98.7	89.3	399	20.106
Yes	5.9	13.8	1.3	10.7	30	10.516
Total	100.0	100.0	100.0	100.0	429	**
N	90	145	194	235		
Difficulties faced in obtaining CURRENT METHOD?						
Fear of partner knowing; he opposes contraception						
No	80.2	74.7	56.9	76.0	23	0.875
Yes	19.8	25.3	43.1	24.1	7	0.181
Total	100.0	100.0	100.0	100.0	30	.
N	7	21	2	28		
Fear of parents/other relatives knowing						
No	54.6	90.6	100.0	82.7	25	1.221
Yes	45.4	9.4	0.0	17.3	5	1.188
Total	100.0	100.0	100.0	100.0	30	.
N	7	21	2	28		
High cost of transportation to facility						
No	80.2	83.6	100.0	82.9	25	1.209
Yes	19.8	16.4	0.0	17.2	5	1.706
Total	100.0	100.0	100.0	100.0	30	.
N	7	21	2	28		
Long waiting times at facility						
No	65.0	86.1	100.0	81.5	24	1.324
Yes	35.0	13.9	0.0	18.5	6	1.377
Total	100.0	100.0	100.0	100.0	30	.
N	7	21	2	28		
Periodic stock-outs at facility						
No	100.0	70.5	100.0	77.0	24	1.717
Yes	0.0	29.5	0.0	23.0	6	0.906
Total	100.0	100.0	100.0	100.0	30	.
N	7	21	2	28		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

3.2 Contraception: reasons for use/non-use and intentions

TABLE 3.2.1. REASONS FOR USING A CONTRACEPTIVE METHOD

Percentage of non-pregnant women aged 15 to 49 years with a child under 2 years using any contraception method by reasons for method use, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	TOTAL	N	CHI² VALUE
	%	%	%	%	%		
Prefer to wait before having more children							
No	23.7	20.4	23.4	21.7	22.8	100	0.146
Yes	76.3	79.6	76.7	78.3	77.2	329	0.035
Total	100.0	100.0	100.0	100.0	100.0	429	.
N	90	145	194	235	429		
Does not want any more children							
No	85.8	94.6	89.2	91.1	89.8	386	0.374
Yes	14.2	5.4	10.8	8.9	10.2	43	0.213
Total	100.0	100.0	100.0	100.0	100.0	429	.
N	90	145	194	235	429		
My partner wants to use contraception							
No	72.8	60.5	68.7	65.4	67.6	291	0.452
Yes	27.2	39.5	31.4	34.6	32.4	138	0.105
Total	100.0	100.0	100.0	100.0	100.0	429	.
N	90	145	194	235	429		
Health provider says I should use contraception							
No	93.4	94.6	92.9	94.1	93.3	402	0.233
Yes	6.6	5.4	7.2	5.9	6.7	27	0.177
Total	100.0	100.0	100.0	100.0	100.0	429	.
N	90	145	194	235	429		
Protect against STIs							
No	97.8	100.0	98.9	99.1	99.0	424	0.040
Yes	2.3	0.0	1.1	0.9	1.0	5	0.043
Total	100.0	100.0	100.0	100.0	100.0	429	.
N	90	145	194	235	429		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates $p<0.001$, ** indicates $p<0.05$ and * indicates $p<.0.01$ for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 3.2.2. REASONS FOR NOT USING A CONTRACEPTIVE METHOD

Percentage of non-pregnant women aged 15 to 49 years with a child under 2 years not using any contraception method by reasons for method non-use, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
Knows no method						
No	96.1	98.9	99.3	97.6	2,522	13.186
Yes	3.9	1.2	0.7	2.4	49	3.058
Total	100.0	100.0	100.0	100.0	2,571	.
N	884	876	811	1,760		
Doesn't know where to get method						
No	98.8	99.2	99.2	99.0	2,551	0.171
Yes	1.2	0.8	0.8	1.0	20	0.081
Total	100.0	100.0	100.0	100.0	2,571	.
N	884	876	811	1,760		
Health concerns/Fear of side effects						
No	97.1	96.8	97.2	96.9	2,501	0.215
Yes	2.9	3.2	2.8	3.1	70	0.052
Total	100.0	100.0	100.0	100.0	2,571	.
N	884	876	811	1,760		
Distance to health facility too far						
No	99.1	100.0	99.7	99.6	2,561	0.131
Yes	0.9	0.0	0.4	0.4	10	0.052
Total	100.0	100.0	100.0	100.0	2,571	.
N	884	876	811	1,760		
Difficult to get transport to health facility						
No	99.3	99.5	99.7	99.4	2,558	1.054
Yes	0.7	0.5	0.3	0.6	13	0.491
Total	100.0	100.0	100.0	100.0	2,571	.
N	884	876	811	1,760		
Costs too much						
No	99.5	99.3	99.6	99.4	2,555	0.350
Yes	0.5	0.7	0.4	0.6	16	0.295
Total	100.0	100.0	100.0	100.0	2,571	.
N	884	876	811	1,760		
Inconvenient to use						
No	97.6	96.8	97.7	97.2	2,498	0.748
Yes	2.4	3.2	2.3	2.8	73	0.108
Total	100.0	100.0	100.0	100.0	2,571	.
N	884	876	811	1,760		
Preferred method not available						
No	99.8	100.0	99.9	99.9	2,567	0.002
Yes	0.2	0.0	0.1	0.1	4	0.002
Total	100.0	100.0	100.0	100.0	2,571	.
N	884	876	811	1,760		
Fear of infertility						
No	86.5	90.0	94.7	88.4	2,323	33.650
Yes	13.5	10.0	5.4	11.6	248	3.795
Total	100.0	100.0	100.0	100.0	2,571	.
N	884	876	811	1,760		

Infrequent sex/not having sex						
No	98.2	98.8	97.5	98.5	2,523	3.140
Yes	1.8	1.2	2.5	1.5	48	0.992
Total	100.0	100.0	100.0	100.0	2,571	.
N	884	876	811	1,760		
Can't get pregnant						
No	94.6	98.9	93.7	96.9	2,458	14.134
Yes	5.4	1.1	6.3	3.1	113	1.723
Total	100.0	100.0	100.0	100.0	2,571	.
N	884	876	811	1,760		
Breastfeeding						
No	83.8	88.6	69.8	86.3	2,069	96.863
Yes	16.2	11.4	30.2	13.7	502	8.956
Total	100.0	100.0	100.0	100.0	2,571	**
N	884	876	811	1,760		
Away from husband/partner						
No	98.9	97.2	97.3	98.0	2,512	1.470
Yes	1.1	2.8	2.7	2.0	59	0.810
Total	100.0	100.0	100.0	100.0	2,571	.
N	884	876	811	1,760		
Trying to get pregnant						
No	98.3	96.6	98.7	97.4	2,511	5.610
Yes	1.7	3.4	1.3	2.6	60	1.952
Total	100.0	100.0	100.0	100.0	2,571	.
N	884	876	811	1,760		
Wants more children						
No	83.2	85.2	88.3	84.3	2,193	8.840
Yes	16.8	14.8	11.7	15.7	378	0.651
Total	100.0	100.0	100.0	100.0	2,571	.
N	884	876	811	1,760		
Respondent opposes						
No	87.7	84.0	79.4	85.7	2,163	16.840
Yes	12.3	16.1	20.6	14.3	408	1.729
Total	100.0	100.0	100.0	100.0	2,571	.
N	884	876	811	1,760		
Husband/partner opposes						
No	84.7	82.2	75.5	83.4	2,087	23.633
Yes	15.3	17.8	24.5	16.6	484	2.826
Total	100.0	100.0	100.0	100.0	2,571	.
N	884	876	811	1,760		
Others oppose						
No	99.4	99.5	99.5	99.4	2,555	0.152
Yes	0.6	0.5	0.5	0.6	16	0.123
Total	100.0	100.0	100.0	100.0	2,571	.
N	884	876	811	1,760		
Interferes with body's natural process						
No	96.4	94.4	93.1	95.4	2,452	5.690
Yes	3.6	5.6	6.9	4.6	119	0.657
Total	100.0	100.0	100.0	100.0	2,571	.
N	884	876	811	1,760		
Up to God						
No	73.2	65.8	79.9	69.3	1,889	37.974
Yes	26.8	34.2	20.1	30.7	682	3.037
Total	100.0	100.0	100.0	100.0	2,571	.
N	884	876	811	1,760		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates $p<0.001$, ** indicates $p<0.05$ and * indicates $p<.0.01$ for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 3.2.3. INTENTION TO USE/CONTINUE TO USE CONTRACEPTION IN THE NEXT SIX MONTHS

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years intending to start or continue to use contraception in next six months by method, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
In the next 6 months, do you plan to start using a method of contraception?						
No	79.0	85.7	78.3	82.5	2,073	34.195
Yes	13.8	7.8	17.7	10.6	333	2.739
Don't know	7.3	6.6	3.9	6.9	165	.
Total	100.0	100.0	100.0	100.0	2,571	
N	884	876	811	1,760		
In the next 6 months, do you plan to continue using a method of contraception?						
No	14.1	6.4	27.7	9.5	76	18.871
Yes	85.2	91.9	71.8	89.2	350	5.518
Don't know	0.8	1.7	0.5	1.3	3	**
Total	100.0	100.0	100.0	100.0	429	
N	90	145	194	235		
Method you intend to use?						
IUD						
No	98.4	99.8	97.4	99.1	670	2.230
Yes	1.6	0.3	2.6	0.9	13	2.393
Total	100.0	100.0	100.0	100.0	683	.
N	185	209	289	394		
Injectables						
No	44.1	48.4	52.2	46.3	346	2.113
Yes	55.9	51.6	47.8	53.7	337	0.705
Total	100.0	100.0	100.0	100.0	683	.
N	185	209	289	394		
Implants						
No	75.2	70.4	71.4	72.7	484	0.131
Yes	24.8	29.6	28.6	27.3	199	0.039
Total	100.0	100.0	100.0	100.0	683	.
N	185	209	289	394		
Daily pill						
No	90.8	82.6	81.3	86.6	576	2.997
Yes	9.3	17.4	18.7	13.4	107	1.653
Total	100.0	100.0	100.0	100.0	683	.
N	185	209	289	394		
Male condom						
No	99.0	100.0	99.5	99.5	678	0.015
Yes	1.0	0.0	0.6	0.5	5	0.021
Total	100.0	100.0	100.0	100.0	683	.
N	185	209	289	394		
Lactational amenorrhea method						
No	100.0	99.5	99.0	99.7	679	1.308
Yes	0.0	0.5	1.1	0.3	4	2.269
Total	100.0	100.0	100.0	100.0	683	.
N	185	209	289	394		
Withdrawal						
No	99.8	99.4	97.6	99.6	673	3.565
Yes	0.2	0.6	2.4	0.4	10	5.609
Total	100.0	100.0	100.0	100.0	683	*
N	185	209	289	394		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

3.3 Contraception: beliefs, perceptions, and self-efficacy

TABLE 3.3.1. PERCEIVED CONTRACEPTION BENEFITS FOR FUTURE CHILDREN

Percentage of women 15 to 49 years currently pregnant or with a child under 2 years reporting contraceptive benefits for children by benefit, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
No benefits						
No	89.8	81.5	89.7	85.4	5,236	25.914
Yes	10.2	18.5	10.3	14.6	798	1.433
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Better growth						
No	43.0	47.7	37.0	45.5	2,550	43.701
Yes	57.1	52.3	63.0	54.5	3,484	1.673
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Better nutritional status						
No	81.6	80.4	62.2	81.0	4,505	243.768
Yes	18.4	19.6	37.8	19.0	1,529	10.710
Total	100.0	100.0	100.0	100.0	6,034	***
N	1,960	2,062	2,012	4,022		
Better overall health						
No	75.6	83.6	58.1	80.0	4,355	314.285
Yes	24.4	16.4	42.0	20.1	1,679	13.681
Total	100.0	100.0	100.0	100.0	6,034	***
N	1,960	2,062	2,012	4,022		
Better survival chance						
No	93.2	90.3	79.3	91.6	5,259	167.649
Yes	6.8	9.8	20.7	8.4	775	9.225
Total	100.0	100.0	100.0	100.0	6,034	**
N	1,960	2,062	2,012	4,022		
More attention by mother						
No	79.8	78.5	68.0	79.1	4,526	91.448
Yes	20.2	21.5	32.1	21.0	1,508	3.912
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Better education						
No	96.3	96.7	91.0	96.5	5,634	72.819
Yes	3.7	3.3	9.1	3.5	400	6.505
Total	100.0	100.0	100.0	100.0	6,034	*
N	1,960	2,062	2,012	4,022		
More opportunities						
No	97.6	98.0	90.0	97.8	5,758	139.643
Yes	2.4	2.0	10.0	2.2	276	9.951
Total	100.0	100.0	100.0	100.0	6,034	**
N	1,960	2,062	2,012	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 3.3.2. PERCEIVED CONTRACEPTION BENEFITS FOR WOMEN

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years who report any contraceptive benefits for themselves by type of benefit, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
No benefits						
No	89.7	84.5	89.6	86.9	5,269	10.803
Yes	10.3	15.5	10.4	13.1	765	0.576
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Woman gets rest after birth						
No	39.3	39.0	29.5	39.1	2,227	61.025
Yes	60.7	61.0	70.5	60.9	3,807	2.201
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Better health and nutrition						
No	71.0	77.1	56.7	74.3	4,052	194.827
Yes	29.0	22.9	43.3	25.8	1,982	8.955
Total	100.0	100.0	100.0	100.0	6,034	**
N	1,960	2,062	2,012	4,022		
Beauty and youthfulness						
No	86.1	84.1	67.5	85.0	4,729	236.897
Yes	13.9	15.9	32.6	15.0	1,305	10.885
Total	100.0	100.0	100.0	100.0	6,034	***
N	1,960	2,062	2,012	4,022		
Fewer pregnancy complications						
No	91.4	85.9	80.9	88.4	5,193	61.231
Yes	8.6	14.2	19.1	11.6	841	2.207
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Reduce unwanted pregnancies						
No	90.8	89.3	80.7	90.0	5,240	96.667
Yes	9.2	10.7	19.3	10.0	794	2.888
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Fewer children to educate						
No	98.5	98.3	94.6	98.4	5,818	57.258
Yes	1.5	1.7	5.4	1.6	216	7.019
Total	100.0	100.0	100.0	100.0	6,034	**
N	1,960	2,062	2,012	4,022		
Family has more money						
No	98.9	99.0	96.9	99.0	5,909	28.352
Yes	1.1	1.0	3.1	1.1	125	4.047
Total	100.0	100.0	100.0	100.0	6,034	*
N	1,960	2,062	2,012	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 3.3.3. CONTRACEPTION BELIEFS, ATTITUDES, AND PERCEIVED SOCIAL NORMS

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years reporting contraception beliefs, attitudes, or perceived social norms, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Do you personally approve of using contraception for SPACING BIRTHS?						
No	50.3	58.7	50.1	54.8	3,126	59.974
Yes	43.3	35.1	46.8	38.9	2,576	1.745
Don't know	6.4	6.2	3.1	6.3	331	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Do you think people would call you bad names or avoid your company if they knew you were using contraception to space births?						
No	65.1	43.5	68.8	53.5	3,556	198.886
Yes	14.9	34.2	21.5	25.2	1,441	4.209
Don't know	20.0	22.4	9.7	21.3	1,036	*
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Couples who use modern contraception have a better quality of life						
Agree	62.8	55.9	59.7	59.1	3,638	107.833
Disagree	24.2	27.3	33.0	25.9	1,646	2.518
Don't know	13.0	16.8	7.3	15.0	749	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Side effects are normal and usually go away in a few months						
Agree	50.1	42.7	52.3	46.2	2,990	58.092
Disagree	25.0	30.6	29.9	28.0	1,583	1.484
Don't know	24.9	26.7	17.8	25.9	1,460	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Religious leaders should speak publicly about modern contraception						
Agree	51.5	49.5	50.0	50.5	3,079	106.955
Disagree	32.6	37.5	43.2	35.3	2,187	2.344
Don't know	15.9	13.0	6.8	14.3	767	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Most couples in my community use modern contraception for birth spacing						
Agree	42.8	34.2	51.7	38.2	2,752	138.535
Disagree	37.6	38.1	34.1	37.9	2,033	2.398
Don't know	19.6	27.7	14.2	23.9	1,248	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
It is important that husbands and wives discuss contraception						
Agree	69.4	62.5	72.4	65.7	4,165	82.298
Disagree	19.4	29.7	23.8	24.9	1,388	1.943
Don't know	11.2	7.8	3.9	9.3	480	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
A woman's body is not ready for childbirth until she is 18						
Agree	27.4	22.6	26.7	24.8	1,546	125.008
Disagree	59.9	69.9	70.3	65.3	4,026	2.506
Don't know	12.8	7.5	3.1	10.0	461	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Women over 35 have a higher risk of complications and should consider limiting births						
Agree	36.6	32.4	42.8	34.3	2,265	173.162
Disagree	48.3	53.8	52.2	51.3	3,092	3.470
Don't know	15.2	13.8	5.0	14.4	676	*
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		

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TABLE 3.3.4. CONTRACEPTION MYTHS AND PERCEIVED HEALTH RISKS

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years reporting contraception myths and perceived health risks, September–October 2019

	INTERVENTION AREA			N	CHI² VALUE
	INTEGRATED (KEBBI/SOKOTO) %	MALARIA-ONLY (ZAMFARA) %	TOTAL %		
Use of some contraceptives can make a woman permanently infertile					
Agree	31.4	25.1	27.6	1,728	101.959
Disagree	40.9	54.1	48.7	2,684	2.063
Don't know	27.7	20.8	23.6	1,621	.
Total	100.0	100.0	100.0	6,033	
N	4,022	2,011	6,033		
Contraceptives can harm a woman's womb					
Agree	32.8	23.8	27.5	1,738	135.019
Disagree	39.2	54.4	48.2	2,645	2.738
Don't know	28.0	21.9	24.3	1,650	.
Total	100.0	100.0	100.0	6,033	
N	4,022	2,011	6,033		
Contraceptives can cause cancer					
Agree	21.3	16.0	18.2	1,173	157.593
Disagree	36.5	52.9	46.2	2,513	3.183
Don't know	42.2	31.1	35.6	2,347	*
Total	100.0	100.0	100.0	6,033	
N	4,022	2,011	6,033		
Contraceptives can give you deformed babies					
Agree	20.6	15.5	17.6	1,128	103.150
Disagree	44.8	58.1	52.7	2,978	2.324
Don't know	34.6	26.4	29.7	1,927	.
Total	100.0	100.0	100.0	6,033	
N	4,022	2,011	6,033		
Women who use contraception end up with health problems					
Agree	35.0	30.5	32.3	1,974	123.174
Disagree	36.8	50.5	45.0	2,490	2.640
Don't know	28.2	19.0	22.7	1,569	.
Total	100.0	100.0	100.0	6,033	
N	4,022	2,011	6,033		
Contraceptives can reduce a man's sexual urge					
Agree	17.8	11.1	13.8	954	162.542
Disagree	38.2	54.5	47.9	2,613	3.377
Don't know	44.0	34.4	38.3	2,466	*
Total	100.0	100.0	100.0	6,033	
N	4,022	2,011	6,033		
Contraceptives can reduce a woman's sexual urge					
Agree	17.6	12.8	14.8	991	147.498
Disagree	38.4	54.3	47.8	2,612	3.151
Don't know	44.1	32.9	37.4	2,430	*
Total	100.0	100.0	100.0	6,033	
N	4,022	2,011	6,033		
Women who use contraceptives may become promiscuous					
Agree	19.6	11.1	14.6	1,064	166.608
Disagree	40.8	56.6	50.1	2,753	3.281
Don't know	39.6	32.4	35.3	2,216	*
Total	100.0	100.0	100.0	6,033	
N	4,022	2,011	6,033		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 3.3.5. SPOUSAL COMMUNICATION ABOUT CONTRACEPTION

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years reporting on spousal communication about contraception, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
Ever talked to your husband/partner about the number of children to have?						
No	94.5	92.1	91.0	93.2	5,565	36.612
Yes	4.8	6.6	8.8	5.7	423	3.104
Don't know	0.7	1.4	0.2	1.1	45	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Ever talked with husband/partner about using modern contraception?						
No	85.2	83.4	73.9	84.2	4,898	96.933
Yes	14.2	15.3	25.3	14.8	1,079	4.811
Don't know	0.7	1.3	0.8	1.0	56	*
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Discussion with partner included						
Which method to use						
No	54.9	44.8	40.1	49.3	498	7.614
Yes	45.1	55.2	59.9	50.7	581	0.817
Total	100.0	100.0	100.0	100.0	1,079	.
N	245	321	513	566		
Using a method to space births						
No	29.2	31.2	27.1	30.3	308	1.133
Yes	70.8	68.8	72.9	69.7	771	0.170
Total	100.0	100.0	100.0	100.0	1,079	.
N	245	321	513	566		
Using a method to not have more births						
No	94.3	94.6	78.5	94.5	954	39.866
Yes	5.7	5.4	21.5	5.5	125	5.225
Total	100.0	100.0	100.0	100.0	1,079	*
N	245	321	513	566		
Side effects of methods						
No	89.4	88.9	77.9	89.1	926	18.151
Yes	10.6	11.1	22.1	10.9	153	1.389
Total	100.0	100.0	100.0	100.0	1,079	.
N	245	321	513	566		
Who decides if you use a contraceptive method?						
Mainly your decision	22.9	17.2	26.8	19.9	1,458	137.967
Mainly your partner's decision	32.9	26.9	17.2	29.7	1,494	2.548
Both decide together	44.2	55.9	56.0	50.5	3,081	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 3.3.6. WHO ELSE INFLUENCES DECISIONS ABOUT CONTRACEPTIVE USE?

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years reporting on who else influences a woman's decision about contraceptive use, September–October 2019

	INTERVENTION AREA			N	CHI² VALUE
	INTEGRATED (KEBBI/SOKOTO) %	MALARIA-ONLY (ZAMFARA) %	TOTAL %		
No one else					
No	38.7	39.0	38.9	2,294	0.044
Yes	61.3	61.0	61.1	3,740	0.002
Total	100.0	100.0	100.0	6,034	.
N	4,022	2,012	6,034		
Partner					
No	69.9	69.9	69.9	4,236	0.001
Yes	30.1	30.1	30.1	1,798	0.000
Total	100.0	100.0	100.0	6,034	.
N	4,022	2,012	6,034		
Mother-in-law					
No	94.0	98.4	96.6	5,780	83.068
Yes	6.0	1.6	3.4	254	14.751
Total	100.0	100.0	100.0	6,034	***
N	4,022	2,012	6,034		
Mother					
No	95.4	95.9	95.7	5,786	0.784
Yes	4.6	4.1	4.3	248	0.064
Total	100.0	100.0	100.0	6,034	.
N	4,022	2,012	6,034		
Other own family					
No	99.5	98.7	99.0	5,986	9.401
Yes	0.5	1.3	1.0	48	2.905
Total	100.0	100.0	100.0	6,034	.
N	4,022	2,012	6,034		
Other partner's family					
No	99.8	99.3	99.5	6,020	7.725
Yes	0.2	0.7	0.5	14	3.674
Total	100.0	100.0	100.0	6,034	.
N	4,022	2,012	6,034		
Friends					
No	98.4	97.4	97.8	5,914	6.675
Yes	1.7	2.7	2.2	120	1.071
Total	100.0	100.0	100.0	6,034	.
N	4,022	2,012	6,034		
Health provider					
No	96.7	96.1	96.4	5,829	1.281
Yes	3.3	3.9	3.6	205	0.116
Total	100.0	100.0	100.0	6,034	.
N	4,022	2,012	6,034		
Community/religious leader					
No	99.6	99.9	99.8	6,019	4.513
Yes	0.4	0.1	0.2	15	1.995
Total	100.0	100.0	100.0	6,034	.
N	4,022	2,012	6,034		
Other					
No	99.8	99.1	99.4	6,007	12.058
Yes	0.2	0.9	0.6	27	5.329
Total	100.0	100.0	100.0	6,034	*
N	4,022	2,012	6,034		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 3.3.7. SELF-EFFICACY TO CONVINCE PARTNER ABOUT CONTRACEPTION USE

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years reporting on self-efficacy to convince partner about contraceptive use, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Confident in ability to convince partner to use modern contraception to SP						
Confident	53.8	41.2	52.2	47.0	3,022	99.746
Uncertain	37.9	52.1	45.6	45.5	2,641	2.695
Don't know	8.3	6.8	2.2	7.5	370	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Confidence in ability to use modern contraception even if partner opposes						
Confident	35.1	29.6	40.9	32.1	2,134	104.217
Uncertain	55.8	65.4	56.7	60.9	3,549	2.831
Don't know	9.2	5.1	2.4	7.0	350	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

4 Current pregnancy

Key findings

Among respondents who were currently pregnant, 87 percent reported that they wanted to get pregnant at the time they did for this pregnancy, and 84 percent planned to have another child in the future. Among those currently in late pregnancy (7–9 months pregnant), only half (53%) reported attending any ANC; 66 percent of respondents went for their first visit during the second trimester. In Kebbi/Sokoto, the most common sources for the first ANC visit were government PHC (49%) or government hospital (37%), whereas in Zamfara respondents in late pregnancy who attended ANC were 1.5 times more likely to go to a government hospital than a government PHC. Among respondents currently in late pregnancy (7–9 months) who did not attend antenatal care, the most common reasons for non-attendance included: lack of perceived need (47%), spousal opposition (37%), and fatalism ("It's up to God") (20%).

Most respondents currently in late pregnancy (7-9 months) and who attended ANC reported that the following checks were done: blood pressure measured (90%), urine sample taken (72%), blood sample taken (76%), HIV testing (50%), weight measured (79%), pregnancy danger signs discussed (67%), and baby's due date discussed (50%). About half of these respondents were given iron tablets or folic acid supplements, and only 39 percent and 17 percent, respectively, reported receiving a tetanus injection or being given deworming medication. Only 16 percent of respondents currently in late pregnancy and who attended ANC reported receiving a mosquito net during ANC. In addition, few of these respondents discussed a birth plan with a health worker, with significantly lower birth planning practiced in Kebbi/Sokoto (25%) than in Zamfara (45%). This suggests that developing a birth plan is not a standard practice in these areas, and that birth planning could be a potential topic for more focused SBC programming.

All currently pregnant respondents were asked about their dietary intake in the previous 24 hours. Seven out of 10 respondents (71%) reported eating at least three main meals during the previous day or night. Nearly all pregnant respondents (92%) reported eating breads, rice, tuwo (stodgy, tuber- or grain-based meal), or other grains. Other commonly reported foods eaten in the previous 24-hour period included: beans, peas, or lentils (59%); oil, fats, and butters (59%); dark green leafy vegetables (58%); meat, poultry, or fish (48%); milk, cheese, yogurt, or other dairy (43%); and sugary foods (36%). Few pregnant respondents across study areas reportedly ate eggs (21%) or mangoes or papaya (14%).

TABLE 4.1.1. PREGNANCY INTENTIONS DURING CURRENT PREGNANCY

Percentage of currently pregnant women aged 15 to 49 years who report pregnancy intentions for this current pregnancy, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
How many months pregnant are you?						
0-3 months	22.9	22.4	26.5	22.6	685	44.990
4-6 months	40.1	35.7	37.4	37.7	1,114	3.140
7+ months	32.2	31.2	33.3	31.7	1,031	*
Don't know	4.8	10.8	2.8	8.0	198	
Total	100.0	100.0	100.0	100.0	3,028	
N	984	1,040	1,004	2,024		
When you got pregnant, did you want to get pregnant at that time?						
No	14.7	8.5	13.3	11.4	375	2.327
Yes	85.3	91.5	86.7	88.6	2,653	0.331
Total	100.0	100.0	100.0	100.0	3,028	.
N	984	1,040	1,004	2,024		
Want to have a baby later or no more children? (among mothers)						
No more/None	37.0	19.1	19.3	29.5	84	4.422
Later	63.0	80.9	80.7	70.5	235	1.325
Total	100.0	100.0	100.0	100.0	319	.
N	117	85	117	202		
Want to have a baby later or no more children? (among never mothers)						
No more/None	16.8	17.0	19.6	16.9	12	0.051
Later	83.2	83.0	80.4	83.1	44	0.039
Total	100.0	100.0	100.0	100.0	56	.
N	22	10	24	32		
How much longer did you want to wait (in years)?						
Don't know	20.2	11.6	1.8	16.3	30	23.365
0-2	35.9	19.4	41.2	28.5	90	3.620
3	30.6	39.1	30.9	34.4	92	*
4-8	13.4	29.9	26.2	20.8	67	
Total	100.0	100.0	100.0	100.0	279	
N	92	76	111	168		
Do you plan to have another child in the future?						
No	10.3	6.7	17.7	8.4	343	109.335
Yes	83.3	90.0	81.9	86.9	2,578	7.791
Don't know	6.4	3.4	0.5	4.8	107	**
Total	100.0	100.0	100.0	100.0	3,028	
N	984	1,040	1,004	2,024		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 4.1.2. ANC VISITS AND TIMING DURING CURRENT PREGNANCY

Percentage of women aged 15 to 49 currently in late pregnancy (7–9 months) reporting ANC visits and timing for current pregnancy, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
At anytime during this pregnancy, have you seen anyone for ANC?						
No	47.8	48.7	47.0	48.3	451	0.903
Yes	52.2	51.3	53.0	51.7	580	0.018
Total	100.0	100.0	100.0	100.0	1,031	.
N	334	340	357	674		
When did you first receive ANC for this pregnancy?						
0–3 months	18.6	21.5	15.8	20.1	104	75.416
4–6 months	64.7	63.6	67.6	64.2	380	1.519
7+ months	13.8	14.6	16.6	14.2	90	.
Don't know	2.9	0.4	0.0	1.6	6	
Total	100.0	100.0	100.0	100.0	580	
N	181	190	209	371		
Where did you receive ANC for this first visit during the pregnancy?						
Don't know	1.3	0.0	0.0	0.6	2	.
Other	0.0	1.0	0.0	0.5	2	.
Other private sector	0.0	0.0	0.0	0.0	0	.
Government hospital	38.9	35.8	55.0	37.3	267	
Governmental PHC	49.3	48.7	37.0	49.0	249	
Dispensary/health post	2.9	9.8	1.6	6.5	26	
Community health outreach post	3.0	0.8	3.9	1.8	15	
Nursing/maternity home	0.9	0.0	0.8	0.4	3	
Private hospital/clinic	3.2	3.3	0.0	3.3	11	
Pharmacy/chemist	0.5	0.7	1.7	0.6	5	
Total	100.0	100.0	100.0	100.0	580	
N	181	190	209	371		
Whom did you see when you first received ANC during this pregnancy?						
Don't know/don't remember	0.0	0.0	0.0	0.0	0	.
Other	0.7	0.5	0.0	0.6	2	.
Other health personnel	0.5	0.0	0.0	0.2	1	.
Doctor	11.4	20.1	8.4	16.0	77	
Nurse/midwife	60.2	51.6	66.8	55.7	352	
Community health worker	25.6	27.3	24.9	26.5	144	
Chemist	1.0	0.0	0.0	0.5	2	
Traditional healer/birth attendant	0.0	0.5	0.0	0.3	1	
Family	0.7	0.0	0.0	0.3	1	
Friends/neighbors	0.0	0.0	0.0	0.0	0	
Total	100.0	100.0	100.0	100.0	580	
N	181	190	209	371		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates $p<0.001$, ** indicates $p<0.05$ and * indicates $p<.0.01$ for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 4.1.3. ANC CONTENT DURING CURRENT PREGNANCY

Percentage of women aged 15 to 49 currently in late pregnancy (7–9 months) reporting ANC content for current pregnancy, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
How many checkups have you had for this pregnancy?						
None	2.0	0.0	0.0	0.9	2	267.055
1	18.2	19.7	17.1	19.0	98	3.363
2	16.4	14.9	26.6	15.6	114	**
3	15.3	16.5	21.8	15.9	111	
4+	45.1	46.7	34.5	45.9	245	
Don't know	3.2	2.3	0.0	2.7	10	
Total	100.0	100.0	100.0	100.0	580	
N	181	190	209	371		
Was your blood pressure measured?						
No	21.1	13.7	5.3	17.2	71	220.168
Yes	78.9	85.9	94.7	82.6	508	8.029
Don't know	0.0	0.4	0.0	0.2	1	**
Total	100.0	100.0	100.0	100.0	580	
N	181	190	209	371		
Did you give a urine sample?						
No	40.7	38.6	21.6	39.6	173	210.334
Yes	59.3	61.4	78.4	60.4	407	5.113
Total	100.0	100.0	100.0	100.0	580	*
N	181	190	209	371		
Did you give a blood sample?						
No	30.7	28.2	20.5	29.4	142	.
Yes	69.3	71.8	79.5	70.6	438	.
Don't know	0.0	0.0	0.0	0.0	0	.
Total	100.0	100.0	100.0	100.0	580	
N	181	190	209	371		
Were you tested for HIV?						
No	43.6	37.7	29.3	40.5	202	501.476
Yes	34.7	30.5	61.0	32.5	260	6.291
Don't know	21.8	31.8	9.7	27.0	118	**
Total	100.0	100.0	100.0	100.0	580	
N	181	190	209	371		
Was your weight measured?						
No	42.3	18.2	14.7	29.7	125	218.840
Yes	56.4	81.3	85.4	69.4	451	4.299
Don't know	1.3	0.4	0.0	0.9	4	*
Total	100.0	100.0	100.0	100.0	580	
N	181	190	209	371		
Did you discuss with a health provider when the baby is due?						
No	59.6	58.8	43.7	59.2	293	176.048
Yes	40.4	39.0	56.3	39.7	282	3.154
Don't know	0.0	2.3	0.0	1.2	5	.
Total	100.0	100.0	100.0	100.0	580	
N	181	190	209	371		
Told by health worker about danger signs in pregnancy?						
No	44.0	36.1	29.4	39.8	206	.
Yes	56.1	63.9	70.7	60.2	374	.
Don't know	0.0	0.0	0.0	0.0	0	.
Total	100.0	100.0	100.0	100.0	580	
N	181	190	209	371		
Ever been given a mosquito net as part of ANC?						
No	95.4	82.4	81.9	88.6	497	45.192
Yes	4.6	17.6	18.1	11.4	83	2.336
Total	100.0	100.0	100.0	100.0	580	.
N	181	190	209	371		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 4.1.4. BIRTH PLANNING DURING CURRENT PREGNANCY

Percentage of women aged 15 to 49 currently in late pregnancy (7–9 months) reporting on childbirth planning with health worker during current pregnancy, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Discussed with a health worker a plan for your delivery?						
No	77.9	71.6	54.6	74.6	383	231.967
Yes	21.7	28.4	45.4	25.2	196	4.155
Don't know	0.5	0.0	0.0	0.2	1	*
Total	100.0	100.0	100.0	100.0	580	
N	181	190	209	371		
Where you plan to deliver the baby?						
No	26.1	14.8	3.6	19.5	22	351.219
Yes	73.9	85.2	96.4	80.5	174	13.204
Total	100.0	100.0	100.0	100.0	196	***
N	38	56	102	94		
If you wanted to have a relative/friend/ neighbor with you during labor						
No	26.4	42.7	33.2	36.0	67	46.143
Yes	71.0	57.3	66.8	62.9	128	0.444
Don't know	2.6	0.0	0.0	1.1	1	.
Total	100.0	100.0	100.0	100.0	196	
N	38	56	102	94		
Transportation to where the baby would be born?						
No	53.7	42.3	33.4	47.0	79	160.490
Yes	41.7	57.7	66.6	51.1	115	1.690
Don't know	4.6	0.0	0.0	1.9	2	.
Total	100.0	100.0	100.0	100.0	196	
N	38	56	102	94		
What funds or finances you would use for delivery?						
No	49.4	31.7	24.9	39.0	60	177.141
Yes	45.9	68.3	75.1	59.1	134	2.284
Don't know	4.6	0.0	0.0	1.9	2	.
Total	100.0	100.0	100.0	100.0	196	
N	38	56	102	94		
Finding a skilled birth attendant to deliver your child						
No	32.6	22.8	20.6	26.8	47	99.559
Yes	62.8	77.3	79.4	71.3	147	1.613
Don't know	4.6	0.0	0.0	1.9	2	.
Total	100.0	100.0	100.0	100.0	196	
N	38	56	102	94		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates $p<0.001$, ** indicates $p<0.05$ and * indicates $p<.0.01$ for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 4.1.5. REASONS FOR NOT ATTENDING ANC DURING CURRENT PREGNANCY

Percentage of women aged 15 to 49 currently in late pregnancy (7–9 months) reporting reasons for not attending any antenatal care during current pregnancy, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Costs too much/Difficulty getting money						
No	85.0	85.2	90.9	85.1	397	43.674
Yes	15.0	14.8	9.1	14.9	54	0.836
Total	100.0	100.0	100.0	100.0	451	.
N	153	150	148	303		
Don't know where to go						
No	96.7	97.4	96.7	97.1	436	0.738
Yes	3.3	2.6	3.3	2.9	15	0.027
Total	100.0	100.0	100.0	100.0	451	.
N	153	150	148	303		
Health facility not open						
No	97.3	95.9	98.1	96.5	437	12.601
Yes	2.7	4.1	1.9	3.5	14	0.303
Total	100.0	100.0	100.0	100.0	451	.
N	153	150	148	303		
Distance to health facility too far						
No	95.6	98.8	97.3	97.3	437	0.003
Yes	4.4	1.2	2.7	2.7	14	0.000
Total	100.0	100.0	100.0	100.0	451	.
N	153	150	148	303		
Poor quality of service						
No	98.5	99.6	99.6	99.1	446	6.378
Yes	1.5	0.4	0.4	0.9	5	0.609
Total	100.0	100.0	100.0	100.0	451	.
N	153	150	148	303		
No female provider at facility						
No	100.0	96.0	75.0	97.9	423	498.139
Yes	0.0	4.0	25.0	2.1	28	5.916
Total	100.0	100.0	100.0	100.0	451	*
N	153	150	148	303		
Husband/partner oppose						
No	66.8	72.7	58.7	70.0	303	70.411
Yes	33.2	27.3	41.3	30.0	148	0.537
Total	100.0	100.0	100.0	100.0	451	.
N	153	150	148	303		
Religious leader opposes						
No	95.0	99.4	98.7	97.3	440	13.595
Yes	5.1	0.6	1.3	2.7	11	0.459
Total	100.0	100.0	100.0	100.0	451	.
N	153	150	148	303		
Not necessary to go						
No	65.1	52.0	49.5	58.2	274	39.169
Yes	34.9	48.0	50.5	41.8	177	0.337
Total	100.0	100.0	100.0	100.0	451	.
N	153	150	148	303		
Not customary						
No	93.5	68.5	91.6	80.3	392	148.691
Yes	6.5	31.5	8.4	19.7	59	1.632
Total	100.0	100.0	100.0	100.0	451	.
N	153	150	148	303		
Up to God						
No	82.3	68.8	82.4	75.1	356	42.339
Yes	17.8	31.2	17.6	24.9	95	0.940
Total	100.0	100.0	100.0	100.0	451	.
N	153	150	148	303		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 4.1.6. MEDICINES OR VACCINATIONS RECEIVED DURING CURRENT PREGNANCY

Percentage of women 15 to 49 years currently in late pregnancy (7–9 months) reporting medicines or vaccinations received during ANC for current pregnancy, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
Were you given an injection in the arm to prevent tetanus?						
No	63.9	63.3	58.9	63.6	597	47.500
Yes	34.4	36.7	41.2	35.6	427	1.057
Don't know	1.8	0.0	0.0	0.8	7	.
Total	100.0	100.0	100.0	100.0	1,031	
N	334	340	357	674		
Before this pregnancy, how many times did you get a tetanus injection?						
None	44.3	62.2	63.4	53.7	552	287.726
1	5.9	5.3	3.1	5.6	54	2.710
2	5.8	5.9	11.2	5.9	84	.
3 or more	4.2	7.4	9.0	5.9	80	
Don't know	39.7	19.3	13.3	29.0	258	
Total	100.0	100.0	100.0	100.0	1,028	
N	333	339	356	672		
During this pregnancy, have you taken any iron tablet or iron syrup?						
No	54.2	56.4	50.3	55.4	513	35.616
Yes	45.6	42.8	49.7	44.1	513	0.651
Don't know	0.2	0.8	0.0	0.5	5	.
Total	100.0	100.0	100.0	100.0	1,031	
N	334	340	357	674		
During this pregnancy, have you taken any folic acid supplements?						
No	56.5	56.0	50.7	56.2	521	81.318
Yes	40.0	43.0	49.1	41.6	490	1.441
Don't know	3.5	1.0	0.2	2.2	20	.
Total	100.0	100.0	100.0	100.0	1,031	
N	334	340	357	674		
During this pregnancy, have you taken any drugs for intestinal worms?						
No	65.3	75.6	81.3	70.7	742	90.720
Yes	25.8	18.3	14.1	21.8	215	2.258
Don't know	8.9	6.1	4.6	7.4	74	.
Total	100.0	100.0	100.0	100.0	1,031	
N	334	340	357	674		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

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TABLE 4.1.7. NUTRITIONAL INTAKE DURING CURRENT PREGNANCY

Percentage of women aged 15 to 49 who are currently pregnant reporting foods eaten during the previous 24 hours, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
How many meals did you have at any time yesterday?						
None	0.1	0.2	0.1	0.1	4	113.635
1	1.7	7.3	1.8	4.7	106	5.742
2	17.2	25.2	9.5	21.5	523	***
3 or more	81.0	66.5	88.3	73.3	2,380	
Don't know	0.1	0.8	0.4	0.5	15	
Total	100.0	100.0	100.0	100.0	3,028	
N	984	1,040	1,004	2,024		
Did you eat any of the following at any time yesterday (during the day or night)?						
Milk, cheese, yoghurt, other dairy						
No	65.6	53.9	55.5	59.4	1,792	5.515
Yes	34.4	45.9	44.2	40.5	1,230	0.280
Don't know	0.0	0.2	0.3	0.1	6	.
Total	100.0	100.0	100.0	100.0	3,028	
N	984	1,040	1,004	2,024		
Bread, rice, tuwo or other grains						
No	8.3	3.5	7.6	5.8	173	5.756
Yes	91.67	96.4	92.2	94.2	2,851	0.240
Don't know	0.0	0.1	0.2	0.0	4	.
Total	100.0	100.0	100.0	100.0	3,028	
N	984	1,040	1,004	2,024		
White potato, cassava, yam, eba, or other foods from roots or tubers						
No	58.1	72.4	56.9	65.8	1,890	23.621
Yes	41.5	27.3	42.6	33.9	1,127	1.562
Don't know	0.3	0.3	0.5	0.3	11	.
Total	100.0	100.0	100.0	100.0	3,028	
N	984	1,040	1,004	2,024		
Pumpkin, squash, or other that is yellow or orange inside						
No	82.8	86.4	79.3	84.8	2,532	15.024
Yes	16.5	13.3	19.7	14.8	477	0.719
Don't know	0.6	0.3	1.0	0.5	19	.
Total	100.0	100.0	100.0	100.0	3,028	
N	984	1,040	1,004	2,024		
Any dark and leafy vegetables						
No	37.5	51.4	40.1	44.9	1,330	7.046
Yes	62.2	48.3	59.6	54.7	1,686	0.501
Don't know	0.4	0.3	0.4	0.3	12	.
Total	100.0	100.0	100.0	100.0	3,028	
N	984	1,040	1,004	2,024		
Ripe mangoes, pawpaw						
No	87.7	91.9	82.6	90.0	2,665	31.884
Yes	12.2	7.8	16.7	9.8	352	1.806
Don't know	0.1	0.3	0.7	0.2	11	.
Total	100.0	100.0	100.0	100.0	3,028	
N	984	1,040	1,004	2,024		

Other kinds of fruits/vegetables (other local vitamin A rich fruits)

No	57.6	79.9	67.2	69.5	2,062	1.950
Yes	42.0	19.8	32.4	30.1	952	0.104
Don't know	0.4	0.3	0.5	0.4	14	.
Total	100.0	100.0	100.0	100.0	3,028	
N	984	1,040	1,004	2,024		

Eggs

No	80.7	86.1	75.4	83.6	2,429	29.028
Yes	19.2	13.6	24.4	16.2	592	1.890
Don't know	0.1	0.3	0.2	0.2	7	.
Total	100.0	100.0	100.0	100.0	3,028	
N	984	1,040	1,004	2,024		

Any kinds of meat, poultry, fish, or shellfish (or organ meats)

No	53.9	56.5	49.1	55.3	1,586	11.563
Yes	45.9	43.2	50.5	44.5	1,432	0.716
Don't know	0.1	0.3	0.4	0.2	10	.
Total	100.0	100.0	100.0	100.0	3,028	
N	984	1,040	1,004	2,024		

Any foods made from beans, peas, lentils or nuts

No	44.8	58.3	32.5	52.0	1,363	117.060
Yes	53.7	41.4	67.0	47.2	1,642	5.578
Don't know	1.4	0.3	0.5	0.8	23	**
Total	100.0	100.0	100.0	100.0	3,028	
N	984	1,040	1,004	2,024		

Any oil, fats, butter or foods made with these

No	41.4	53.5	35.7	47.8	1,317	47.337
Yes	56.8	46.2	63.7	51.1	1,681	1.590
Don't know	1.9	0.3	0.6	1.0	30	.
Total	100.0	100.0	100.0	100.0	3,028	
N	984	1,040	1,004	2,024		

Sugary foods such as dates, sweets, biscuits

No	70.1	67.9	58.7	68.9	1,945	34.988
Yes	28.2	31.7	40.6	30.0	1,051	1.536
Don't know	1.8	0.4	0.7	1.1	32	.
Total	100.0	100.0	100.0	100.0	3,028	
N	984	1,040	1,004	2,024		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi^2 statistic comparing integrated versus malaria-only study areas.

5 Antenatal, delivery, and newborn care

5.1 Antenatal care

Key findings

ANC attendance: Among respondents with a completed pregnancy in the past two years, only 32 percent in Kebbi/Sokoto and 38 percent in Zamfara made at least one ANC visit with a skilled health provider. This percentage was significantly higher among respondents in the wealthiest households (58% and 75%) than in the poorest households (18% and 12%) in Kebbi/Sokoto and Zamfara, respectively. Similarly, respondents who attended primary or secondary/higher education in both areas were more likely to attend ANC at least one time than their less educated counterparts. As a result, only 20 percent of respondents in Kebbi/Sokoto and 26 percent in Zamfara made the recommended four or more ANC visits during their last pregnancy, with similar patterns by sociodemographic characteristics.

ANC awareness and non-use reasons: Among respondents who chose not to make any ANC visits during the last pregnancy, the most common reasons were lack of perceived need (42%), spousal opposition (25%), fatalism ("It's up to God") (20%), and the perception that ANC is not the norm (13%). Few respondents were aware of the suggested number and timing of ANC visits during pregnancy. There was higher awareness about attending ANC four or more times in Zamfara (49%) than in Kebbi/Sokoto (34%). Only one quarter of respondents reported that a woman should go for her first ANC visit as soon as she thinks she is pregnant or in the first trimester.

ANC decision-making, self-efficacy, and intentions: All respondents were asked about who influences a woman's decision to go to four or more ANC visits. The most common responses were spouse (67%) and no one else (26%). Nearly all respondents (92%) agreed that it is important to discuss their pregnancies with their husbands yet only 73 percent of respondents had the confidence to start a conversation with their husband about attending ANC. Only about two-thirds of respondents (66%) intended to make at least four ANC visits during their next pregnancies with fewer (48%) intending to go to ANC eight or more times.

ANC myths: All respondents were asked about the benefits of ANC to a woman. The most common responses were to monitor the mother's health (66%) and the baby's growth (65%). Nevertheless, there were some common myths about ANC, with a greater proportion of respondents agreeing with these myths in Kebbi/Sokoto than in Zamfara. Overall, 48 percent and 35 percent of respondents in Kebbi/Sokoto and Zamfara, respectively, agreed that pregnant women need ANC only when sick, while 40 percent and 30 percent of respondents in these areas agreed that it is better to use a traditional provider than a health facility for ANC. One-quarter of respondents (25%) believed that only first-time mothers need ANC. These responses point to areas for SBC activities to improve ANC attendance by dispelling myths and raising awareness of ANC benefits among women in these areas.

ANC content: Beyond malaria prevention during pregnancy, few respondents received other essential pregnancy-related care during their last pregnancy. For example, roughly half of respondents (47%) in Zamfara and one-third (35%) in Kebbi/Sokoto received a tetanus injection during their most recent pregnancy, even though the majority (66% in Kebbi/Sokoto and 61% in Zamfara) had not received any tetanus injection prior to the most recent pregnancy. Only about half of respondents reported having taken iron tablets/iron syrup (42% in Kebbi/Sokoto and 53% in Zamfara). Similarly, only 41 percent of respondents in Kebbi/Sokoto and 54 percent of respondents in Zamfara took any folic acid supplements during their most recent pregnancy.

Birth planning: Developing a birth plan with the assistance of a health worker does not appear to be standard practice in study areas, and baseline results point to the need for more intensified SBC messaging to improve this practice going forward. Only one in three respondents reported discussing birth plans with a health worker, with the majority of these respondents reporting that discussions focused on delivery location (92%), delivery financing (74%), finding a skilled birth attendant (72%), choosing personnel to have present during the delivery (67%), and transportation (60%).

TABLE 5.1.A. ANC 1+ DURING LAST PREGNANCY BY SOCIODEMOGRAPHIC CHARACTERISTICS

Percentage of women 15 to 49 years with a child under 2 years who attended ANC one or more times where at least one visit was with a skilled provider for their last-born child by sociodemographic characteristics, September–October 2019

	KEBBI		SOKOTO		MALARIA-ONLY (ZAMFARA)		INTEGRATED (KEBBI/SOKOTO)	
	%	N	%	N	%	N	%	N
Total	41.9	892	24.4	1,078	38.2	1,069	32.0	1,971
Household wealth								
Lowest	26.2	264	11.7	341	11.7	111	17.5	606
Second	38.9	192	19.2	229	18.0	183	27.8	421
Middle	44.4	157	31.7	220	24.6	223	36.8	377
Fourth	57.7	113	32.9	135	41.1	248	44.6	249
Highest	61.8	166	54.4	153	75.3	304	58.4	318
Maternal age (in years)								
15–24 years	36.2	367	24.8	485	32.8	423	29.3	852
25–34 years	43.7	412	23.7	478	41.6	486	32.8	890
35–49 years	52.0	113	25.5	115	43.7	160	37.8	229
Maternal education (highest level attended)								
None	33.5	675	22.4	855	28.9	698	27.0	1,530
Primary	64.7	47	48.9	57	74.1	60	55.8	104
Secondary or higher	83.5	95	62.2	60	85.3	180	75.9	155
Islamic	54.7	75	15.6	106	23	131	32.9	182

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates $p<0.001$, ** indicates $p<0.05$ and * indicates $p<.01$ for the chi^2 statistic comparing integrated versus malaria-only study areas.

TABLE 5.1.B. ANC 4+ DURING LAST PREGNANCY BY SOCIODEMOGRAPHIC CHARACTERISTICS

Percentage of women 15 to 49 years with a child under 2 years who attended ANC four or more times where at least one visit was with a skilled provider for their last-born child by sociodemographic characteristics, September–October 2019

	KEBBI		SOKOTO		MALARIA-ONLY (ZAMFARA)		INTEGRATED (KEBBI/SOKOTO)	
	%	N	%	N	%	N	%	N
Total	23.5	892	16.9	1,078	26.1	1,069	19.7	1,971
Household wealth								
Lowest	12.1	264	6.2	341	5.9	111	8.5	606
Second	23.5	192	10.5	229	12.7	183	16.2	421
Middle	19.7	157	23.3	220	13.9	223	21.9	377
Fourth	37.8	113	25.7	135	25.7	248	31.3	249
Highest	39.1	166	43.7	153	56.8	304	41.4	318
Maternal age (in years)								
15–24 years	19.5	367	18.2	485	19.2	423	18.7	852
25–34 years	24.0	412	15.9	478	29.3	486	19.6	890
35–49 years	33.1	113	15.5	115	35.9	160	23.7	229
Maternal education (highest level attended)								
None	17.6	675	11.1	855	17.6	698	15.9	1,530
Primary	43.6	47	23.8	57	53.6	60	42.0	104
Secondary or higher	53.2	95	41.7	60	67.7	180	53.2	155
Islamic	30.5	75	17.2	106	15.8	131	19.0	182

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 5.1.1. PREGNANCY INTENTIONS DURING LAST PREGNANCY

Percentage of women 15 to 49 years with a child under 2 years reporting pregnancy intentions for their last-born child in the past two years, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
When you got pregnant, did you want to pregnant at that time?						
No	8.8	7.8	14.1	8.2	316	23.870
Yes	91.2	92.2	85.9	91.8	2,723	2.660
Total	100.0	100.0	100.0	100.0	3,039	.
N	892	1,078	1,069	1,970		
Did you want to have a baby later on or did you not want any more children?						
No more/None	24.4	22.7	23.7	23.5	80	0.001
Later	75.6	77.3	76.3	76.5	236	0.000
Total	100.0	100.0	100.0	100.0	316	.
N	86	87	143	173		
How much longer did you want to wait?						
0–6 months	97.3	87.2	95.6	91.7	219	8.289
7–12 months	0.7	1.4	3.6	1.1	6	3.889
Don't know	2.0	11.4	0.9	7.2	11	*
Total	100.0	100.0	100.0	100.0	236	
N	64	66	106	130		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 5.1.2. SOURCE AND TIMING OF ANC DURING LAST PREGNANCY

Percentage of women 15 to 49 years with a child under 2 years reporting source and timing of ANC for their last-born child in the past two years, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
During your pregnancy, did you see anyone for antenatal care?						
No	47.0	61.8	47.4	55.4	1,523	29.969
Yes	52.7	37.5	52.6	44.1	1,502	1.894
Don't know	0.3	0.7	0.0	0.6	14	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
When did you first receive antenatal care for last pregnancy?						
0–3 months	30.7	25.5	20.5	28.1	356	32.632
4–6 months	53.7	60.6	63.2	57.0	912	3.300
7+ months	9.0	11.0	14.9	10.0	188	*
Don't know	6.6	3.0	1.4	4.9	46	
Total	100.0	100.0	100.0	100.0	1,502	
N	452	457	593	909		
Where did you receive ANC for this first visit during your pregnancy						
Her home	4.2	2.5	0.8	3.4	37	
Other home	0.6	0.0	0.1	0.3	5	
Government hospital	31.8	30.8	46.6	31.4	616	
Governmental PHC	55.2	48.2	41.0	51.8	668	
Dispensary/health post	2.0	12.6	3.2	7.1	85	
Community health outreach post	2.7	0.9	4.1	1.8	31	
Nursing/maternity home	0.2	0.6	0.0	0.4	3	
Private hospital/clinic	1.4	3.2	0.8	2.3	29	
Pharmacy	0.5	0.4	2.6	0.4	15	
Don't know/don't remember	1.0	0.0	0.0	0.5	3	84.832
Other	0.3	0.0	0.5	0.2	3	2.001
Other public source	0.2	0.0	0.0	0.1	1	.
Other private source	0.0	0.9	0.4	0.4	6	
Total	100.0	100.0	100.0	100.0	1,502	
N	452	457	593	909		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 5.1.3. WHOM DID YOU SEE FOR THE FIRST ANC VISIT DURING LAST PREGNANCY?

Percentage of women 15 to 49 years with a child under 2 years reporting whom they saw for their first ANC visit for their last-born child in the past two years, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Doctor						
No	83.9	80.7	89.4	82.4	1,255	15.179
Yes	16.2	19.3	10.6	17.7	247	1.733
Total	100.0	100.0	100.0	100.0	1,502	.
N	452	457	593	909		
Nurse/midwife						
No	35.2	48.5	32.1	41.6	565	13.480
Yes	64.8	51.5	67.9	58.4	937	1.217
Total	100.0	100.0	100.0	100.0	1,502	.
N	452	457	593	909		
Community health worker						
No	80.8	62.8	69.0	72.0	1,085	1.496
Yes	19.2	37.3	31.0	28.0	417	0.119
Total	100.0	100.0	100.0	100.0	1,502	.
N	452	457	593	909		
Chemist						
No	99.3	100.0	98.6	99.6	1,492	3.320
Yes	0.8	0.0	1.4	0.4	10	1.645
Total	100.0	100.0	100.0	100.0	1,502	.
N	452	457	593	909		
Traditional healer/birth attendant						
No	99.7	100.0	99.8	99.9	1,499	0.051
Yes	0.3	0.0	0.2	0.2	3	0.055
Total	100.0	100.0	100.0	100.0	1,502	.
N	452	457	593	909		
Family						
No	98.8	99.9	99.7	99.3	1,494	1.166
Yes	1.2	0.1	0.3	0.7	8	1.035
Total	100.0	100.0	100.0	100.0	1,502	.
N	452	457	593	909		
Friends/neighbors						
No	99.8	100.0	100.0	99.9	1,501	0.933
Yes	0.2	0.0	0.0	0.1	1	1.788
Total	100.0	100.0	100.0	100.0	1,502	.
N	452	457	593	909		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 5.1.4. ANC CONTENT DURING LAST PREGNANCY

Percentage of women 15 to 49 years with a child under 2 years reporting on content of ANC visits for their last-born child in the past two years, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
How many check-ups did you have for your last pregnancy?						
Don't know	11.5	5.1	1.7	8.4	96	42.962
0	0.3	0.0	0.8	0.1	6	3.173
1–3	34.4	29.5	36.0	32.0	481	*
4–6	43.3	43.8	46.7	43.5	692	
7–60	10.7	21.6	14.8	16.0	227	
Total	100.0	100.0	100.0	100.0	1,502	
N	452	457	593	909		
Was your blood pressure measured?						
No	21.1	11.4	9.7	16.4	181	15.139
Yes	78.1	88.6	90.1	83.2	1,317	1.178
Don't know	0.8	0.0	0.2	0.4	4	.
Total	100.0	100.0	100.0	100.0	1,502	
N	452	457	593	909		
Did you give a urine sample?						
No	33.3	32.8	20.4	33.1	380	30.888
Yes	66.2	67.2	79.6	66.7	1,119	2.810
Don't know	0.5	0.0	0.1	0.3	3	.
Total	100.0	100.0	100.0	100.0	1,502	
N	452	457	593	909		
Did you give a blood sample?						
No	27.9	22.3	17.8	25.2	310	11.604
Yes	71.8	77.6	82.0	74.6	1,186	1.085
Don't know	0.3	0.1	0.3	0.2	6	.
Total	100.0	100.0	100.0	100.0	1,502	
N	452	457	593	909		
Were you tested for HIV?						
No	36.8	37.6	24.4	37.2	465	67.647
Yes	42.6	38.7	62.7	40.7	761	3.856
Don't know	20.6	23.7	12.9	22.1	276	*
Total	100.0	100.0	100.0	100.0	1,502	
N	452	457	593	909		
Was your weight measured?						
No	40.6	16.1	9.8	28.7	298	94.643
Yes	58.8	82.9	90.1	70.5	1,191	7.987
Don't know	0.6	1.0	0.1	0.8	13	**
Total	100.0	100.0	100.0	100.0	1,502	
N	452	457	593	909		
Did a health provider ask if you had vaginal bleeding?						
No	50.9	52.4	44.4	51.7	708	7.840
Yes	48.2	45.9	54.6	47.1	772	0.624
Don't know	0.9	1.6	0.9	1.2	22	.
Total	100.0	100.0	100.0	100.0	1,502	
N	452	457	593	909		
Were you told to pay attention to baby movements?						
No	34.2	26.0	27.2	30.2	416	6.529
Yes	64.9	72.7	72.5	68.7	1,073	0.562
Don't know	0.9	1.3	0.3	1.1	13	.
Total	100.0	100.0	100.0	100.0	1,502	
N	452	457	593	909		
Did you discuss baby due date?						
No	54.1	57.4	46.1	55.7	753	24.670
Yes	44.7	39.7	53.5	42.3	726	1.903
Don't know	1.2	2.9	0.4	2.0	23	.
Total	100.0	100.0	100.0	100.0	1,502	
N	452	457	593	909		
Told about danger signs in pregnancy?						
No	43.7	35.4	36.9	39.7	566	1.893
Yes	54.9	63.7	62.3	59.2	919	0.146
Don't know	1.4	0.9	0.8	1.2	17	.
Total	100.0	100.0	100.0	100.0	1,502	
N	452	457	593	909		
As part of your ANC during your pregnancy were you ever given a mosquito net?						
No	74.0	82.9	63.8	78.3	1,079	34.177
Yes	25.6	17.1	36.0	21.5	420	6.990
Don't know	0.4	0.0	0.2	0.2	3	**
Total	100.0	100.0	100.0	100.0	1,502	
N	452	457	593	909		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 5.1.5. BIRTH PLANNING DURING LAST PREGNANCY

Percentage of women 15 to 49 years with a child under 2 years who discussed a birth plan with a health worker for their last-born child in past two years by content, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Discuss with a health worker a plan for your delivery during your last pregnancy?						
No	74.4	69.7	64.9	72.1	1,019	8.167
Yes	25.2	30.3	34.7	27.7	478	0.651
Don't know	0.4	0.0	0.4	0.2	5	.
Total	100.0	100.0	100.0	100.0	1,502	
N	452	457	593	909		
Where you plan to deliver the baby?						
No	18.6	10.5	4.5	14.3	45	14.040
Yes	81.0	89.3	95.3	85.4	430	5.085
Don't know	0.4	0.2	0.1	0.3	3	*
Total	100.0	100.0	100.0	100.0	478	
N	116	147	215	263		
Wanted to have relative/friend/neighbor with you during labor?						
No	29.5	42.8	30.9	36.5	164	1.862
Yes	70.1	57.0	68.2	63.2	309	0.254
Don't know	0.4	0.2	0.9	0.3	5	.
Total	100.0	100.0	100.0	100.0	478	
N	116	147	215	263		
Transport to where the baby would be born?						
No	47.0	50.7	34.5	49.0	189	9.735
Yes	52.6	49.3	64.2	50.8	283	1.743
Don't know	0.4	0.0	1.3	0.2	6	.
Total	100.0	100.0	100.0	100.0	478	
N	116	147	215	263		
What funds you would use for delivery?						
No	49.4	34.3	18.3	41.4	146	28.711
Yes	49.2	65.5	80.4	57.8	324	5.518
Don't know	1.5	0.2	1.4	0.8	8	**
Total	100.0	100.0	100.0	100.0	478	
N	116	147	215	263		
Finding a skilled birth attendant for delivery?						
No	35.8	27.3	24.5	31.3	134	3.278
Yes	63.8	72.1	73.8	68.2	336	0.558
Don't know	0.4	0.7	1.7	0.5	8	.
Total	100.0	100.0	100.0	100.0	478	
N	116	147	215	263		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 5.1.6. REASONS FOR NOT ATTENDING ANC DURING LAST PREGNANCY

Percentage of women 15 to 49 years who did not attend ANC for their last-born child in past two years by reason, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
Costs too much/Difficulty getting money						
No	91.4	93.9	93.6	93.0	1,416	0.219
Yes	8.6	6.2	6.4	7.0	107	0.040
Total	100.0	100.0	100.0	100.0	1,523	
N	435	612	476	1,047		.
Don't know where to go						
No	97.3	97.0	93.9	97.1	1,467	8.440
Yes	2.7	3.1	6.1	2.9	56	1.064
Total	100.0	100.0	100.0	100.0	1,523	
N	435	612	476	1,047		.
Health facility not open						
No	96.5	98.5	96.0	97.8	1,487	3.874
Yes	3.5	1.5	4.0	2.2	36	0.369
Total	100.0	100.0	100.0	100.0	1,523	
N	435	612	476	1,047		.
Distance to health facility too far						
No	95.6	96.8	88.7	96.4	1,434	29.570
Yes	4.4	3.2	11.3	3.7	89	4.038
Total	100.0	100.0	100.0	100.0	1,523	*
N	435	612	476	1,047		
Poor quality of service						
No	98.6	99.2	98.2	99.0	1,501	1.639
Yes	1.4	0.8	1.8	1.0	22	0.575
Total	100.0	100.0	100.0	100.0	1,523	
N	435	612	476	1,047		.
No female provider at facility						
No	98.9	95.1	94.1	96.5	1,446	4.642
Yes	1.1	4.9	5.9	3.5	77	0.212
Total	100.0	100.0	100.0	100.0	1,523	
N	435	612	476	1,047		.
Husband/partner oppose						
No	76.2	82.5	70.5	80.2	1,151	18.770
Yes	23.8	17.5	29.6	19.8	372	1.797
Total	100.0	100.0	100.0	100.0	1,523	
N	435	612	476	1,047		.
Not wanting to go alone						
No	98.1	98.3	98.7	98.2	1,501	0.625
Yes	1.9	1.7	1.3	1.8	22	0.185
Total	100.0	100.0	100.0	100.0	1,523	
N	435	612	476	1,047		.
Not necessary to go						
No	47.1	52.7	64.3	50.7	847	28.662
Yes	52.9	47.3	35.7	49.3	676	2.495
Total	100.0	100.0	100.0	100.0	1,523	
N	435	612	476	1,047		.
Not customary						
No	93.0	79.1	89.7	84.2	1,332	10.193
Yes	7.0	20.9	10.3	15.8	191	0.784
Total	100.0	100.0	100.0	100.0	1,523	
N	435	612	476	1,047		.
Up to God						
No	90.2	70.2	81.3	77.6	1,228	3.247
Yes	9.8	29.8	18.7	22.5	295	0.505
Total	100.0	100.0	100.0	100.0	1,523	
N	435	612	476	1,047		.

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TABLE 5.1.7. MEDICINES OR VACCINATIONS RECEIVED DURING LAST PREGNANCY

Percentage of women 15 to 49 years who received certain medicines or vaccinations during pregnancy for their last-born child in past two years, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
Given an injection in the arm to prevent the baby from getting tetanus						
No	60.6	66.7	52.4	64.0	1,775	54.182
Yes	38.3	32.1	47.3	34.8	1,233	4.344
Don't know	1.2	1.2	0.3	1.2	31	*
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
During your last pregnancy, how many times were you given a tetanus injection?						
None	42.3	59.4	43.8	52.0	1,457	87.691
1	13.2	11.2	11.6	12.0	385	2.081
2	14.7	14.5	21.0	14.6	527	.
3 or more	9.6	6.4	15.8	7.8	327	
Don't know	20.2	8.6	7.8	13.6	343	
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
Before your last pregnancy, how many times did you get a tetanus injection?						
	0.0	0.1	0.0	0.0	1	93.569
None	59.3	70.9	60.6	65.9	1,905	2.617
1	5.4	5.2	5.8	5.3	175	.
2	4.0	6.3	10.4	5.3	222	
3 or more	3.0	2.9	9.6	3.0	169	
Don't know	28.3	14.7	13.7	20.5	567	
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
During your last pregnancy with child, did you take any iron tables or iron syrup?						
No	48.0	61.4	47.2	55.6	1,542	62.296
Yes	49.4	36.9	52.7	42.3	1,449	5.025
Don't know	2.7	1.8	0.1	2.2	48	*
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
During your last pregnancy with child, did you take any folic acid supplements?						
No	49.5	59.2	46.3	55.0	1,522	89.884
Yes	45.3	38.3	53.5	41.3	1,438	6.945
Don't know	5.2	2.5	0.2	3.6	79	**
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
During your last pregnancy, did you take any drugs for intestinal worms?						
No	59.2	74.9	77.4	68.1	2,110	35.497
Yes	28.9	18.2	17.3	22.8	685	2.163
Don't know	11.9	7.0	5.3	9.1	244	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 5.1.8. KNOWLEDGE OF ANC TIMING AND VISITS

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years who report the number and timing of ANC visits during pregnancy, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Number of times women should get a checkup during pregnancy						
None	4.4	1.8	5.5	3.0	228	260.703
1–3	5.4	5.4	8.8	5.4	385	3.713
4 or more	29.3	37.5	48.7	33.7	2,469	*
Don't know	60.8	55.3	36.9	57.9	2,951	
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Opinion on timing of 1st ANC visit for pregnant woman						
As soon as she thinks she is pregnant	22.2	15.6	11.5	18.7	963	260.078
In the 1st trimester	7.5	10.0	14.7	8.9	689	2.355
At the beginning of the 2nd trimester	12.5	17.7	27.4	15.3	1,236	*
At the beginning of the 3rd trimester	12.4	7.9	5.9	10.0	565	
Any time during pregnancy	19.6	12.4	17.0	15.7	944	
Other	1.9	1.1	1.9	1.5	95	
Don't know	24.0	35.3	21.8	30.0	1,541	
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 5.1.9. PERCEIVED MATERNAL BENEFITS OF ANC

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years who report ANC benefits for themselves by type of benefit, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
No benefits to mother						
No	93.9	93.2	95.8	93.6	5,710	15.240
Yes	6.1	6.8	4.2	6.4	324	0.385
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Monitor baby's growth by provider						
No	41.3	41.1	31.4	41.2	2,211	61.550
Yes	58.7	58.9	68.6	58.8	3,823	2.063
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Monitor mother's health by provider						
No	43.2	41.6	28.1	42.3	2,270	130.938
Yes	56.8	58.4	71.9	57.7	3,764	4.644
Total	100.0	100.0	100.0	100.0	6,034	*
N	1,960	2,062	2,012	4,022		
Receive mosquito net						
No	78.4	90.4	73.7	84.9	4,923	106.175
Yes	21.6	9.6	26.3	15.1	1,111	3.916
Total	100.0	100.0	100.0	100.0	6,034	*
N	1,960	2,062	2,012	4,022		
Receive medicine to prevent malaria during pregnancy						
No	75.4	84.6	71.5	80.3	4,653	60.786
Yes	24.6	15.5	28.5	19.7	1,381	2.238
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Reduce risk of pregnancy complications						
No	85.7	87.2	82.0	86.5	5,118	22.212
Yes	14.3	12.8	18.1	13.5	916	0.914
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Reduce risk of delivery complications						
No	89.8	91.6	83.5	90.8	5,315	66.454
Yes	10.2	8.4	16.6	9.2	719	3.386
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		

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TABLE 5.1.10. WHAT ARE SOME DANGER SIGNS DURING PREGNANCY?

Percentage of women 15 to 49 years currently pregnant or with a child under 2 years who report any danger signs during pregnancy by type, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
No knowledge of pregnancy danger signs						
No	87.5	89.9	91.9	88.8	5,425	16.868
Yes	12.5	10.1	8.1	11.2	609	0.788
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Severe weakness						
No	63.2	67.5	49.9	65.5	3,659	144.598
Yes	36.8	32.5	50.1	34.5	2,375	5.559
Total	100.0	100.0	100.0	100.0	6,034	*
N	1,960	2,062	2,012	4,022		
Convulsions or fits						
No	78.7	84.4	71.4	81.8	4,788	85.798
Yes	21.3	15.6	28.7	18.2	1,246	2.999
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Severe headache						
No	68.2	73.8	58.8	71.2	4,069	97.236
Yes	31.9	26.2	41.2	28.8	1,965	4.326
Total	100.0	100.0	100.0	100.0	6,034	*
N	1,960	2,062	2,012	4,022		
Blurred vision						
No	82.4	87.2	84.7	85.0	5,143	0.106
Yes	17.6	12.8	15.3	15.0	891	0.004
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Fever						
No	62.6	56.1	56.1	59.1	3,484	5.388
Yes	37.4	43.9	43.9	40.9	2,550	0.217
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Severe stomach pain						
No	64.4	67.4	67.9	66.0	4,007	2.416
Yes	35.6	32.7	32.1	34.0	2,027	0.134
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Fast or difficult breathing						
No	85.7	85.9	87.7	85.8	5,260	4.709
Yes	14.3	14.1	12.3	14.2	774	0.245
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Swollen feet						
No	83.2	79.5	74.4	81.2	4,747	38.639
Yes	16.8	20.5	25.6	18.8	1,287	1.846
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Swollen hands						
No	86.7	88.2	86.6	87.6	5,310	1.216
Yes	13.3	11.8	13.4	12.5	724	0.054
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 5.1.11. SELF-EFFICACY FOR ANC AND FACILITY BIRTH

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years who report confidence to start a conversation or get to a facility for ANC/delivery, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Confidence to start a conversation with husband about attending ANC						
Confident	73.7	67.1	74.9	70.2	4,414	44.298
Uncertain	23.3	29.9	24.2	26.8	1,484	1.228
Don't know	3.0	3.0	0.9	3.0	135	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Confidence that you could get to a health facility for ANC						
Confident	67.4	63.0	71.3	65.0	4,161	41.605
Uncertain	28.6	33.6	27.1	31.3	1,707	0.984
Don't know	4.0	3.4	1.7	3.7	165	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Confidence to start a conversation with husband about facility delivery						
Confident	56.8	47.5	49.7	51.8	3,213	63.754
Uncertain	38.2	49.5	49.3	44.3	2,646	1.578
Don't know	5.0	3.1	1.0	3.9	174	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Confidence that you could get to a health facility for delivery						
Confident	48.6	43.3	43.5	45.8	2,855	76.230
Uncertain	46.7	53.1	55.6	50.1	3,000	1.957
Don't know	4.7	3.6	0.9	4.1	178	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 5.1.12. INTENTIONS FOR ANC AND FACILITY BIRTH DURING NEXT PREGNANCY

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years who report intent to attend ANC and have a facility birth during next pregnancy, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Make at least 1 ANC visit during next pregnancy						
Likely	65.4	58.7	65.7	61.8	3,907	95.242
Unlikely	28.5	34.6	32.6	31.8	1,827	2.492
Don't know	6.1	6.8	1.7	6.5	299	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Make at least 4 ANC visits during next pregnancy						
Likely	65.2	58.6	68.8	61.7	3,983	127.378
Unlikely	27.8	34.0	29.6	31.1	1,714	3.422
Don't know	7.0	7.4	1.7	7.2	336	*
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Make at least 8 ANC visits during next pregnancy						
Likely	52.7	46.2	46.4	49.2	2,938	103.863
Unlikely	37.3	44.6	49.8	41.2	2,612	2.614
Don't know	10.0	9.2	3.8	9.6	483	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Take SP/Fansidar to prevent malaria during next pregnancy						
Likely	76.3	66.9	81.4	71.3	4,581	185.937
Unlikely	15.6	22.6	16.6	19.3	1,020	4.749
Don't know	8.1	10.5	2.0	9.4	432	*
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Have facility delivery during next pregnancy						
Likely	56.3	45.2	51.7	50.3	3,209	98.262
Unlikely	37.2	48.6	46.7	43.3	2,537	2.500
Don't know	6.6	6.1	1.6	6.3	287	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates $p<0.001$, ** indicates $p<0.05$ and * indicates $p<.01$ for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 5.1.13. WHO ELSE INFLUENCES DECISIONS ABOUT ANC AND FACILITY DELIVERY?

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years who report influences on their decision to go for ANC or facility delivery, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI^2 VALUE
	%	%	%	%		
To attend 4+ ANC visits						
No one else	27.3	27.3	25.5	27.3	1,582	117.315
Partner	67.0	63.6	67.4	65.2	3,988	1.818
Mother-in-law	2.8	3.6	0.9	3.3	153	.
Mother	1.6	1.0	1.2	1.3	89	
Other own family	0.2	0.3	0.3	0.2	18	
Other partner's family	0.1	0.1	0.3	0.1	10	
Friends	0.2	0.1	0.4	0.1	14	
Health provider	0.7	3.7	1.5	2.3	117	
Community/religious leader	0.0	0.2	0.0	0.1	4	
Other	0.1	0.1	2.5	0.1	58	
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
For facility delivery						
No one else	30.4	31.1	36.8	30.7	1,969	173.590
Partner	60.3	57.2	56.5	58.6	3,508	2.752
Mother-in-law	4.1	4.3	0.8	4.2	173	*
Mother	2.4	1.4	1.3	1.9	110	
Other own family	0.1	0.3	0.6	0.2	18	
Other partner's family	0.1	0.1	0.2	0.1	9	
Friends	0.2	0.2	0.1	0.2	13	
Health provider	2.5	5.4	2.0	4.0	188	
Community/religious leader	0.0	0.1	0.0	0.1	3	
Other	0.0	0.1	1.8	0.1	42	
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi^2 statistic comparing integrated versus malaria-only study areas.

TABLE 5.1.14. PREGNANCY-RELATED BELIEFS, ATTITUDES AND VALUES

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years who agree with certain beliefs, attitudes, or values about ANC or facility delivery, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
It is important for a woman to discuss her pregnancy with her husband						
Agree	89.7	87.8	94.8	88.7	5,480	88.462
Disagree	6.9	8.3	4.3	7.7	404	2.293
Don't know	3.4	3.9	0.9	3.7	149	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Pregnant women need ANC only when sick						
Agree	45.2	50.8	34.8	48.2	2,535	129.623
Disagree	49.4	40.0	59.2	44.3	3,088	2.423
Don't know	5.4	9.3	6.1	7.5	410	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Only first-time pregnant women need ANC						
Agree	33.5	26.2	21.2	29.6	1,638	55.400
Disagree	58.6	62.4	67.0	60.6	3,766	0.976
Don't know	7.9	11.5	11.7	9.8	629	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Better to use traditional provider than health facility for ANC						
Agree	41.3	38.2	29.9	39.7	2,116	83.144
Disagree	51.0	54.6	64.6	52.9	3,515	2.009
Don't know	7.7	7.2	5.5	7.4	402	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
The health facility is the best place to deliver a baby						
Agree	58.6	47.7	56.3	52.7	3,401	46.154
Disagree	36.6	47.7	42.0	42.6	2,404	1.090
Don't know	4.8	4.5	1.7	4.7	228	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Pregnant women attending 4+ ANC visits have safer pregnancies						
Agree	67.8	58.3	63.2	62.7	3,924	24.781
Disagree	20.9	27.7	27.7	24.5	1,431	0.413
Don't know	11.3	14.1	9.1	12.8	678	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

5.2 Delivery care

Key findings

Across study areas, more than 80% of women 15 to 49 years with a completed pregnancy in the past two years delivered at home, either at their own home (74%) or at another home (9%). Births were most commonly assisted by family members (36%) or traditional birth attendants (29%). Only 14% and 16% of women delivered in a health facility in Kebbi/Sokoto and Zamfara, respectively. Facility deliveries were more common among women living in the wealthiest households (36% and 43%) than in the poorest households (5% and 4%) in Kebbi/Sokoto and Zamfara. Women who attended primary education (31% and 19%) had higher facility delivery rates than those with no school attendance (10% and 9%) in Kebbi/Sokoto and Zamfara, respectively. Among women who did not have a facility delivery, the most common reasons for not

doing so were lack of perceived need (75% and 61%) and spousal opposition (15% and 36%) in Kebbi/Sokoto and Zamfara.

All respondents were asked about decision-making for facility deliveries and other related beliefs or attitudes. The most commonly reported influencers of a woman's decision to have a facility delivery were spouses (57%) and no one else (34%). Despite reasons for non-facility delivery, including lack of perceived need, 55% of all respondents nevertheless agreed that the health facility is the best place to deliver a baby. Moreover, only 44% felt confident that they could get to a health facility for delivery. Only 51% were confident that they could start a conversation with their husband about facility delivery, and a similar proportion (51%) intended to deliver their next child at a health facility. There was no real difference in responses to these questions across Kebbi/Sokoto and Zamfara.

TABLE 5.2. FACILITY DELIVERY DURING LAST PREGNANCY BY SOCIODEMOGRAPHIC CHARACTERISTICS

Percentage of women 15 to 49 years with a child under 2 years with a facility delivery for their last-born child by socio-demographic characteristics, September–October 2019

	KEBBI		SOKOTO		MALARIA-ONLY (ZAMFARA)		INTEGRATED (KEBBI/ SOKOTO)	
	%	N	%	N	%	N	%	N
Total	14.8	892	13.8	1,078	16.3	1,069	14.2	1,971
Household wealth								
Lowest	5.7	264	5.3	341	3.5	111	5.4	606
Second	11.0	192	11.8	229	5.5	183	11.5	421
Middle	13.1	157	14.8	220	9.1	223	14.1	377
Fourth	28.1	113	15.6	135	10.8	248	21.4	249
Highest	29.5	166	42.1	153	42.5	304	35.6	318
Maternal age (in years)								
15–24 years	15.8	367	16.6	485	13.1	423	16.3	852
25–34 years	13.8	412	11.7	478	17.7	486	12.7	890
35–49 years	15.5	113	10.8	115	21.7	160	13.0	229
Maternal education (highest level attended)								
None	8.8	675	10.3	855	9.0	698	9.7	1,530
Primary	36.9	47	26.9	57	18.9	60	31.2	104
Secondary or higher	40.5	95	68.1	60	54.4	180	50.4	155
Islamic	24.8	75	15.5	106	15.4	131	19.6	182

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi^2 statistic comparing integrated versus malaria-only study areas.

TABLE 5.2.1. WHO ASSISTED IN THE DELIVERY OF YOUR CHILD DURING THE LAST PREGNANCY?

Percentage of women 15 to 49 years with a child under 2 years reporting who assisted in the delivery of their last-born child in past two years by reason, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
Doctor						
No	96.1	95.9	97.0	96.0	2,912	2.355
Yes	3.9	4.1	3.0	4.0	127	0.467
Total	100.0	100.0	100.0	100.0	3,039	.
N	892	1,078	1,069	1,970		
Nurse/midwife						
No	77.9	89.8	83.1	84.7	2,507	1.384
Yes	22.2	10.2	17.0	15.3	532	0.145
Total	100.0	100.0	100.0	100.0	3,039	.
N	892	1,078	1,069	1,970		
Community health worker						
No	94.9	94.8	92.5	94.8	2,851	6.675
Yes	5.1	5.2	7.5	5.2	188	1.582
Total	100.0	100.0	100.0	100.0	3,039	.
N	892	1,078	1,069	1,970		
Chemist						
No	100.0	100.0	100.0	100.0	3,038	0.280
Yes	0.0	0.0	0.0	0.0	1	1.555
Total	100.0	100.0	100.0	100.0	3,039	.
N	892	1,078	1,069	1,970		
Traditional birth attendant						
No	84.5	63.5	70.1	72.5	2,203	2.062
Yes	15.5	36.5	29.9	27.5	836	0.133
Total	100.0	100.0	100.0	100.0	3,039	.
N	892	1,078	1,069	1,970		
Religious leader						
No	99.7	99.9	99.9	99.8	3,034	0.786
Yes	0.3	0.1	0.1	0.2	5	0.848
Total	100.0	100.0	100.0	100.0	3,039	.
N	892	1,078	1,069	1,970		
Family						
No	58.0	67.5	64.6	63.4	1,918	0.415
Yes	42.0	32.5	35.5	36.6	1,121	0.033
Total	100.0	100.0	100.0	100.0	3,039	.
N	892	1,078	1,069	1,970		
Friends/neighbors						
No	82.1	92.0	84.6	87.7	2,627	5.874
Yes	17.9	8.0	15.4	12.3	412	0.627
Total	100.0	100.0	100.0	100.0	3,039	.
N	892	1,078	1,069	1,970		
Itinerant drug seller						
No	99.9	100.0	99.9	100.0	3,037	0.452
Yes	0.1	0.0	0.1	0.0	2	0.571
Total	100.0	100.0	100.0	100.0	3,039	.
N	892	1,078	1,069	1,970		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 5.2.2. DELIVERY LOCATION AND RESPECTFUL CARE DURING LAST PREGNANCY

Percentage of women 15 to 49 years with a child under 2 years reporting where they gave birth during the delivery of their last-born child in past two years and respectful care among facility births, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Where did you give birth to child?						
Her home	77.1	75.6	72.2	76.3	2,208	74.368
Other home	7.1	6.3	10.2	6.6	236	1.812
Government hospital	7.4	7.6	11.4	7.5	326	.
Governmental PHC	7.0	4.8	3.1	5.8	144	
Dispensary/health post	0.1	0.5	0.0	0.3	8	
Community health outreach post	0.1	0.0	0.8	0.0	10	
Nursing/maternity home	0.0	0.0	0.6	0.0	11	
Private hospital/clinic	0.2	0.9	0.5	0.6	21	
Pharmacy	0.0	0.0	0.0	0.0	1	
Other	0.8	4.1	0.9	2.7	62	
Don't know	0.2	0.2	0.4	0.2	12	
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
When giving birth (in a facility), did you feel ignored or neglected by health staff?						
No	83.8	85.2	85.3	84.6	405	5.692
Yes	15.1	12.4	14.8	13.6	76	1.490
Don't know	1.1	2.4	0.0	1.8	7	.
Total	100.0	100.0	100.0	100.0	488	
N	138	156	194	294		
When giving birth (in a facility), did you have privacy?						
No	25.5	3.2	13.1	13.5	70	28.982
Yes, separate room	44.5	47.2	25.7	45.9	182	2.535
Yes, curtains	28.8	48.5	59.8	39.5	228	.
Other	0.0	0.0	1.3	0.0	3	
Don't know	1.2	1.1	0.0	1.2	5	
Total	100.0	100.0	100.0	100.0	488	
N	138	156	194	294		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas. Note: The respectful care questions were only asked for respondents that had a facility delivery, or more specifically, who gave birth during their last pregnancy at a government hospital, government PHC, dispensary/health post, or community health outreach post.

TABLE 5.2.3. REASONS FOR NO FACILITY DELIVERY DURING LAST PREGNANCY

Percentage of women 15 to 49 years with a child under 2 years who did not deliver their last-born child in the past two years in a health facility by reasons for non-facility delivery, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Costs too much						
No	92.7	95.5	95.5	94.3	2,386	1.700
Yes	7.3	4.5	4.5	5.7	132	0.228
Total	100.0	100.0	100.0	100.0	2,518	.
N	750	908	860	1,658		
Facility not open						
No	97.8	98.7	95.3	98.3	2,455	16.722
Yes	2.2	1.3	4.7	1.7	63	1.934
Total	100.0	100.0	100.0	100.0	2,518	.
N	750	908	860	1,658		
Health facility too far away/ no transportation						
No	97.1	97.5	92.2	97.3	2,408	28.694
Yes	3.0	2.6	7.8	2.7	110	4.151
Total	100.0	100.0	100.0	100.0	2,518	*
N	750	908	860	1,658		
No female provider at facility						
No	99.4	98.7	95.6	99.0	2,461	24.011
Yes	0.6	1.3	4.4	1.0	57	4.418
Total	100.0	100.0	100.0	100.0	2,518	*
N	750	908	860	1,658		
Poor quality of service						
No	99.3	99.4	99.6	99.4	2,501	0.483
Yes	0.7	0.6	0.4	0.6	17	0.418
Total	100.0	100.0	100.0	100.0	2,518	.
N	750	908	860	1,658		
Husband/family does not allow						
No	84.1	85.9	64.3	85.1	1,942	131.939
Yes	15.9	14.1	35.7	14.9	576	11.712
Total	100.0	100.0	100.0	100.0	2,518	***
N	750	908	860	1,658		
Not necessary to go						
No	24.3	25.7	38.6	25.1	761	49.618
Yes	75.7	74.3	61.4	74.9	1,757	3.736
Total	100.0	100.0	100.0	100.0	2,518	.
N	750	908	860	1,658		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates $p<0.001$, ** indicates $p<0.05$ and * indicates $p<.0.01$ for the chi² statistic comparing integrated versus malaria-only study areas.

5.3 Newborn care

Key findings

Newborn care practices: Among respondents with a completed pregnancy in the past two years, only 32 percent and 22 percent reported placing the newborn on a bare chest directly after birth in Kebbi/Sokoto and Zamfara, respectively. Less than one in five newborns had chlorhexidine applied to their stump across study areas. In the two days following birth, less than one in five newborns were provided with all other essential measures, including examining the cord, measuring temperature, and checking on the child for feeding practices, breathing problems, weakness, convulsions, swollen/red umbilical cord, skin boils, and pus in the eyes.

All respondents were asked about ways to protect a newborn after delivery. While nearly two-thirds of respondents across study areas (65%) reported immediate breastfeeding, awareness of other measures was far lower: getting the child immunized (23%), skin-to-skin contact (19%), and using chlorhexidine for the child's stump (7%), with generally higher awareness in Zamfara than in Kebbi/Sokoto for each of these measures. Taken together, these results point to low awareness and provision of newborn care in study areas, which could be an area for SBC activities to help raise rates of essential newborn care.

Postpartum care and counseling: Among respondents with a completed pregnancy in the past two years, only 13 percent and 20 percent were given misoprostol after their most recent birth in Kebbi/Sokoto and Zamfara, respectively. Less than one-third received a postpartum check following birth. Of those who did, nearly all received a check within the first 12 hours post-birth, either by a nurse/midwife (33%), community health worker (27%), or doctor (22%). Few respondents (10% and 12%) in Kebbi/Sokoto and Zamfara were counseled on postpartum family planning in the first few days after delivery. In addition, few respondents were counseled on newborn danger signs (16% and 15%) and breastfeeding practices (17% and 16%) within the first 2 days after birth in Kebbi/Sokoto and Zamfara.

All respondents were asked about ways to help a mother recover from childbirth. While most respondents reported rest (62%) and good nutrition (58%), far fewer reported the need to take misoprostol immediately after birth (14%), thereby indicating low awareness of this practice. There was much lower awareness of misoprostol in Kebbi/Sokoto (9%) than in Zamfara (18%). Taken together, these results point to low awareness and provision of postpartum care and counseling in study areas to help women recover from childbirth.

TABLE 5.3.1. NEWBORN CARE IMMEDIATELY AFTER DELIVERY

Percentage of women 15 to 49 years with a child under 2 years reporting the following procedures done immediately after delivery for her last-born child in the past two years, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Was child wiped dry within a few minutes after birth?						
No	41.1	48.5	45.4	45.3	1,330	2.204
Yes	53.9	47.5	51.2	50.2	1,564	0.087
Don't know	5.0	4.1	3.4	4.5	145	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
Was child bathed immediately after birth?						
No	30.9	28.5	31.9	29.5	1,000	5.035
Yes	65.9	68.2	65.9	67.2	1,941	0.204
Don't know	3.2	3.4	2.2	3.3	98	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
How long after birth was child bathed for the first time (in hours)?						
1	58.5	50.6	48.8	53.9	1,015	113.686
2	10.1	14.8	13.5	12.8	260	3.139
3–5	4.8	10.8	21.5	8.3	243	*
6–11	2.1	7.2	6.2	5.0	107	
12–23	2.8	7.2	5.1	5.3	106	
24+	9.1	5.9	3.9	7.3	113	
Don't know	12.6	3.6	1.2	7.4	97	
Total	100.0	100.0	100.0	100.0	1,941	
N	539	725	677	1,264		
Child placed directly on bare skin of chest						
No	66.4	64.7	76.5	65.4	2,056	45.522
Yes	31.5	32.9	21.5	32.3	905	2.397
Don't know	2.1	2.4	2.0	2.3	78	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
New blade to cut child's cord						
No	13.2	7.0	7.7	9.7	290	4.057
Yes	85.6	90.6	90.6	88.4	2,687	0.204
Don't know	1.2	2.5	1.7	1.9	62	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
Chlorhexidine applied to child's stump						
No	75.2	79.0	77.7	77.4	2,268	5.964
Yes	17.5	15.9	18.1	16.6	583	0.327
Don't know	7.3	5.2	4.3	6.1	188	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
Given misoprostol (miso miso)						
No	78.7	83.2	75.0	81.3	2,348	26.393
Yes	13.7	12.6	20.3	13.1	509	1.562
Don't know	7.6	4.1	4.7	5.6	182	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 5.3.2. NEWBORN CARE IN THE FIRST TWO DAYS AFTER DELIVERY

Percentage of women 15 to 49 years with a child under 2 years reporting the following procedures done within two days after delivery for her last-born child in the past two years, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
Examine the cord						
No	80.6	71.2	75.2	75.2	2,242	10.093
Yes	16.1	25.2	23.0	21.3	712	0.615
Don't know	3.3	3.6	1.7	3.5	85	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
Measure child temperature						
No	85.4	80.5	80.0	82.6	2,424	9.591
Yes	10.7	16.6	17.7	14.1	528	0.747
Don't know	3.9	2.9	2.3	3.3	87	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
Check child feeding problems						
No	83.5	79.6	82.4	81.3	2,422	7.653
Yes	12.1	17.3	15.5	15.0	520	0.596
Don't know	4.4	3.1	2.0	3.7	97	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
Check child for jaundice						
No	83.9	80.7	80.2	82.1	2,414	30.729
Yes	10.2	15.0	17.7	12.9	496	2.688
Don't know	6.0	4.3	2.1	5.0	129	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
Check child breathing problems						
No	82.2	80.7	81.0	81.3	2,407	6.158
Yes	13.2	15.8	16.5	14.7	523	0.477
Don't know	4.6	3.6	2.6	4.0	109	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
Check child for convulsions						
No	84.2	82.6	83.2	83.3	2,483	10.034
Yes	9.7	12.6	13.5	11.4	411	0.778
Don't know	6.1	4.8	3.3	5.4	145	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
Check child for weakness/lethargy						
No	83.5	81.7	83.5	82.5	2,465	17.773
Yes	10.4	12.3	13.5	11.5	414	1.417
Don't know	6.1	6.0	3.1	6.0	160	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
Check child for swollen/red umbilicus with pus						
No	83.9	81.5	81.6	82.5	2,438	10.786
Yes	11.1	13.2	15.1	12.3	456	0.849
Don't know	5.1	5.3	3.3	5.2	145	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
Check child for skin boils						
No	83.3	82.4	82.8	82.8	2,467	4.835

Yes	12.0	13.0	13.9	12.5	442	0.391
Don't know	4.8	4.6	3.3	4.7	130	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
Check child for pus in eyes						
No	83.8	80.8	82.4	82.1	2,446	3.607
Yes	11.6	14.4	14.2	13.2	461	0.276
Don't know	4.6	4.8	3.4	4.7	132	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
Counsel on newborn danger signs						
No	85.3	76.7	83.5	80.4	2,447	9.732
Yes	10.6	19.9	14.5	15.9	490	0.502
Don't know	4.1	3.4	2.0	3.7	102	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
Counsel on breastfeeding						
No	84.5	76.0	82.2	79.6	2,411	5.565
Yes	12.0	21.4	15.9	17.4	546	0.291
Don't know	3.6	2.6	1.9	3.0	82	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
Counsel on nutrition for new mothers						
No	84.5	76.2	83.2	79.8	2,436	8.750
Yes	11.5	21.3	15.0	17.1	518	0.432
Don't know	4.1	2.5	1.8	3.2	85	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.01 for the chi^2 statistic comparing integrated versus malaria-only study areas.

TABLE 5.3.3. POSTPARTUM CARE FOR MOTHERS AFTER DELIVERY

Percentage of women 15 to 49 years with a child under 2 years reporting the following procedures done within two days after delivery for her last-born child in the past two years, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Did anyone check on your health after you gave birth to child?						
No	80.6	76.7	66.0	78.4	2,201	57.431
Yes	18.2	22.2	33.1	20.5	804	3.973
Don't know	1.2	1.1	0.9	1.1	34	*
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
How long after delivery did the first check take place?						
0–11 hours	82.5	65.7	63.8	72.2	541	5.538
12–23 hours	2.1	0.7	1.0	1.2	9	1.193
24+ hours	15.4	33.7	35.2	26.5	239	.
Total	100.0	100.0	100.0	100.0	789	
N	168	244	377	412		
Who checked on your health at that time?						
Other health personnel	0.0	0.0	0.4	0.0	1	95.866
Doctor	19.4	22.1	22.6	21.1	186	3.837
Nurse/midwife	52.5	23.0	31.8	34.4	277	***
Community health worker	20.1	18.9	30.0	19.4	198	
Chemist	0.8	0.1	8.0	0.4	29	
Traditional healer/birth attendant	4.5	8.8	4.9	7.2	48	
Religious leader	0.0	0.4	0.0	0.2	1	
Family	2.8	22.8	1.1	15.1	50	
Friends/neighbors	0.0	3.5	0.5	2.1	10	
Other	0.0	0.0	0.6	0.0	2	
Don't know	0.0	0.4	0.2	0.2	2	
Total	100.0	100.0	100.0	100.0	804	
N	171	250	383	421		
After childbirth, did anyone talk to you about using modern contraception?						
No	90.8	87.9	87.4	89.2	2,659	14.162
Yes	7.9	11.2	12.4	9.8	351	1.486
Don't know	1.4	0.9	0.2	1.1	29	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
After giving birth, did anyone counsel you on nutrition for new mothers?						
No	84.5	76.2	83.2	79.8	2,436	8.750
Yes	11.5	21.3	15.0	17.1	518	0.432
Don't know	4.1	2.5	1.8	3.2	85	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 5.3.4. WHAT ARE SOME WAYS TO PROTECT A NEWBORN IMMEDIATELY AFTER BIRTH?

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years who report ways to protect a newborn immediately after birth by method, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Skin to skin contact						
No	81.7	79.0	81.1	80.2	4,888	0.627
Yes	18.3	21.1	18.9	19.8	1,146	0.020
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Immediate breastfeeding						
No	31.0	46.3	31.8	39.2	2,299	35.481
Yes	69.1	53.7	68.2	60.8	3,735	1.132
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Give fluids excluding breastmilk						
No	83.2	79.8	90.0	81.4	5,086	92.970
Yes	16.8	20.3	10.0	18.6	948	2.464
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Get child immunized						
No	83.4	81.2	73.2	82.3	4,667	67.682
Yes	16.6	18.8	26.9	17.8	1,367	2.175
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Chlorhexidine for baby's stump						
No	95.6	94.5	91.3	95.0	5,661	30.284
Yes	4.4	5.5	8.7	5.0	373	0.966
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Traditional medicine for stump						
No	85.2	78.5	83.0	81.6	5,027	2.096
Yes	14.8	21.5	17.0	18.4	1,007	0.050
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates $p<0.001$, ** indicates $p<0.05$ and * indicates $p<.0.01$ for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 5.3.5. WHAT ARE SOME WAYS TO HELP A MOTHER RECOVER WELL AFTER BIRTH?

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years who report ways to help a mother recover well from childbirth by method, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Take misoprostol immediately after birth						
No	94.0	89.3	81.6	91.5	5,297	114.640
Yes	6.0	10.7	18.4	8.5	737	4.576
Total	100.0	100.0	100.0	100.0	6,034	*
N	1,960	2,062	2,012	4,022		
Ensure good nutrition is taken						
No	41.4	52.8	37.6	47.5	2,661	58.892
Yes	58.6	47.3	62.4	52.5	3,373	1.869
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Lose weight gained during pregnancy						
No	94.5	93.9	86.9	94.2	5,567	84.542
Yes	5.5	6.1	13.1	5.8	467	3.285
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Resume regular activity immediately						
No	85.0	86.2	75.3	85.6	5,016	95.435
Yes	15.0	13.8	24.7	14.4	1,018	2.792
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Rest						
No	47.9	26.9	38.4	36.6	2,342	1.868
Yes	52.1	73.1	61.7	63.4	3,692	0.060
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.01 for the chi² statistic comparing integrated versus malaria-only study areas.

6 Child nutrition and breastfeeding

6.1 Child nutrition and breastfeeding practices

Key findings

Nearly all respondents (96%) reported ever breastfeeding their last-born child under 2 years old. Among the few respondents who never breastfed, the most common reasons were respondent and partner opposition. Despite high rates of ever breastfeeding, initiation of breastfeeding within one hour of birth was low overall but higher in Zamfara (46%) than in Kebbi/Sokoto (36%). Immediate breastfeeding was higher among respondents in the wealthiest (40% and 57%) than in the poorest (35% and 47%) households and among respondents with secondary/higher schooling (47% and 58%) than among respondents with no education (33% and 43%) in Kebbi/Sokoto and Zamfara, respectively.

Exclusive breastfeeding was also low across study areas, with higher rates in Zamfara (46%) than in Kebbi/Sokoto (26%) and with similar patterns by sociodemographic characteristics. This low coverage is in large part due to high rates of giving non-breastmilk liquids to a child in the first three days after birth, with much higher practice rates in Kebbi/Sokoto (73%) than in Zamfara (50%). In addition, 73 percent of respondents agreed that the mother's breastmilk after birth is bad, which may be linked with giving non-breastmilk liquids to a newborn.

Taken together, this points to a potential area for SBC activities to help promote exclusive breastfeeding.

All respondents were asked who else influences decisions about breastfeeding, with the most common responses being spouse (60%) and no one else (34%). Respondents were also asked about the benefits of breastfeeding for women. The most commonly reported benefits were promoting infant bonding (31%) and convenience (20%). One in five respondents reported no benefits whatsoever. Nearly two-thirds (64%) of respondents reported that breastfeeding should last 12 to 23 months, and a similar proportion agreed that exclusive breastfeeding was important. Most respondents (86%) also agreed that breastmilk contains essential nutrients for the child's first six months of life.

Yet despite this reported high awareness of breastfeeding and its benefits, only about half (55%) of respondents felt confident to exclusively breastfeed their child for the first six months, with higher confidence in Zamfara (64%) than in Kebbi/Sokoto (42%). In Kebbi/Sokoto and Zamfara, respectively, 30 percent and 49 percent of respondents believed that most women in their communities gave breastmilk alone to infants, suggesting weak social norms favoring exclusive breastfeeding in this area. There was also relatively low intent to exclusively breastfeed their next child for the first six months, with higher intent in Zamfara (59%) than in Kebbi/Sokoto (46%).

TABLE 6.1.A. IMMEDIATE BREASTFEEDING AFTER BIRTH BY SOCIODEMOGRAPHIC CHARACTERISTICS

Percentage of last-born children in past two years who were breastfed within one hour of birth by sociodemographic characteristics, September–October 2019

	KEBBI		SOKOTO		MALARIA-ONLY (ZAMFARA)		INTEGRATED (KEBBI/SOKOTO)	
	%	N	%	N	%	N	%	N
Total	41.6	892	31.6	1,078	46.1	1,069	35.9	1,971
Household wealth								
Lowest	32.0	264	36.9	341	46.9	111	35.0	606
Second	40.1	192	30.1	229	36.7	183	34.5	421
Middle	40.4	157	24.9	220	32.3	223	31.1	377
Fourth	63.7	113	28.2	135	55.0	248	44.9	249
Highest	46.1	166	32.7	153	56.5	304	39.6	318
Maternal age (in years)								
15–24 years	46.8	367	27.9	485	38.9	423	35.4	852
25–34 years	37.2	412	35.5	478	51.9	486	36.2	890
35–49 years	42.3	113	31.3	115	48.8	160	36.4	229
Maternal education (highest level attended)								
None	40.2	675	28.4	855	42.5	698	33.2	1530
Primary	55.2	47	28.0	57	56.0	60	39.8	104
Secondary or higher	47.8	95	46.4	60	58.4	180	47.3	155
Islamic	40.2	75	52.1	106	50.5	131	46.9	182

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates $p<0.001$, ** indicates $p<0.05$ and * indicates $p<.0.01$ for the chi^2 statistic comparing integrated versus malaria-only study areas.

TABLE 6.1.B. EXCLUSIVE BREASTFEEDING IN FIRST SIX MONTHS OF LIFE BY SOCIODEMOGRAPHIC CHARACTERISTICS

Percentage of last-born children aged 0–5 months who were exclusively breastfed (defined in BSS as current breastfeeding without solid or semi-solid foods and not given non-breastmilk liquids within first 3 days of life) by socio-demographic characteristics, September–October 2019

	KEBBI		SOKOTO		MALARIA-ONLY (ZAMFARA)		INTEGRATED (KEBBI/SOKOTO)	
	%	N	%	N	%	N	%	N
Total	20.3	212	29.3	276	45.9	233	25.6	488
Household wealth								
Lowest	14.6	58	27.4	96	9.2	21	23.2	154
Second	20.9	44	35.3	61	43.6	38	29.1	105
Middle	27.9	34	30.9	45	41.1	51	29.7	79
Fourth	17.6	28	22.6	35	53.0	45	20.2	63
Highest	23.3	48	28.0	39	60.9	78	25.6	87
Maternal age (in years)								
15–24 years	19.6	89	27.6	115	37.6	89	24.4	204
25–34 years	17.5	100	30.9	132	52.3	109	25.3	232
35–49 years	33.4	23	28.8	29	50.9	35	30.8	52
Maternal education (highest level attended)								
None	17.1	156	26.4	236	44.4	159	22.9	392
Primary	(..)	11	(..)	14	(..)	9	25.1	25
Secondary or higher	43.4	24	(..)	14	62.8	42	44.4	38
Islamic	21.2	21	(..)	12	24.2	23	36.4	33

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates $p<0.001$, ** indicates $p<0.05$ and * indicates $p<.0.01$ for the chi^2 statistic comparing integrated versus malaria-only study areas.

TABLE 6.1.1. BREASTFEEDING PRACTICES IMMEDIATELY AFTER BIRTH

Percentage of last-born children in past two years who ever breastfed, initiated breastfeeding within one hour of birth or received non-breastmilk liquids in first three days, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Did you ever breastfeed your last-born child?						
No	1.9	2.4	4.9	2.2	126	14.336
Yes	98.1	97.6	95.1	97.8	2,913	2.471
Total	100.0	100.0	100.0	100.0	3,039	.
N	892	1,078	1,069	1,970		
Did the child start breastfeeding within 1 hour of birth?						
No	57.6	67.4	53.6	63.2	1,812	34.620
Yes	41.6	31.6	46.1	35.9	1,201	2.158
Don't know	0.8	1.0	0.3	0.9	26	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
In the first 3 days, was the child given something to drink apart from breastmilk?						
No	21.6	29.1	49.9	25.9	979	168.895
Yes	76.9	70.3	49.7	73.2	1,903	12.643
Don't know	1.5	0.5	0.5	1.0	31	***
Total	100.0	100.0	100.0	100.0	2,913	
N	864	1,045	1,004	1,909		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 6.1.2. REASONS FOR CHOOSING NOT TO EVER BREASTFEED YOUR CHILD

Percentage of women 15 to 49 years with a child under 2 years who did not ever breastfeed their last-born child by reasons for choosing not to breastfeed, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Respondent opposed						
No	95.4	65.6	46.0	76.8	82	8.447
Yes	4.6	34.4	54.1	23.3	44	3.435
Total	100.0	100.0	100.0	100.0	126	.
N	28	33	65	61		
Partner opposed						
No	63.2	74.9	70.4	70.5	89	0.000
Yes	36.8	25.1	29.6	29.5	37	0.000
Total	100.0	100.0	100.0	100.0	126	.
N	28	33	65	61		
Inadequate milk						
No	92.4	90.7	96.5	91.3	116	1.337
Yes	7.6	9.3	3.5	8.7	10	1.082
Total	100.0	100.0	100.0	100.0	126	.
N	28	33	65	61		
Not necessary						
No	77.2	86.0	92.4	82.7	114	2.363
Yes	22.8	14.0	7.6	17.3	12	1.079
Total	100.0	100.0	100.0	100.0	126	.
N	28	33	65	61		
Up to God						
No	77.5	80.3	90.5	79.3	110	2.649
Yes	22.5	19.7	9.5	20.7	16	0.684
Total	100.0	100.0	100.0	100.0	126	.
N	28	33	65	61		
Introduced other fluids						
No	89.9	97.8	95.3	94.9	119	0.009
Yes	10.1	2.2	4.7	5.1	7	0.009
Total	100.0	100.0	100.0	100.0	126	.
N	28	33	65	61		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 6.1.3. REASONS FOR GIVING NON-BREASTMILK LIQUIDS TO A NEWBORN IN FIRST THREE DAYS AFTER BIRTH

Percentage of women 15 to 49 years with a child under 2 years who gave non-breastmilk liquids in first three days to last-born child by reasons for not exclusively breastfeeding, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Respondent opposed						
No	62.7	63.7	56.8	63.2	1,177	8.042
Yes	37.3	36.3	43.2	36.8	726	0.484
Total	100.0	100.0	100.0	100.0	1,903	.
N	657	738	508	1,395		
Partner opposed						
No	70.3	74.0	60.8	72.3	1,303	28.517
Yes	29.7	26.0	39.2	27.7	600	2.324
Total	100.0	100.0	100.0	100.0	1,903	.
N	657	738	508	1,395		
Religious/community leader opposed						
No	97.9	92.9	97.3	95.2	1,817	5.561
Yes	2.1	7.1	2.8	4.8	86	0.830
Total	100.0	100.0	100.0	100.0	1,903	.
N	657	738	508	1,395		
Inadequate milk for newborn						
No	85.5	86.5	82.3	86.1	1,608	5.129
Yes	14.5	13.5	17.7	13.9	295	0.354
Total	100.0	100.0	100.0	100.0	1,903	.
N	657	738	508	1,395		
Painful breastfeeding						
No	99.1	99.0	99.0	99.0	1,884	0.000
Yes	0.9	1.1	1.0	1.0	19	0.000
Total	100.0	100.0	100.0	100.0	1,903	.
N	657	738	508	1,395		
Not necessary						
No	75.1	82.9	78.2	79.4	1,509	0.372
Yes	24.9	17.1	21.8	20.6	394	0.038
Total	100.0	100.0	100.0	100.0	1,903	.
N	657	738	508	1,395		
Healthworker attitude						
No	100.0	99.9	99.6	100.0	1,899	2.919
Yes	0.0	0.1	0.4	0.0	4	5.676
Total	100.0	100.0	100.0	100.0	1,903	*
N	657	738	508	1,395		
Up to God						
No	87.6	88.6	87.2	88.1	1,668	0.381
Yes	12.4	11.4	12.8	11.9	235	0.040
Total	100.0	100.0	100.0	100.0	1,903	.
N	657	738	508	1,395		
Introduced food <6 months						
No	98.0	96.3	91.7	97.1	1,825	26.028
Yes	2.0	3.7	8.3	2.9	78	3.578
Total	100.0	100.0	100.0	100.0	1,903	.
N	657	738	508	1,395		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 6.1.4. BREASTFEEDING PRACTICES AMONG INFANTS AGED 0–5 MONTHS

Percentage of last-born children in past two years aged 0–5 months who were ever breastfed, are still breastfeeding, and are exclusively breastfed,** September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
Did you ever breastfeed your last-born child?						
No	1.3	0.8	4.3	1.0	21	53.748
Yes	98.7	99.2	95.7	99.0	700	4.223
Total	100.0	100.0	100.0	100.0	721	*
N	212	276	233	488		
In the first 3 days, was the child given something to drink apart from breastmilk?						
No	25.7	37.4	52.2	32.6	264	232.426
Yes	73.9	62.0	47.7	66.9	431	4.751
Don't know	0.4	0.6	0.2	0.5	5	*
Total	100.0	100.0	100.0	100.0	700	
N	206	273	221	479		
Are you still breastfeeding the child?						
No	3.9	5.2	2.6	4.7	56	19.285
Yes	96.1	94.8	97.4	95.3	644	1.332
Total	100.0	100.0	100.0	100.0	700	.
N	206	273	221	479		
Are you giving the child soft or semi-solid food?						
No	85.4	81.7	82.3	83.2	581	0.788
Yes	14.7	18.3	17.7	16.8	140	0.035
Total	100.0	100.0	100.0	100.0	721	.
N	212	276	233	488		
Was the child exclusively breastfed (0–5 months)?						
No	79.3	70.2	54.1	74.0	512	271.828
Yes	20.3	29.3	45.9	25.6	206	7.402
Don't know	0.4	0.5	0.0	0.5	3	**
Total	100.0	100.0	100.0	100.0	721	
N	212	276	233	488		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates $p<0.001$, ** indicates $p<0.05$ and * indicates $p<.01$ for the chi² statistic comparing integrated versus malaria-only study areas. Note that exclusive breastfeeding in BSS is defined as infants 0-5 months who are currently breastfeeding and who received no solid or semi-solid foods in the past 24 hours and no non-breastmilk liquids in first three days after birth.

TABLE 6.1.5. BREASTFEEDING AND NUTRITION AMONG CHILDREN AGED 6–23 MONTHS

Percentage of last-born children in past two years aged 6–23 months who are still breastfeeding, or given solid or semi-solid foods by type of food, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Are you still breastfeeding the child?						
No	12.6	10.2	12.6	11.3	357	2.347
Yes	87.5	89.8	87.4	88.8	1,817	0.239
Total	100.0	100.0	100.0	100.0	2,174	.
N	649	757	768	1,406		
Are you giving the child soft or semi-solid food?						
No	16.4	12.5	13.0	14.2	332	1.631
Yes	83.7	87.5	87.0	85.8	1,945	0.220
Total	100.0	100.0	100.0	100.0	2,277	.
N	671	787	819	1,458		
How many times did the child eat solid/semi-solid food yesterday?						
No times	0.5	1.2	0.4	0.9	12	20.039
1 time	4.5	8.8	8.3	7.0	133	0.338
2 times	23.8	29.0	28.9	26.8	500	.
3+ times	66.6	53.2	57.8	58.9	1,164	
Don't know	4.7	7.9	4.6	6.5	136	
Total	100.0	100.0	100.0	100.0	1,945	
N	551	681	713	1,232		
Did child eat any of these yesterday?						
Milk, cheese, yoghurt, other dairy						
No	51.8	46.8	42.9	48.9	893	21.744
Yes	48.2	52.8	57.0	50.9	1,046	0.698
Don't know	0.0	0.4	0.1	0.2	6	.
Total	100.0	100.0	100.0	100.0	1,945	
N	551	681	713	1,232		
Bread, rice, tuwo, other grains						
No	15.5	11.9	16.0	13.4	257	9.745
Yes	84.5	88.1	83.8	86.5	1,684	0.647
Don't know	0.0	0.1	0.2	0.1	4	.
Total	100.0	100.0	100.0	100.0	1,945	
N	551	681	713	1,232		
Potato, other roots or tubers						
No	78.9	83.2	72.3	81.4	1,485	62.234
Yes	20.7	16.2	27.2	18.1	447	2.269
Don't know	0.4	0.6	0.5	0.5	13	.
Total	100.0	100.0	100.0	100.0	1,945	
N	551	681	713	1,232		
Pumpkin squash or similar food						
No	89.0	91.9	86.5	90.7	1,716	22.580
Yes	11.0	7.6	13.1	9.0	221	0.881
Don't know	0.0	0.5	0.4	0.3	8	.
Total	100.0	100.0	100.0	100.0	1,945	
N	551	681	713	1,232		
Dark or leafy vegetables						
No	56.9	73.1	74.3	66.2	1,344	43.575
Yes	43.1	26.0	25.3	33.2	591	1.933
Don't know	0.0	1.0	0.4	0.6	10	.
Total	100.0	100.0	100.0	100.0	1,945	
N	551	681	713	1,232		

Mango, pawpaw or vitamin A fruits						
No	90.6	93.8	88.2	92.4	1,738	26.325
Yes	9.3	5.5	11.1	7.1	192	1.132
Don't know	0.1	0.7	0.7	0.5	15	.
Total	100.0	100.0	100.0	100.0	1,945	
N	551	681	713	1,232		
Any other fruits or vegetables						
No	72.0	81.8	73.3	77.6	1,452	13.764
Yes	27.9	17.6	26.0	22.0	479	0.506
Don't know	0.1	0.7	0.7	0.4	14	.
Total	100.0	100.0	100.0	100.0	1,945	
N	551	681	713	1,232		
Eggs						
No	79.5	79.8	71.4	79.7	1,466	60.324
Yes	20.2	19.0	28.3	19.5	465	2.296
Don't know	0.3	1.3	0.4	0.9	14	.
Total	100.0	100.0	100.0	100.0	1,945	
N	551	681	713	1,232		
Meat, poultry, fish						
No	61.5	70.7	56.8	66.8	1,181	64.787
Yes	38.2	28.4	42.9	32.5	752	2.189
Don't know	0.3	1.0	0.3	0.7	12	.
Total	100.0	100.0	100.0	100.0	1,945	
N	551	681	713	1,232		
Bean food, peas, lentils or nuts						
No	52.6	69.4	42.3	62.3	1,016	220.035
Yes	47.2	29.9	57.4	37.2	918	7.469
Don't know	0.2	0.7	0.4	0.5	11	**
Total	100.0	100.0	100.0	100.0	1,945	
N	551	681	713	1,232		
Any oil, fats, butter, or foods made with these						
No	48.9	65.6	49.5	58.5	1,029	51.290
Yes	50.9	33.6	50.3	40.9	905	1.230
Don't know	0.2	0.8	0.2	0.6	11	.
Total	100.0	100.0	100.0	100.0	1,945	
N	551	681	713	1,232		
Dates, sweets, biscuits						
No	57.2	52.8	42.9	54.7	931	76.651
Yes	42.6	46.2	56.5	44.6	995	1.960
Don't know	0.2	1.0	0.6	0.7	19	.
Total	100.0	100.0	100.0	100.0	1,945	
N	551	681	713	1,232		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

6.2 Breastfeeding ideations

TABLE 6.2.1. PERCEIVED BENEFITS OF EXCLUSIVE BREASTFEEDING FOR THE MOTHER

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years who report breastfeeding benefits for the mother by perceived benefit, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
None						
No	69.3	77.9	79.2	73.9	4,560	22.578
Yes	30.7	22.1	20.8	26.1	1,474	0.760
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Free/No cost						
No	88.8	88.2	83.9	88.5	5,224	24.655
Yes	11.2	11.8	16.1	11.5	810	0.908
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Convenient						
No	89.5	84.7	74.7	86.9	5,000	134.187
Yes	10.5	15.3	25.3	13.1	1,034	4.386
Total	100.0	100.0	100.0	100.0	6,034	*
N	1,960	2,062	2,012	4,022		
Promotes bonding with infant						
No	89.4	71.7	61.5	79.9	4,431	230.443
Yes	10.6	28.3	38.5	20.1	1,603	8.242
Total	100.0	100.0	100.0	100.0	6,034	**
N	1,960	2,062	2,012	4,022		
Promotes weight loss						
No	95.2	94.6	82.3	94.9	5,479	209.408
Yes	4.8	5.4	17.7	5.1	555	10.031
Total	100.0	100.0	100.0	100.0	6,034	**
N	1,960	2,062	2,012	4,022		
Reduces blood post-delivery						
No	96.6	94.4	83.4	95.5	5,535	204.831
Yes	3.4	5.6	16.6	4.6	499	8.728
Total	100.0	100.0	100.0	100.0	6,034	**
N	1,960	2,062	2,012	4,022		
Relieves pain after birth						
No	96.1	93.6	87.3	94.8	5,573	91.711
Yes	3.9	6.4	12.7	5.2	461	3.511
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Promotes maternal health						
No	94.8	91.6	86.8	93.1	5,515	61.027
Yes	5.2	8.4	13.2	6.9	519	2.282
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Improves emotional well-being						
No	93.9	93.5	87.7	93.7	5,526	57.895
Yes	6.1	6.5	12.3	6.3	508	2.807
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates $p<0.001$, ** indicates $p<0.05$ and * indicates $p<.0.01$ for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 6.2.2. PERCEIVED BENEFITS OF EXCLUSIVE BREASTFEEDING FOR THE BABY

Percentage of women aged 15-49 years with a child under 2 years who report breastfeeding benefits for the baby by perceived benefit, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Good nutrition						
No	92.5	90.0	92.2	91.2	2,860	1.031
Yes	7.6	10.0	7.8	8.8	267	0.124
Total	100.0	100.0	100.0	100.0	3,127	.
N	1,240	1,062	825	2,302		
Prevents illness						
No	98.4	93.8	93.4	96.1	2,966	12.047
Yes	1.6	6.2	6.6	3.9	161	0.960
Total	100.0	100.0	100.0	100.0	3,127	.
N	1,240	1,062	825	2,302		
Promotes long-term health						
No	99.3	98.2	94.8	98.8	3,036	39.490
Yes	0.7	1.9	5.2	1.3	91	6.465
Total	100.0	100.0	100.0	100.0	3,127	*
N	1,240	1,062	825	2,302		
Promotes bonding with mother						
No	99.3	98.2	98.7	98.8	3,089	0.073
Yes	0.7	1.9	1.4	1.2	38	0.017
Total	100.0	100.0	100.0	100.0	3,127	.
N	1,240	1,062	825	2,302		
Leads to weight gain						
No	99.8	98.5	97.8	99.1	3,084	9.555
Yes	0.3	1.5	2.3	0.9	43	1.735
Total	100.0	100.0	100.0	100.0	3,127	.
N	1,240	1,062	825	2,302		
Leads to higher IQ						
No	99.6	99.3	95.2	99.5	3,072	56.275
Yes	0.4	0.7	4.8	0.5	55	11.855
Total	100.0	100.0	100.0	100.0	3,127	***
N	1,240	1,062	825	2,302		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates $p<0.001$, ** indicates $p<0.05$ and * indicates $p<.0.01$ for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 6.2.3. WHO ELSE INFLUENCES DECISIONS ABOUT BREASTFEEDING?

Percentage of women aged 15 to 49 years who are currently pregnant or with a child under 2 years who report influencers on a woman's decisions about breastfeeding, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
No one else						
No	71.6	62.2	65.0	66.5	3,951	1.439
Yes	28.4	37.8	35.0	33.5	2,083	0.040
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Partner						
No	32.8	46.4	39.5	40.1	2,455	0.233
Yes	67.2	53.6	60.5	59.9	3,579	0.006
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Mother in-law						
No	91.1	86.4	95.7	88.6	5,536	110.887
Yes	8.9	13.6	4.3	11.5	498	10.482
Total	100.0	100.0	100.0	100.0	6,034	**
N	1,960	2,062	2,012	4,022		
Mother						
No	92.7	91.4	93.9	92.0	5,575	7.719
Yes	7.3	8.6	6.1	8.0	459	0.549
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Own other family members						
No	99.5	98.7	99.3	99.1	5,984	0.812
Yes	0.5	1.3	0.7	0.9	50	0.262
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Partner's other family members						
No	99.8	99.3	99.3	99.5	6,005	0.969
Yes	0.3	0.7	0.7	0.5	29	0.304
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Friends						
No	99.4	99.1	97.1	99.2	5,935	32.939
Yes	0.6	0.9	2.9	0.8	99	6.445
Total	100.0	100.0	100.0	100.0	6,034	*
N	1,960	2,062	2,012	4,022		
Health provider						
No	97.8	96.6	93.6	97.2	5,792	40.263
Yes	2.2	3.4	6.4	2.8	242	2.266
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Religious/community leader						
No	99.2	99.8	99.7	99.5	6,010	1.441
Yes	0.8	0.2	0.3	0.5	24	0.459
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 6.2.4. BREASTFEEDING KNOWLEDGE, BELIEFS, INTENTIONS, AND SELF-EFFICACY

Percentage of women aged 15 to 49 years who are currently pregnant or with a child under 2 years with breastfeeding knowledge, beliefs, intentions, and self-efficacy, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI^2 VALUE
	%	%	%	%		
In your opinion, how long should a woman breastfeed her child?						
6 months or less	2.7	1.1	2.3	1.9	133	129.116
6–11 months	3.1	7.2	8.1	5.3	327	1.027
12–23 months	64.2	68.3	62.5	66.4	3,957	.
24 months or more (correct response)	27.9	21.7	19.8	24.6	1,353	
Other	1.2	1.0	6.1	1.1	178	
Don't know	0.9	0.7	1.2	0.8	85	
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Breastmilk contains essential nutrients for first 6 months of life						
Agree	77.1	85.0	88.7	81.3	5,005	95.845
Disagree	15.8	9.9	9.5	12.6	691	2.510
Don't know	7.1	5.2	1.8	6.1	337	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Breastmilk immediately after birth is bad						
Agree	29.9	28.2	18.8	29.0	1,489	190.173
Disagree	61.3	65.5	78.7	63.6	4,145	5.282
Don't know	8.8	6.3	2.5	7.5	399	**
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Likelihood you would exclusively breastfeed next child for first 6 months						
Likely	45.4	45.8	59.3	45.6	2,987	147.534
Unlikely	47.8	49.9	39.1	49.0	2,759	2.871
Don't know	6.8	4.3	1.7	5.4	287	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Most women in my community only give infants breastmilk						
Agree	31.5	28.8	48.8	30.0	2,270	211.334
Disagree	58.2	60.0	43.6	59.2	3,127	3.611
Don't know	10.3	11.3	7.6	10.8	636	*
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Important for mothers to only give child breastmilk for first 6 months						
Agree	48.6	53.0	70.6	51.0	3,462	246.712
Disagree	41.8	39.9	25.6	40.8	2,150	4.297
Don't know	9.6	7.1	3.8	8.3	421	*
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Confidence to exclusively breastfeed your child for first 6 months						
Confident	40.4	43.5	64.2	42.1	2,921	334.042
Uncertain	50.7	53.4	34.7	52.2	2,829	6.956
Don't know	8.9	3.0	1.2	5.7	283	**
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Confidence to start conversation with husband about breastfeeding child						
Confident	59.3	61.5	75.1	60.5	3,928	184.155
Uncertain	34.8	35.4	24.0	35.1	1,903	4.678
Don't know	5.9	3.1	0.9	4.4	202	*
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi^2 statistic comparing integrated versus malaria-only study areas.

TABLE 6.2.5. WHAT ARE SOME WAYS TO RECOGNIZE POOR NUTRITION IN A CHILD?

Percentage of women aged 15 to 49 years who are pregnant or with a child under 2 years who report ways of recognizing poor nutrition in a child by symptom, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Lack of energy						
No	56.7	62.7	52.3	59.9	3,392	34.015
Yes	43.3	37.3	47.7	40.1	2,642	1.448
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Trouble paying attention						
No	74.2	81.7	74.4	78.2	4,677	11.927
Yes	25.8	18.3	25.6	21.8	1,357	0.362
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Trouble learning						
No	83.3	89.8	82.4	86.8	5,142	21.107
Yes	16.7	10.2	17.6	13.2	892	0.790
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Irritability						
No	77.2	91.1	85.7	84.7	5,106	1.205
Yes	22.8	8.9	14.3	15.3	928	0.040
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Becomes ill easily						
No	68.0	77.5	73.8	73.1	4,476	0.399
Yes	32.0	22.5	26.2	26.9	1,558	0.011
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Weakness						
No	71.0	75.9	63.9	73.6	4,298	63.379
Yes	29.0	24.1	36.1	26.4	1,736	2.418
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Dry/scaly skin						
No	88.6	80.2	76.8	84.1	4,926	48.345
Yes	11.4	19.8	23.2	15.9	1,108	2.021
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Longer time to healing for wounds						
No	94.6	94.7	92.4	94.6	5,706	11.847
Yes	5.4	5.3	7.6	5.4	328	0.824
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Stunted growth						
No	78.5	66.4	64.1	72.0	4,272	41.217
Yes	21.5	33.7	35.9	28.0	1,762	1.660
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Thin arms and legs						
No	81.6	71.8	67.2	76.3	4,501	58.853
Yes	18.4	28.2	32.8	23.7	1,533	1.829
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Visible ribs						
No	87.0	72.7	67.4	79.3	4,616	102.197
Yes	13.1	27.3	32.6	20.7	1,418	3.534
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

7 Child health

7.1 Vaccination

Key findings

From the baseline results, it is clear that promoting norms and awareness of the value of routine vaccinations should be a priority area for SBC efforts. There was low vaccination coverage in study areas, with generally higher vaccination rates in Zamfara than in Kebbi/Sokoto. Based on BSS baseline results, only 4 percent and 8 percent of children 12–23 months in Kebbi/Sokoto and Zamfara received all basic vaccinations (BCG, measles, DPT3, polio3) before the survey interview. Children 12 to 23 months in the poorest households (2% and 2%) and with least educated mothers (4% and 5%) had lower rates of full vaccination than those in the wealthiest households (9% and 18%) and with mothers who attended secondary/higher school (17% and 19%) in Kebbi/Sokoto and Zamfara, respectively. The most important reasons for not vaccinating a child across study areas were spousal opposition (33%), distance to health facilities (14%), and fear of needles (11%). The person most commonly reported to influence a woman's decision to vaccinate her child was her spouse (73%), making their opposition an important barrier to vaccine uptake.

All respondents were asked about their views of health services for child vaccinations. Most respondents (76%) agreed that vaccination services in their communities were free of charge, and 75 percent agreed that people in their communities trust health providers with vaccination services. Yet in Kebbi/Sokoto, only about half (52%) of respondents believed that health facilities frequently had vaccines available, as compared with 61 percent in Zamfara. Only 47 percent of respondents in Kebbi/Sokoto and 66 percent in Zamfara believed that most women in their communities take children to facilities for routine vaccinations. Approximately one-quarter (26%) believed that vaccines contain dangerous chemicals that could harm a child.

Nevertheless, most respondents (72%) agreed that childhood vaccinations were effective in preventing illnesses, and 70 percent agreed that the illnesses vaccines prevent are severe. Seventy-two percent also agreed that they knew when and where to get a child vaccinated. Yet results from more specific vaccine questions elicit a less rosy picture: Only 17 percent and 30 percent of respondents in Kebbi/Sokoto and Zamfara, respectively, reported that a child should be given his/her first vaccination at birth. Two-thirds of respondents could not recall the number of times a child should be vaccinated before his or her first birthday. This suggests some disconnect between respondents' positive reports of their own vaccine knowledge and the more realistic picture derived from specific questions. Indeed, BSS baseline results suggest that vaccine-specific knowledge is relatively low, that there are common perceptions of frequent vaccine stock-outs at health facilities, and that vaccine myths persist in this area.

TABLE 7.1. FULLY VACCINATED CHILDREN 12–23 MONTHS BY SOCIODEMOGRAPHIC CHARACTERISTICS

Percentage of last-born children aged 12–23 months who received all basic vaccinations (BCG, measles1, polio3, DPT3) at any time before the survey by sociodemographic characteristics, September–October 2019

	KEBBI		SOKOTO		MALARIA-ONLY (ZAMFARA)		INTEGRATED (KEBBI/SOKOTO)	
	%	N	%	N	%	N	%	N
Total	3.6	482	4.5	548	7.7	578	4.1	1,030
Household wealth								
Lowest	1.5	149	1.9	172	2.0	65	1.7	321
Second	2.7	104	1.2	106	1.7	105	1.9	210
Middle	3.0	90	6.2	121	3.1	120	4.8	211
Fourth	11.5	58	6.8	67	9.0	144	9.1	126
Highest	4.2	81	13.3	82	18.1	144	8.7	162
Maternal age (in years)								
15–24 years	2.4	201	5.4	240	5.0	227	4.1	440
25–34 years	4.4	213	4.0	253	7.2	269	4.2	466
35–49 years	4.5	68	2.4	55	16.5	82	3.6	124
Maternal education (highest level attended)								
None	3.7	365	3.6	401	5.3	365	3.6	766
Primary	(..)	21	4.5	32	33.7	32	2.6	53
Secondary or higher	9.3	58	3.1	35	19.3	88	17.0	93
Islamic	(..)	38	1.1	80	0.0	93	0.7	118

(..) Value not shown due to low number of observations. Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 7.1.1. VACCINATION PRACTICES FOR CHILDREN 12–23 MONTHS

Percentage of last-born children aged 12–23 months whoever received vaccinations, and among those, total times taken for vaccination and vaccine card receipt, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Has the child ever received any immunizations?						
No	48.6	59.2	60.1	54.4	896	82.007
Yes	48.9	38.3	39.7	43.1	680	2.126
Don't know	2.5	2.6	0.2	2.6	32	.
Total	100.0	100.0	100.0	100.0	1,608	
N	482	548	578	1,030		
Total times child taken for routine immunization since birth						
No times	5.9	4.5	3.0	5.2	27	300.385
1–3 times	40.2	47.2	46.1	43.6	300	3.269
4–6 times	35.4	30.8	39.3	33.2	256	*
7+ times	9.4	5.8	11.0	7.7	55	
Don't know	9.1	11.6	0.6	10.3	42	
Total	100.0	100.0	100.0	100.0	680	
N	240	221	219	461		
Do you have a card where child vaccinations are written down?						
Yes, only has a card	56.0	39.3	58.8	47.9	348	70.600
Yes, has only another document	2.8	0.0	2.1	1.5	8	1.119
Yes, has card and other document	1.3	4.7	1.7	3.0	13	.
No, has no card and no other document	39.8	56.0	37.4	47.7	311	
Total	100.0	100.0	100.0	100.0	680	
N	240	221	219	461		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 7.1.2. VACCINATED CHILDREN 12–23 MONTHS BY TYPE OF VACCINE

Percentage of last-born children aged 12-23 months who received specific vaccines at any time before the survey, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
BCG coverage						
No	57.4	73.0	69.7	65.9	1,051	74.678
Yes	32.8	21.9	27.8	26.8	448	1.796
Don't know	9.9	5.1	2.6	7.3	109	.
Total	100.0	100.0	100.0	100.0	1,608	
N	482	548	578	1,030		
DPT1 coverage						
No	65.3	75.6	71.1	70.9	1,125	61.258
Yes	19.4	18.1	23.4	18.7	343	1.115
Don't know	15.3	6.3	5.5	10.4	140	.
Total	100.0	100.0	100.0	100.0	1,608	
N	482	548	578	1,030		
DPT2 coverage						
No	73.9	79.3	78.6	76.8	1,233	56.504
Yes	10.8	14.4	15.9	12.8	235	1.216
Don't know	15.3	6.3	5.5	10.4	140	.
Total	100.0	100.0	100.0	100.0	1,608	
N	482	548	578	1,030		
DPT3 coverage						
No	79.1	84.1	83.8	81.8	1,325	59.564
Yes	5.7	9.6	10.7	7.8	143	1.300
Don't know	15.3	6.3	5.5	10.4	140	.
Total	100.0	100.0	100.0	100.0	1,608	
N	482	548	578	1,030		
Polio1 coverage						
No	50.5	61.1	63.6	56.3	930	177.505
Yes	37.7	31.1	34.3	34.1	560	4.168
Don't know	11.9	7.8	2.0	9.6	116	*
Total	100.0	100.0	100.0	100.0	1,606	
N	482	546	578	1,028		
Polio2 coverage						
No	52.2	64.4	65.3	58.9	974	174.445
Yes	35.9	27.8	32.7	31.5	518	4.167
Don't know	11.9	7.8	2.0	9.6	116	*
Total	100.0	100.0	100.0	100.0	1,608	
N	482	548	578	1,030		
Polio3 coverage						
No	59.2	71.3	69.8	65.9	1,079	174.762
Yes	28.9	20.9	28.1	24.5	413	4.123
Don't know	11.9	7.8	2.0	9.6	116	*
Total	100.0	100.0	100.0	100.0	1,608	
N	482	548	578	1,030		
Measles1 coverage						
No	67.6	78.6	76.4	73.7	1,189	80.083
Yes	15.9	16.5	19.2	16.2	288	1.792
Don't know	16.5	4.9	4.4	10.1	131	.
Total	100.0	100.0	100.0	100.0	1,608	
N	482	548	578	1,030		
All basic vaccinations (BCG, Measles1, DPT3, Polio3)						
No	96.4	95.6	92.4	95.9	1,521	31.269
Yes	3.7	4.5	7.7	4.1	87	2.128
Total	100.0	100.0	100.0	100.0	1,608	.
N	482	548	578	1,030		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 7.1.3. REASONS FOR NOT VACCINATING A CHILD

Percentage of pregnant women and women with a child under 2 years who reported specific reasons why a mother in her community may not get her child vaccinated, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Too expensive						
No	92.8	91.7	96.1	92.1	1,734	13.424
Yes	7.2	8.3	3.9	7.9	113	1.571
Total	100.0	100.0	100.0	100.0	1,847	.
N	496	688	663	1,184		
Facility closed						
No	89.0	96.9	88.8	93.8	1,697	13.029
Yes	11.0	3.1	11.2	6.2	150	1.051
Total	100.0	100.0	100.0	100.0	1,847	.
N	496	688	663	1,184		
Distance/transport not available						
No	90.5	90.4	83.0	90.5	1,631	20.203
Yes	9.5	9.6	17.0	9.6	216	1.864
Total	100.0	100.0	100.0	100.0	1,847	.
N	496	688	663	1,184		
No female provider						
No	98.5	96.9	95.2	97.5	1,773	6.394
Yes	1.5	3.1	4.8	2.5	74	0.519
Total	100.0	100.0	100.0	100.0	1,847	.
N	496	688	663	1,184		
Disrespectful provider						
No	98.6	97.9	99.3	98.2	1,817	5.058
Yes	1.4	2.1	0.7	1.8	30	2.684
Total	100.0	100.0	100.0	100.0	1,847	.
N	496	688	663	1,184		
Poor quality service						
No	95.9	96.9	96.4	96.5	1,776	0.035
Yes	4.1	3.1	3.7	3.5	71	0.006
Total	100.0	100.0	100.0	100.0	1,847	.
N	496	688	663	1,184		
Vaccines not effective						
No	96.1	96.8	99.6	96.5	1,798	25.885
Yes	3.9	3.2	0.4	3.5	49	15.040
Total	100.0	100.0	100.0	100.0	1,847	***
N	496	688	663	1,184		
Vaccines not safe/fear side effects						
No	80.5	83.7	95.8	82.4	1,602	92.640
Yes	19.5	16.3	4.2	17.6	245	10.598
Total	100.0	100.0	100.0	100.0	1,847	**
N	496	688	663	1,184		
Fear needles						
No	93.1	91.0	86.4	91.8	1,652	12.784
Yes	6.9	9.0	13.6	8.2	195	1.349
Total	100.0	100.0	100.0	100.0	1,847	.
N	496	688	663	1,184		
Husband/partner oppose						
No	70.8	65.4	66.8	67.5	1,210	0.105
Yes	29.2	34.6	33.2	32.5	637	0.010
Total	100.0	100.0	100.0	100.0	1,847	.
N	496	688	663	1,184		
Religious/community leaders oppose						
No	98.8	98.9	99.4	98.8	1,823	1.767
Yes	1.2	1.1	0.6	1.2	24	0.661
Total	100.0	100.0	100.0	100.0	1,847	.
N	496	688	663	1,184		
Don't know where to go						
No	95.1	96.5	97.9	95.9	1,788	6.110
Yes	4.9	3.5	2.1	4.1	59	1.363
Total	100.0	100.0	100.0	100.0	1,847	.
N	496	688	663	1,184		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates $p<0.001$, ** indicates $p<0.05$ and * indicates $p<.0.01$ for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 7.1.4. WHO ELSE INFLUENCES DECISIONS ABOUT GETTING A CHILD VACCINATED?

Percentage of pregnant women and women with a child under 2 years reporting who influences decisions to vaccinate a child, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
No one else						
No	76.0	79.4	78.1	77.9	2,364	0.025
Yes	24.0	20.6	21.9	22.1	675	0.002
Total	100.0	100.0	100.0	100.0	3,039	.
N	892	1,078	1,069	1,970		
Husband/partner						
No	27.0	26.5	27.2	26.7	819	0.086
Yes	73.0	73.5	72.8	73.3	2,220	0.005
Total	100.0	100.0	100.0	100.0	3,039	.
N	892	1,078	1,069	1,970		
Mother-in-law						
No	92.5	83.7	95.5	87.5	2,771	65.394
Yes	7.5	16.3	4.5	12.5	268	11.386
Total	100.0	100.0	100.0	100.0	3,039	***
N	892	1,078	1,069	1,970		
Mother						
No	94.2	94.7	93.8	94.5	2,853	0.587
Yes	5.8	5.3	6.2	5.5	186	0.090
Total	100.0	100.0	100.0	100.0	3,039	.
N	892	1,078	1,069	1,970		
Own other family members						
No	99.7	99.3	99.1	99.5	3,019	1.859
Yes	0.3	0.7	1.0	0.5	20	1.164
Total	100.0	100.0	100.0	100.0	3,039	.
N	892	1,078	1,069	1,970		
Partner's other family members						
No	99.9	99.3	99.2	99.6	3,026	1.831
Yes	0.1	0.7	0.9	0.4	13	0.897
Total	100.0	100.0	100.0	100.0	3,039	.
N	892	1,078	1,069	1,970		
Friends						
No	99.3	98.9	96.1	99.1	2,975	25.194
Yes	0.7	1.1	3.9	0.9	64	7.136
Total	100.0	100.0	100.0	100.0	3,039	**
N	892	1,078	1,069	1,970		
Health provider						
No	97.3	95.8	93.9	96.4	2,910	9.636
Yes	2.7	4.2	6.1	3.6	129	1.287
Total	100.0	100.0	100.0	100.0	3,039	.
N	892	1,078	1,069	1,970		
Community/religious leader						
No	99.3	98.9	98.5	99.0	3,008	1.546
Yes	0.7	1.2	1.5	1.0	31	0.626
Total	100.0	100.0	100.0	100.0	3,039	.
N	892	1,078	1,069	1,970		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 7.1.5. VACCINE KNOWLEDGE, PERCEPTIONS, SELF-EFFICACY, AND INTENTIONS

Percentage of pregnant women and women with a child under 2 years reporting specific knowledge, perceptions, self-efficacy, and intentions for child vaccinations, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Before 12 months, how many times should a child be vaccinated?						
No times	5.4	3.6	6.0	4.4	158	76.635
1–5 times	15.0	16.8	18.3	16.0	566	2.066
6–10 times	2.0	7.7	14.0	5.2	281	.
11+ times	1.7	0.1	0.7	0.8	22	
Don't know	75.9	71.9	61.0	73.6	2,012	
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
What age should child go for first routine vaccination?						
At birth	24.6	11.8	29.6	17.3	681	87.751
Before naming ceremony	12.4	12.0	9.7	12.2	394	1.717
After naming ceremony but before coming out	9.7	15.3	10.7	12.9	395	.
At coming out/6 weeks	6.2	2.5	1.9	4.1	102	
3 months	4.7	3.7	1.5	4.1	96	
After 1 year	0.8	0.9	0.6	0.8	22	
Other	0.9	1.2	1.4	1.1	43	
Don't know	40.8	52.8	44.6	47.6	1,306	
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
In your opinion, how effective are childhood vaccines?						
Effective	73.6	67.5	72.6	70.2	2,204	15.116
Not effective	4.8	7.4	8.8	6.3	204	0.640
Don't know	21.6	25.1	18.7	23.6	631	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
Many of the illnesses vaccines prevent are severe						
Agree	70.3	68.9	71.1	69.5	2,145	8.207
Disagree	16.8	12.7	16.3	14.5	458	0.344
Don't know	12.9	18.5	12.6	16.1	436	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
I know where and when to get a child vaccinated						
Agree	64.2	63.6	75.6	63.9	2,138	50.324
Disagree	25.4	21.7	14.6	23.3	579	1.660
Don't know	10.4	14.7	9.8	12.9	322	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
Easy for mothers in my community to take child for routine immunizations						
Agree	53.1	45.2	66.3	48.6	1,773	120.177
Disagree	40.3	44.6	24.0	42.8	1,008	3.359
Don't know	6.6	10.2	9.7	8.6	258	*
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
Easy for mothers in my community to track child routine immunizations						
Agree	46.6	38.3	62.1	41.9	1,583	172.165
Disagree	46.4	50.9	25.8	49.0	1,149	4.879
Don't know	7.0	10.8	12.1	9.1	307	**
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
Vaccines have chemicals that can be dangerous to a child's health						
Agree	34.4	26.0	23.1	29.6	835	16.814
Disagree	42.3	44.0	48.6	43.2	1,437	0.592
Don't know	23.3	30.1	28.3	27.2	767	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
Likelihood to make sure next child receives all vaccines						
Likely	78.4	68.5	78.4	72.8	2,277	14.627
Unlikely	14.1	23.4	16.3	19.4	560	0.572
Don't know	7.6	8.1	5.3	7.9	202	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 7.1.6. VACCINATIONS AND HEALTH SERVICES PERCEPTIONS

Percentage of pregnant women and women with a child under 2 years who reported specific perceptions about health services for child vaccinations, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
Immunization services in my community are free						
Agree	75.5	68.4	78.7	71.5	2,288	33.447
Disagree	13.7	15.9	8.4	15.0	376	1.089
Don't know	10.8	15.7	12.9	13.6	375	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
Most people in my community trust immunization services						
Agree	75.5	60.8	80.1	67.1	2,203	69.938
Disagree	15.4	25.1	11.2	20.9	536	2.274
Don't know	9.1	14.2	8.7	12.0	300	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
Health facilities in my community frequently have vaccines available						
Agree	57.8	47.8	60.6	52.1	1,736	21.536
Disagree	30.3	33.0	26.8	31.9	880	0.684
Don't know	11.8	19.2	12.7	16.0	423	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
Most parents take children to a health facility for routine immunizations						
Agree	48.2	45.9	65.9	46.9	1,724	155.535
Disagree	43.6	44.7	22.8	44.2	1,010	5.040
Don't know	8.2	9.5	11.3	8.9	305	**
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

7.2 Acute respiratory infections

Key findings

Care-seeking and treatment: Among last-born children in the past two years, 7 percent were reported to have had a cough, rapid breaths, and a chest-related problem in the past two weeks, or acute respiratory infections (ARI). Among these children, 81 percent and 77 percent were taken for any care in Kebbi/Sokoto and Zamfara, respectively. However, only 49 percent and 33 percent of children with these respiratory symptoms who were taken for any care were brought to a formal medical source in Kebbi/Sokoto and Zamfara, indicating that many children may not have received adequate health care. Few children with these symptoms were given antibiotics across study areas, although Zamfara (41%) had higher antibiotic treatment rates than Kebbi/Sokoto (26%).

Reasons for source of care or not seeking any care: The most important reasons for choosing the source of care were nearby location (40%), trust in provider (36%), recommendation by family member or friend (30%),

and effective treatment (27%) across study areas. These results point to the importance to respondents of convenient, trusted, and high-quality health services in their communities as a complement to SBC activities. The most important reasons for not seeking care included expense or cost (33%) and perceptions that symptoms were not severe or that home care was provided (25%).

Pneumonia ideations: Pediatric pneumonia knowledge is low across study areas. Only 28 percent and 37 percent of respondents currently pregnant or with a child under 2 years reported rapid or difficult breathing as a sign or symptom of pediatric pneumonia; 45 percent and 31 percent of respondents were unable to report any way to help prevent a child from getting pneumonia; and 62 percent and 56 percent were unable to report any effective medicine to treat pneumonia in Kebbi/Sokoto and Zamfara, respectively. Across study areas, most respondents (72%) agreed that pneumonia is a serious illness that can result in hospitalization and even death. Most respondents (80%) said that they were likely to have their child complete a full course of antibiotics, and most (86%) also said that they intended to seek treatment the same or next day for pneumonia symptoms.

TABLE 7.2. ARI CARE-SEEKING FROM FORMAL MEDICAL SOURCES, BY SOCIODEMOGRAPHIC CHARACTERISTICS

Percentage of last-born children under 2 years with ARI in the past two weeks who were taken to a formal medical source by sociodemographic characteristics, September–October 2019

	KEBBI		SOKOTO		MALARIA-ONLY (ZAMFARA)		INTEGRATED (KEBBI/SOKOTO)	
	%	N	%	N	%	N	%	N
Total	38.0	42	53.9	84	32.6	77	48.8	126
Household wealth								
Lowest	(..)	11	49.8	30	(..)	5	48.1	41
Second	(..)	7	(..)	10	(..)	13	(..)	17
Middle	(..)	8	61.3	24	(..)	14	56.1	32
Fourth	(..)	10	(..)	10	34.7	25	(..)	20
Highest	(..)	6	(..)	10	(..)	20	(..)	16
Maternal age (in years)								
15–24 years	(..)	9	49.4	30	29.4	33	42.1	39
25–34 years	42.4	31	55.8	45	27.1	33	50.5	76
35–49 years	(..)	2	(..)	9	(..)	11	(..)	11
Maternal education (highest level attended)								
None	48.7	27	51.9	64	25.2	45	51.0	91
Primary	(..)	3	(..)	5	(..)	10	(..)	8
Secondary or higher	(..)	8	(..)	1	(..)	8	(..)	9
Islamic	(..)	4	(..)	14	(..)	14	(..)	18

(..) Value is not shown due to few observations. Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates $p<0.001$, ** indicates $p<0.05$ and * indicates $p<.0.01$ for the chi^2 statistic comparing integrated versus malaria-only study areas.

TABLE 7.2.1. ARI BY SYMPTOM

Percentage of last-born children under 2 years with ARI symptoms in the past two weeks, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Has child had cough, rapid breaths, chest issue in past 2 weeks?						
No	94.1	90.8	92.9	92.2	2,802	6.033
Yes	5.1	8.1	6.9	6.8	203	0.959
Don't know	0.8	1.1	0.3	0.9	28	.
Total	100.0	100.0	100.0	100.0	3,033	
N	887	1,077	1,069	1,964		
Has child had an illness with a cough at any time in the last 2 weeks?						
No	84.0	75.7	77.1	79.3	2,373	8.434
Yes	15.3	23.3	22.6	19.9	639	0.949
Don't know	0.8	1.0	0.3	0.9	27	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
Did child have short, rapid breaths or difficulty breathing?						
No	46.4	38.9	47.8	41.4	283	7.894
Yes	49.2	61.1	52.2	57.2	351	1.289
Don't know	4.4	0.0	0.0	1.5	5	.
Total	100.0	100.0	100.0	100.0	639	
N	138	245	256	383		
Was this a problem in the chest or a blocked/runny nose?						
Chest only	12.3	14.1	14.9	13.6	45	2.072
Nose only	32.3	42.0	42.0	39.2	146	0.294
Both chest and nose	55.4	42.8	43.1	46.4	158	.
Other	0.0	0.5	0.0	0.4	1	
Don't know	0.0	0.5	0.0	0.4	1	
Total	100.0	100.0	100.0	100.0	351	
N	69	151	131	220		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 7.2.2. ARI CARE-SEEKING BY SOURCE

Percentage of last-born children under 2 years with ARI in the past two weeks who was taken to any care by source, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
Did you seek advice or treatment for the illness?						
No	12.2	22.8	22.9	19.4	41	10.684
Yes	87.8	77.2	77.1	80.6	162	0.200
Total	100.0	100.0	100.0	100.0	203	.
N	42	84	77	126		
Source of care for respiratory symptoms						
No care sought	12.2	22.8	22.9	19.4	41	163.354
Informal private source	49.8	23.3	44.5	31.9	76	1.545
Formal medical source	38.0	53.9	32.6	48.8	86	.
Total	100.0	100.0	100.0	100.0	203	
N	42	84	77	126		
Where did you seek advice or treatment?						
Government hospital						
No	82.8	93.4	81.9	89.7	139	68.305
Yes	17.2	6.6	18.1	10.4	23	1.236
Total	100.0	100.0	100.0	100.0	162	.
N	37	64	61	101		
Governmental PHC						
No	89.6	63.6	79.6	72.7	122	39.094
Yes	10.4	36.4	20.4	27.3	40	0.420
Total	100.0	100.0	100.0	100.0	162	.
N	37	64	61	101		
Dispensary/health post						
No	97.6	90.1	98.4	92.7	152	120.759
Yes	2.5	9.9	1.7	7.3	10	2.240
Total	100.0	100.0	100.0	100.0	162	.
N	37	64	61	101		
Community health outreach post						
No	90.7	91.0	100.0	90.9	156	335.472
Yes	9.3	9.0	0.0	9.1	6	3.137
Total	100.0	100.0	100.0	100.0	162	.
N	37	64	61	101		
Nursing/maternity home						
No	97.6	100.0	97.1	99.2	160	29.524
Yes	2.4	0.0	2.9	0.8	2	0.831
Total	100.0	100.0	100.0	100.0	162	.
N	37	64	61	101		
Private hospital/clinic						
No	96.1	97.8	97.0	97.2	156	0.226
Yes	3.9	2.2	3.0	2.8	6	0.004
Total	100.0	100.0	100.0	100.0	162	.
N	37	64	61	101		
Pharmacy/chemist						
No	44.6	73.9	50.0	63.6	94	109.370
Yes	55.4	26.1	50.0	36.4	68	1.536
Total	100.0	100.0	100.0	100.0	162	.
N	37	64	61	101		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas. Note that the respondent was not prompted about the type of facility attended. The interviewer is trained to code any secondary level government (or general) hospital mentioned as "government hospital."

TABLE 7.2.3. REASONS FOR CHOOSING SOURCE OF CARE FOR ARI

Percentage of last-born children under 2 years with ARI in the past two weeks who were taken to care by reason for treatment location, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Free or inexpensive						
No	94.6	69.4	89.2	78.2	143	133.929
Yes	5.4	30.6	10.8	21.8	19	1.300
Total	100.0	100.0	100.0	100.0	162	.
N	37	64	61	101		
Nearby/transport available						
No	55.5	47.6	66.7	50.4	102	161.706
Yes	44.6	52.4	33.3	49.7	60	2.164
Total	100.0	100.0	100.0	100.0	162	.
N	37	64	61	101		
Medicines often in stock						
No	94.1	97.4	97.1	96.3	155	3.488
Yes	5.9	2.6	2.9	3.8	7	0.074
Total	100.0	100.0	100.0	100.0	162	.
N	37	64	61	101		
Respectful care						
No	97.6	97.1	89.0	97.3	153	141.101
Yes	2.4	2.9	11.0	2.7	9	3.483
Total	100.0	100.0	100.0	100.0	162	.
N	37	64	61	101		
Trust to care for child						
No	62.6	75.7	58.8	71.1	102	95.120
Yes	37.4	24.3	41.3	28.9	60	1.216
Total	100.0	100.0	100.0	100.0	162	.
N	37	64	61	101		
Effective treatment						
No	76.8	83.1	68.0	80.9	119	121.602
Yes	23.2	16.9	32.0	19.1	43	1.467
Total	100.0	100.0	100.0	100.0	162	.
N	37	64	61	101		
Short wait time						
No	68.6	90.5	87.7	82.8	135	28.788
Yes	31.4	9.5	12.3	17.2	27	0.284
Total	100.0	100.0	100.0	100.0	162	.
N	37	64	61	101		
Privacy						
No	97.6	96.9	100.0	97.1	158	103.063
Yes	2.4	3.1	0.0	2.9	4	3.501
Total	100.0	100.0	100.0	100.0	162	.
N	37	64	61	101		
Family/friends recommend						
No	84.2	94.0	55.6	90.5	121	836.974
Yes	15.8	6.1	44.4	9.5	41	10.966
Total	100.0	100.0	100.0	100.0	162	***
N	37	64	61	101		
Religious/community leaders						
No	98.7	100.0	100.0	99.5	161	16.387
Yes	1.3	0.0	0.0	0.5	1	1.423
Total	100.0	100.0	100.0	100.0	162	.
N	37	64	61	101		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 7.2.4. REASONS FOR NOT SEEKING CARE FOR ARI

Percentage of last-born children under 2 years with ARI in the past two weeks not taken to care by reason for no care-seeking, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	TOTAL	N	CHI² VALUE
	%	%	%	%	%		
Too expensive/could not find money							
No	56.9	50.5	76.1	51.8	67.5	27	361.503
Yes	43.1	49.5	23.9	48.2	32.5	14	2.620
Total	100.0	100.0	100.0	100.0	100.0	41	.
N	5	20	16	25	41		
Facility closed/no one there							
No	100.0	97.4	87.7	97.9	91.4	39	178.178
Yes	0.0	2.6	12.3	2.1	8.7	2	2.065
Total	100.0	100.0	100.0	100.0	100.0	41	.
N	5	20	16	25	41		
Distance/transportation not available							
No	86.1	100.0	100.0	97.2	99.0	40	107.571
Yes	13.9	0.0	0.0	2.8	1.0	1	1.630
Total	100.0	100.0	100.0	100.0	100.0	41	.
N	5	20	16	25	41		
Medicine often not available							
No	80.3	100.0	100.0	96.0	98.6	40	153.740
Yes	19.8	0.0	0.0	4.0	1.4	1	1.677
Total	100.0	100.0	100.0	100.0	100.0	41	.
N	5	20	16	25	41		
Treatment not effective							
No	100.0	93.8	94.5	95.1	94.7	39	0.847
Yes	0.0	6.2	5.5	4.9	5.3	2	0.006
Total	100.0	100.0	100.0	100.0	100.0	41	.
N	5	20	16	25	41		
Symptoms not severe/pro-vided home care							
No	76.7	89.2	67.9	86.7	74.6	31	250.013
Yes	23.3	10.8	32.1	13.3	25.4	10	1.139
Total	100.0	100.0	100.0	100.0	100.0	41	.
N	5	20	16	25	41		
Husband/partner oppose							
No	100.0	87.3	90.3	89.9	90.1	37	0.207
Yes	0.0	12.7	9.7	10.1	9.9	4	0.001
Total	100.0	100.0	100.0	100.0	100.0	41	.
N	5	20	16	25	41		
Up to God							
No	94.0	69.2	91.5	74.2	85.4	31	322.832
Yes	6.1	30.8	8.5	25.8	14.6	10	1.166
Total	100.0	100.0	100.0	100.0	100.0	41	.
N	5	20	16	25	41		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 7.2.5. ARI TREATMENT BY MEDICATION TYPE

Percentage of last-born children under 2 years with ARI in the past two weeks who were given antibiotics to treat the condition, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
At any time during the illness, did the child take any medicines?						
No	5.2	16.6	14.7	12.9	27	3.757
Yes	94.8	83.4	85.3	87.1	176	0.062
Total	100.0	100.0	100.0	100.0	203	.
N	42	84	77	126		
What medicines did the child take?						
Any antibiotic drug						
No	54.5	83.8	58.9	74.3	136	150.251
Yes	45.5	16.3	41.1	25.7	67	1.884
Total	100.0	100.0	100.0	100.0	203	.
N	42	84	77	126		
Antibiotic drugs: pills/syrup						
No	52.0	81.6	54.1	71.2	111	176.736
Yes	48.0	18.4	45.9	28.8	65	2.024
Total	100.0	100.0	100.0	100.0	176	.
N	39	70	67	109		
Antibiotic drugs: IV/Injection						
No	97.7	98.9	93.4	98.5	170	87.299
Yes	2.3	1.1	6.7	1.5	6	3.688
Total	100.0	100.0	100.0	100.0	176	.
N	39	70	67	109		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic

TABLE 7.2.6. REPORTED SIGNS AND SYMPTOMS OF PEDIATRIC PNEUMONIA

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years reporting signs and symptoms of pediatric pneumonia, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
Fever						
No	70.4	73.6	67.2	72.1	4,316	16.420
Yes	29.7	26.4	32.8	27.9	1,718	0.537
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Chills						
No	84.1	87.3	90.2	85.8	5,262	27.544
Yes	15.9	12.7	9.8	14.2	772	1.100
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Headache						
No	80.6	85.8	79.9	83.4	4,938	11.614
Yes	19.4	14.2	20.1	16.6	1,096	0.366
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Body pain						
No	84.1	87.5	82.4	85.9	5,060	13.024
Yes	15.9	12.5	17.6	14.1	974	0.689
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Stiff neck						
No	93.8	97.2	94.2	95.7	5,725	6.572
Yes	6.2	2.8	5.9	4.4	309	0.516
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Wheezing						
No	78.2	82.4	78.4	80.5	4,839	3.742
Yes	21.8	17.6	21.6	19.5	1,195	0.169
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Cough						
No	57.1	56.8	44.6	56.9	3,245	89.086
Yes	42.9	43.2	55.4	43.1	2,789	3.684
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Rapid or difficult breathing						
No	75.7	68.4	62.9	71.8	4,295	50.961
Yes	24.3	31.6	37.1	28.2	1,739	1.650
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Diarrhea						
No	94.5	96.7	94.1	95.7	5,728	7.194
Yes	5.5	3.3	5.9	4.3	306	0.418
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Vomiting						
No	91.4	92.3	90.3	91.9	5,511	4.583
Yes	8.6	7.7	9.7	8.1	523	0.275
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Poor appetite						
No	95.2	95.5	92.4	95.4	5,719	21.449
Yes	4.8	4.6	7.6	4.7	315	0.856
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Crying all the time						
No	96.8	93.7	88.3	95.2	5,622	84.121
Yes	3.2	6.3	11.7	4.8	412	5.779
Total	100.0	100.0	100.0	100.0	6,034	*
N	1,960	2,062	2,012	4,022		
Don't know						
No	70.3	62.9	72.5	66.3	4,045	26.537
Yes	29.7	37.1	27.5	33.7	1,989	1.119
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 7.2.7. REPORTED WAYS TO PREVENT PEDIATRIC PNEUMONIA

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years reporting ways to prevent pediatric pneumonia, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI^2 VALUE
	%	%	%	%		
Ensure child vaccinated						
No	73.7	74.1	67.6	73.9	4,355	27.882
Yes	26.3	25.9	32.4	26.1	1,679	0.714
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Keep house/surroundings clean						
No	78.8	88.8	78.1	84.2	4,905	34.250
Yes	21.2	11.2	21.9	15.8	1,129	1.442
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Only breastmilk first 6 months						
No	92.4	94.1	85.4	93.3	5,467	90.616
Yes	7.6	5.9	14.6	6.7	567	2.881
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Safe storage of drinking water						
No	91.6	93.0	83.6	92.4	5,330	99.703
Yes	8.4	7.0	16.4	7.6	704	4.946
Total	100.0	100.0	100.0	100.0	6,034	*
N	1,960	2,062	2,012	4,022		
Don't give dirty water						
No	91.0	94.5	90.9	92.9	5,537	7.824
Yes	9.0	5.5	9.2	7.1	497	0.571
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Good nutrition						
No	87.7	92.2	87.8	90.1	5,370	7.510
Yes	12.3	7.8	12.2	9.9	664	0.311
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Handwashing						
No	93.5	95.7	94.1	94.7	5,671	0.844
Yes	6.5	4.3	5.9	5.3	363	0.045
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Other						
No	89.3	91.7	87.7	90.6	5,445	12.261
Yes	10.7	8.3	12.3	9.4	589	0.568
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Don't know						
No	62.4	47.9	68.7	54.6	3,581	122.903
Yes	37.6	52.1	31.3	45.4	2,453	5.031
Total	100.0	100.0	100.0	100.0	6,034	*
N	1,960	2,062	2,012	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi^2 statistic comparing integrated versus malaria-only study areas.

TABLE 7.2.8. REPORTED TREATMENT PERCEIVED AS EFFECTIVE AGAINST PEDIATRIC PNEUMONIA

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years reporting which medicines are effective to treat pneumonia, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Amoxicillin						
No	71.0	82.4	71.6	77.1	4,592	22.678
Yes	29.0	17.7	28.4	22.9	1,442	0.833
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Cotrimoxazole						
No	87.4	93.0	78.3	90.4	5,313	152.736
Yes	12.7	7.0	21.7	9.6	721	5.800
Total	100.0	100.0	100.0	100.0	6,034	*
N	1,960	2,062	2,012	4,022		
Other antibiotics						
No	98.8	98.9	97.8	98.9	5,953	9.537
Yes	1.2	1.1	2.2	1.1	81	1.567
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Anti-malarials						
No	93.2	96.1	88.5	94.7	5,591	69.809
Yes	6.8	3.9	11.5	5.3	443	2.592
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
ORS						
No	93.6	99.1	98.2	96.6	5,845	16.757
Yes	6.4	0.9	1.8	3.4	189	1.644
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Other						
No	96.9	87.6	92.7	91.9	5,612	1.233
Yes	3.1	12.4	7.3	8.1	422	0.053
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Don't know						
No	43.1	34.2	43.9	38.3	2,336	18.902
Yes	56.9	65.8	56.1	61.7	3,698	0.685
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates $p<0.001$, ** indicates $p<0.05$ and * indicates $p<.0.01$ for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 7.2.9. PNEUMONIA-RELATED BELIEFS, INTENTIONS, AND SELF-EFFICACY

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years reporting certain pneumonia-related beliefs, intentions, and self-efficacy, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Young children may get severely ill from pneumonia, hospitalized, or die						
Agree	75.0	70.6	72.4	72.6	4,305	12.669
Disagree	4.3	7.6	8.3	6.1	403	0.224
Don't know	20.7	21.8	19.3	21.3	1,307	.
Total	100.0	100.0	100.0	100.0	6,015	
N	1,954	2,060	2,001	4,014		
Only weak children die from pneumonia						
Agree	53.7	51.9	51.6	52.8	2,970	4.691
Disagree	24.4	26.0	27.7	25.3	1,693	0.083
Don't know	21.9	22.0	20.7	22.0	1,347	.
Total	100.0	100.0	100.0	100.0	6,010	
N	1,952	2,059	1,999	4,011		
Most women go to drug shop for a child with cough, rapid breaths						
Agree	79.9	73.9	70.2	76.6	4,424	65.029
Disagree	8.6	13.2	18.7	11.0	798	1.455
Don't know	11.6	13.0	11.1	12.3	780	.
Total	100.0	100.0	100.0	100.0	6,002	
N	1,948	2,058	1,996	4,006		
Antibiotics are the most effective treatment for pneumonia						
Agree	59.8	50.0	61.4	54.5	3,346	28.784
Disagree	7.1	7.9	6.7	7.5	443	0.737
Don't know	33.2	42.2	31.9	38.0	2,215	.
Total	100.0	100.0	100.0	100.0	6,004	
N	1,951	2,055	1,998	4,006		
Likelihood that child completes full course of antibiotics						
Likely	78.7	74.8	82.7	76.6	4,728	39.780
Unlikely	10.5	10.3	6.5	10.4	529	0.934
Don't know	10.8	14.9	10.8	13.0	754	.
Total	100.0	100.0	100.0	100.0	6,011	
N	1,953	2,056	2,002	4,009		
Likelihood to seek care same/next day if child develops cough, rapid breaths						
Likely	85.0	79.6	89.1	82.1	5,070	64.159
Unlikely	7.2	11.8	5.1	9.7	463	1.474
Don't know	7.8	8.6	5.8	8.2	467	.
Total	100.0	100.0	100.0	100.0	6,000	
N	1,950	2,055	1,995	4,005		
Confidence to convince husband to seek care for child with cough, rapid breaths						
Confident	84.6	85.2	91.2	84.9	5,206	60.428
Uncertain	8.9	8.5	4.5	8.7	456	1.403
Don't know	6.5	6.3	4.3	6.4	344	.
Total	100.0	100.0	100.0	100.0	6,006	
N	1,951	2,057	1,998	4,008		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

7.3 Diarrheal diseases

Key findings

Diarrhea prevalence and care-seeking: Among last-born children in the past two years, less than one in five had diarrhea in the past two weeks. Among these children, 65 percent and 74 percent were taken for any care in Kebbi/Sokoto and Zamfara, respectively. However, 34 percent and 56 percent who were taken for care were brought to a pharmacy in Kebbi/Sokoto and Zamfara, respectively, which often results in poor-quality care provision.

Reasons for source of care or not seeking any care: The most common reasons for choosing the source of care across study areas were, trust in provider (39%), nearby location (29%), and effective treatment (25%). This points to the importance of convenient, trusted, and high-quality care provision among respondents in these communities. The most important reasons for not seeking care included expense or cost (31%), fatalism ("It's up to God") (29%), and symptoms not perceived as severe or care provided at home (25%).

Diarrhea treatment: Among children under 2 years with diarrhea, 36 percent and 56 percent were given ORS alone in Kebbi/Sokoto and Zamfara, with a statistically significant higher percentage in the latter area. Few children with diarrhea were given both ORS and zinc, although this proportion was again higher in Zamfara

(27%) than in Kebbi/Sokoto (13%). Similar to other priority behavioral outcomes, ORS and zinc treatment for children with diarrhea was far lower among those living in the poorest households or with less-educated mothers as compared with their wealthier and better-educated counterparts. Twenty percent of children with diarrhea still received traditional or homemade fluids across study areas, which merits further investigation if these fluids are used as alternatives to ORS and zinc. Antibiotics were also commonly given to treat diarrhea despite their lack of indication for most diarrhea-causing pathogens.

Diarrhea ideations: Among respondents who were currently pregnant or with a child under 2 years across study areas, 11 percent were unable to report any way to prevent pediatric diarrhea, while nearly half reported keeping surroundings clean (48%), followed by not giving dirty water (39%) or bad food (32%) as prevention methods. While more than two-thirds of respondents recalled ORS as a diarrhea treatment (69%), less than half could name zinc (42%), and nearly one-third reported antibiotics as an effective diarrhea treatment despite its lack of indication for most diarrheal conditions. Nearly two-thirds of respondents (63%) reported that ORS replaces lost water in a child with diarrhea, while 44 percent incorrectly noted that it stops diarrhea. One-quarter of respondents (24%) had never heard of zinc, and approximately one-third of respondents reported that zinc makes diarrhea less severe and shortens its duration. Only 69 percent of respondents agreed that they knew how to prepare ORS themselves.

TABLE 7.3.A. ORS TREATMENT FOR PEDIATRIC DIARRHEA BY SOCIODEMOGRAPHIC CHARACTERISTICS

Percentage of last-born children under 2 years with diarrhea in past two weeks given ORS by sociodemographic characteristics, September–October 2019

	KEBBI		SOKOTO		MALARIA-ONLY (ZAMFARA)		INTEGRATED (KEBBI/SOKOTO)	
	%	N	%	N	%	N	%	N
Total	51.0	153	26.5	210	56.0	171	35.9	364
Household wealth								
Lowest	42.3	40	29.6	67	(..)	13	33.7	107
Second	62.9	32	22.5	43	38.0	31	37.4	75
Middle	49.7	33	20.4	49	48.2	38	30.5	82
Fourth	(..)	16	34.8	24	70.2	32	40.9	41
Highest	54.3	32	33.7	27	64.5	57	45.4	59
Maternal age (in years)								
15–24 years	50.9	54	32.8	92	57.8	73	38.5	146
25–34 years	52.6	74	22.3	98	55.6	72	34.8	172
35–49 years	46.5	25	(..)	20	52.0	26	32.7	46
Maternal education (highest level attended)								
None	53.0	120	19.6	174	53.3	110	30.9	295
Primary	(..)	6	(..)	11	(..)	11	(..)	17
Secondary or higher	(..)	16	(..)	6	70.1	28	57.2	22
Islamic	(..)	11	(..)	19	53.0	22	60.8	30

(..) Value not shown due to low number of observations. Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi^2 statistic comparing integrated versus malaria-only study areas.

TABLE 7.3.B. ORS AND ZINC TREATMENT FOR PEDIATRIC DIARRHEA BY SOCIODEMOGRAPHIC CHARACTERISTICS

Percentage of last-born children under 2 years with diarrhea in past two weeks given ORS and zinc by sociodemographic characteristics, September–October 2019

	KEBBI		SOKOTO		MALARIA-ONLY (ZAMFARA)		INTEGRATED (KEBBI/SOKOTO)	
	%	N	%	N	%	N	%	N
Total	16.1	153	11.5	210	27.1	171	13.3	364
Household wealth								
Lowest	32.2	40	12.6	67	(..)	13	19.0	107
Second	1.5	32	6.3	43	8.2	31	4.6	75
Middle	16.2	33	11.4	49	30.3	38	13.1	82
Fourth	(..)	16	14.3	24	45.2	32	10.4	41
Highest	14.6	32	16.6	27	33.9	57	15.5	59
Maternal age (in years)								
15–24 years	23.8	54	11.2	92	19.2	73	15.2	146
25–34 years	14.4	74	10.6	98	37.2	72	12.2	172
35–49 years	7.7	25	(..)	20	20.8	26	12.0	46
Maternal education (highest level attended)								
None	17.5	120	(..)	17	2.5	110	10.8	295
Primary	(..)	6	(..)	11	(..)	11	12.6	17
Secondary or higher	(..)	16	(..)	6	46.0	28	22.8	22
Islamic	(..)	11	(..)	19	24.2	22	28.5	30

(..) Value not shown due to low number of observations. Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi^2 statistic comparing integrated versus malaria-only study areas.

TABLE 7.3.1. CARE-SEEKING FOR PEDIATRIC DIARRHEA

Percentage of last-born children under 2 years with diarrhea in the past two weeks who were taken for any advice or treatment by source of care, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
Has child had diarrhea at any time in the last 2 weeks?						
No	81.9	78.5	84.2	80.0	2,477	12.381
Yes	17.2	20.6	15.6	19.2	534	1.486
Don't know	0.9	0.9	0.3	0.9	28	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
Did you seek advice or treatment from any source for the diarrhea?						
No	26.8	39.8	25.8	34.8	148	5.131
Yes	73.2	60.2	74.2	65.2	386	1.991
Total	100.0	100.0	100.0	100.0	534	.
N	153	210	171	363		
Where did you seek advice or treatment?						
Government hospital						
No	67.9	92.3	79.0	81.7	305	0.426
Yes	32.1	7.7	21.0	18.3	81	0.086
Total	100.0	100.0	100.0	100.0	386	.
N	119	135	132	254		
Governmental PHC						
No	79.2	70.3	88.3	74.2	311	12.957
Yes	20.8	29.7	11.7	25.8	75	3.706
Total	100.0	100.0	100.0	100.0	386	.
N	119	135	132	254		
Dispensary/health post						
No	98.4	88.8	96.9	93.0	362	3.217
Yes	1.6	11.2	3.1	7.0	24	1.451
Total	100.0	100.0	100.0	100.0	386	.
N	119	135	132	254		
Community health outreach post						
No	94.9	96.4	98.6	95.7	375	2.980
Yes	5.1	3.6	1.4	4.3	11	1.570
Total	100.0	100.0	100.0	100.0	386	.
N	119	135	132	254		
Private hospital/clinic						
No	97.4	94.1	96.7	95.5	374	0.378
Yes	2.6	5.9	3.3	4.5	12	0.092
Total	100.0	100.0	100.0	100.0	386	.
N	119	135	132	254		
Pharmacy/chemist						
No	63.2	68.5	44.5	66.2	218	17.728
Yes	36.9	31.5	55.5	33.8	168	9.273
Total	100.0	100.0	100.0	100.0	386	**
N	119	135	132	254		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 7.3.2. REASONS FOR CHOOSING SOURCE OF CARE FOR PEDIATRIC DIARRHEA

Percentage of last-born children under 2 years with diarrhea in the past two weeks taken to any source of care by reason for choosing treatment location, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
Free or inexpensive						
No	83.9	77.1	93.9	80.1	342	17.285
Yes	16.1	22.9	6.1	19.9	44	6.652
Total	100.0	100.0	100.0	100.0	386	*
N	119	135	132	254		
Nearby/transportation avail						
No	62.5	59.4	78.2	60.7	262	13.856
Yes	37.5	40.6	21.8	39.3	124	4.114
Total	100.0	100.0	100.0	100.0	386	*
N	119	135	132	254		
Medicines often in stock						
No	89.0	86.5	95.2	87.6	356	7.456
Yes	11.0	13.5	4.8	12.4	30	3.173
Total	100.0	100.0	100.0	100.0	386	.
N	119	135	132	254		
Respectful care						
No	94.4	91.7	80.0	92.9	347	12.375
Yes	5.6	8.3	20.0	7.1	39	6.581
Total	100.0	100.0	100.0	100.0	386	*
N	119	135	132	254		
Trust to care for my child						
No	71.0	75.9	52.4	73.8	248	18.059
Yes	29.0	24.1	47.6	26.2	138	6.516
Total	100.0	100.0	100.0	100.0	386	*
N	119	135	132	254		
Effective treatment						
No	88.9	79.7	69.8	83.7	304	9.812
Yes	11.1	20.3	30.2	16.3	82	5.321
Total	100.0	100.0	100.0	100.0	386	*
N	119	135	132	254		
Short wait time						
No	95.2	85.5	90.7	89.7	344	0.099
Yes	4.8	14.5	9.3	10.3	42	0.045
Total	100.0	100.0	100.0	100.0	386	.
N	119	135	132	254		
Privacy						
No	99.5	97.6	99.3	98.4	380	0.813
Yes	0.5	2.4	0.7	1.6	6	0.592
Total	100.0	100.0	100.0	100.0	386	.
N	119	135	132	254		
Family/friends						
No	92.3	90.3	85.3	91.1	340	2.971
Yes	7.8	9.7	14.71	8.9	46	1.443
Total	100.0	100.0	100.0	100.0	386	.
N	119	135	132	254		
Religious/community leaders						
No	91.4	100.0	100.0	96.3	374	8.535
Yes	8.6	0.0	0.0	3.7	12	1.509
Total	100.0	100.0	100.0	100.0	386	.
N	119	135	132	254		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 7.3.3. REASONS FOR NOT SEEKING CARE FOR PEDIATRIC DIARRHEA

Percentage of last-born children under 2 years with diarrhea in the past two weeks not taken to any source of care by reason for no care-seeking, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Too expensive/could not find money						
No	61.9	77.8	63.6	73.0	102	1.531
Yes	38.1	22.3	36.5	27.0	46	0.599
Total	100.0	100.0	100.0	100.0	148	.
N	34	75	39	109		
Facility closed/no one there						
No	91.1	100.0	96.8	97.3	143	0.034
Yes	8.9	0.0	3.2	2.7	5	0.021
Total	100.0	100.0	100.0	100.0	148	.
N	34	75	39	109		
Distance/no transportation						
No	91.8	98.6	92.1	96.6	143	1.402
Yes	8.2	1.4	7.9	3.4	5	0.879
Total	100.0	100.0	100.0	100.0	148	.
N	34	75	39	109		
No female provider at facility						
No	100.0	100.0	98.4	100.0	147	1.287
Yes	0.0	0.0	1.7	0.0	1	0.922
Total	100.0	100.0	100.0	100.0	148	.
N	34	75	39	109		
Poor quality service						
No	100.0	97.9	100.0	98.5	146	1.077
Yes	0.0	2.2	0.0	1.5	2	1.821
Total	100.0	100.0	100.0	100.0	148	.
N	34	75	39	109		
Treatment not effective						
No	94.8	100.0	100.0	98.5	146	1.103
Yes	5.2	0.0	0.0	1.5	2	1.573
Total	100.0	100.0	100.0	100.0	148	.
N	34	75	39	109		
Not severe/provided home care						
No	91.5	72.1	72.3	77.9	118	0.607
Yes	8.6	27.9	27.7	22.1	30	0.160
Total	100.0	100.0	100.0	100.0	148	.
N	34	75	39	109		
Husband/partner oppose						
No	97.7	96.6	97.7	96.9	142	0.087
Yes	2.3	3.4	2.3	3.1	6	0.072
Total	100.0	100.0	100.0	100.0	148	.
N	34	75	39	109		
Unable to leave work/home						
No	98.7	95.8	86.5	96.7	142	5.122
Yes	1.3	4.2	13.5	3.3	6	2.614
Total	100.0	100.0	100.0	100.0	148	.
N	34	75	39	109		
Up to God						
No	84.6	62.9	73.0	69.4	96	0.243
Yes	15.5	37.1	27.0	30.7	52	0.105
Total	100.0	100.0	100.0	100.0	148	.
N	34	75	39	109		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 7.3.4. FLUIDS OR TREATMENTS GIVEN FOR PEDIATRIC DIARRHEA

Percentage of last-born children under 2 years with diarrhea in the past two weeks who were given treatments or fluids for the illness by type given, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
Has child had diarrhea at any time in the last 2 weeks?						
No	81.9	78.5	84.2	80.0	2,477	12.381
Yes	17.2	20.6	15.6	19.2	534	1.486
Don't know	0.9	0.9	0.3	0.9	28	.
Total	100.0	100.0	100.0	100.0	3,039	
N	892	1,078	1,069	1,970		
Was child given the following for diarrhea:						
ORS and zinc						
No	82.4	88.2	72.8	86.0	409	13.019
Yes	17.6	11.8	27.2	14.0	104	5.050
Total	100.0	100.0	100.0	100.0	513	*
N	137	206	170	343		
ORS prepack fluid or mix						
No	48.2	72.8	44.0	63.3	276	19.325
Yes	51.8	27.2	56.0	36.7	252	5.563
Total	100.0	100.0	100.0	100.0	528	*
N	150	207	171	357		
Zinc						
No	62.0	78.7	63.1	72.2	358	23.574
Yes	29.9	18.2	36.8	22.7	154	5.659
Don't know	8.1	3.1	0.2	5.0	22	*
Total	100.0	100.0	100.0	100.0	534	
N	153	210	171	363		
Traditional/homemade fluid						
No	72.3	79.1	77.8	76.5	407	0.989
Yes	25.6	17.5	20.6	20.7	115	0.158
Don't know	2.1	3.3	1.6	2.9	12	.
Total	100.0	100.0	100.0	100.0	534	
N	153	210	171	363		
How much was child given to drink during the diarrhea including breastmilk						
Much less	16.6	18.4	28.6	17.7	114	12.595
Somewhat less	15.4	35.3	27.8	27.6	151	0.764
About the same	35.7	27.6	21.6	30.7	141	.
More to drink	15.4	16.3	12.5	15.9	80	
Nothing to drink	16.6	2.4	9.0	7.9	45	
Don't know	0.4	0.1	0.5	0.2	3	
Total	100.0	100.0	100.0	100.0	534	
N	153	210	171	363		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 7.3.5. REPORTED WAYS TO PREVENT A CHILD FROM GETTING DIARRHEA

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years reporting ways to prevent pediatric diarrhea, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Ensure child is vaccinated						
No	75.9	79.7	68.9	78.0	4,502	60.227
Yes	24.1	20.3	31.1	22.1	1,532	1.495
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Use toilet/no open waste						
No	79.9	90.7	79.9	85.7	4,994	34.018
Yes	20.1	9.3	20.1	14.3	1,040	1.354
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Keep house/surroundings clean						
No	53.8	67.2	46.6	61.0	3,267	120.214
Yes	46.3	32.8	53.4	39.0	2,767	3.887
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Only breastmilk for first 6 months						
No	90.2	92.1	80.5	91.3	5,299	130.291
Yes	9.8	7.9	19.5	8.8	735	4.507
Total	100.0	100.0	100.0	100.0	6,034	*
N	1,960	2,062	2,012	4,022		
Safe storage of drinking water						
No	72.9	85.0	68.9	79.4	4,543	81.764
Yes	27.1	15.0	31.1	20.6	1,491	3.554
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Don't give dirty water						
No	62.6	68.1	58.6	65.6	3,874	29.999
Yes	37.4	31.9	41.4	34.4	2,160	1.227
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Don't eat bad food						
No	73.2	66.1	66.4	69.4	4,141	6.217
Yes	26.8	33.9	33.7	30.6	1,893	0.211
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Good nutrition						
No	85.8	90.3	84.4	88.3	5,233	17.779
Yes	14.2	9.7	15.6	11.8	801	0.888
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Handwashing						
No	82.3	89.3	77.7	86.1	4,964	66.386
Yes	17.7	10.7	22.3	13.9	1,070	2.886
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Proper disposal of infant stool						
No	88.4	93.8	88.3	91.3	5,424	13.791
Yes	11.6	6.2	11.7	8.7	610	0.617
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Other						
No	99.8	99.0	98.9	99.4	5,979	4.726
Yes	0.2	1.0	1.1	0.6	55	1.430
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Don't know						
No	83.7	78.8	94.2	81.0	5,167	257.108
Yes	16.4	21.2	5.8	19.0	867	13.854
Total	100.0	100.0	100.0	100.0	6,034	***
N	1,960	2,062	2,012	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 7.3.6. REPORTED TREATMENTS PERCEIVED AS EFFECTIVE AGAINST PEDIATRIC DIARRHEA

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years reporting effective treatments for pediatric diarrhea, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
ORS						
No	43.6	56.9	17.7	50.7	2,417	739.898
Yes	56.4	43.2	82.3	49.3	3,617	21.421
Total	100.0	100.0	100.0	100.0	6,034	***
N	1,960	2,062	2,012	4,022		
Zinc						
No	62.5	77.5	50.2	70.5	3,838	247.764
Yes	37.5	22.5	49.8	29.5	2,196	7.687
Total	100.0	100.0	100.0	100.0	6,034	**
N	1,960	2,062	2,012	4,022		
Breastmilk						
No	86.0	93.6	80.6	90.1	5,281	99.915
Yes	14.0	6.4	19.4	9.9	753	3.330
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Other fluids						
No	97.6	98.6	95.7	98.2	5,893	27.300
Yes	2.4	1.4	4.3	1.9	141	1.023
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Antibiotics						
No	75.4	67.2	68.2	71.0	4,249	5.060
Yes	24.6	32.8	31.8	29.0	1,785	0.153
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Other						
No	97.7	90.2	97.3	93.7	5,734	49.013
Yes	2.3	9.8	2.7	6.3	300	5.675
Total	100.0	100.0	100.0	100.0	6,034	*
N	1,960	2,062	2,012	4,022		
Don't know						
No	74.4	75.6	90.8	75.0	4,799	274.009
Yes	25.6	24.5	9.2	25.0	1,235	8.328
Total	100.0	100.0	100.0	100.0	6,034	**
N	1,960	2,062	2,012	4,022		

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TABLE 7.3.7. REPORTED WAYS ORS MAY HELP A CHILD WITH DIARRHEA

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years reporting ways ORS may help a child with diarrhea, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Never heard of it						
No	89.2	84.9	95.4	86.9	5,455	142.473
Yes	10.8	15.2	4.6	13.2	579	3.784
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Replaces water lost						
No	46.1	50.0	29.6	48.2	2,573	217.403
Yes	53.9	50.0	70.4	51.8	3,461	7.588
Total	100.0	100.0	100.0	100.0	6,034	**
N	1,960	2,062	2,012	4,022		
Stops diarrhea						
No	61.1	73.5	48.1	67.8	3,685	227.488
Yes	38.9	26.5	51.9	32.3	2,349	8.292
Total	100.0	100.0	100.0	100.0	6,034	**
N	1,960	2,062	2,012	4,022		
Prevents dehydration						
No	76.0	88.9	60.8	83.0	4,619	340.023
Yes	24.0	11.1	39.2	17.0	1,415	14.453
Total	100.0	100.0	100.0	100.0	6,034	***
N	1,960	2,062	2,012	4,022		
Replaces salt/electrolyte						
No	88.5	92.8	73.3	90.8	5,136	282.720
Yes	11.5	7.2	26.7	9.2	898	11.158
Total	100.0	100.0	100.0	100.0	6,034	***
N	1,960	2,062	2,012	4,022		
Restores energy						
No	73.6	80.9	60.1	77.5	4,375	199.122
Yes	26.4	19.2	39.9	22.5	1,659	6.374
Total	100.0	100.0	100.0	100.0	6,034	*
N	1,960	2,062	2,012	4,022		
Other						
No	100.0	99.7	99.7	99.8	6,021	1.352
Yes	0.1	0.3	0.4	0.2	13	0.727
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Don't know						
No	84.2	81.5	93.4	82.7	5,172	170.813
Yes	15.8	18.5	6.6	17.3	862	8.227
Total	100.0	100.0	100.0	100.0	6,034	**
N	1,960	2,062	2,012	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 7.3.8. REPORTED WAYS ZINC MAY HELP A CHILD WITH DIARRHEA

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years reporting ways zinc may help a child with diarrhea, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Never heard of it						
No	73.4	64.8	80.4	68.8	4,497	107.134
Yes	26.6	35.3	19.6	31.2	1,537	3.499
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Make less severe						
No	70.7	80.9	62.5	76.2	4,288	124.634
Yes	29.3	19.1	37.5	23.8	1,746	5.076
Total	100.0	100.0	100.0	100.0	6,034	*
N	1,960	2,062	2,012	4,022		
Shorter duration						
No	70.4	78.3	52.9	74.7	4,085	292.191
Yes	29.6	21.7	47.1	25.3	1,949	11.623
Total	100.0	100.0	100.0	100.0	6,034	***
N	1,960	2,062	2,012	4,022		
Prevent dehydration						
No	83.0	89.2	67.0	86.3	4,824	290.22
Yes	17.0	10.8	33.0	13.7	1,210	13.484
Total	100.0	100.0	100.0	100.0	6,034	***
N	1,960	2,062	2,012	4,022		
Less likely to reoccur						
No	95.0	96.1	82.7	95.6	5,524	228.305
Yes	5.0	3.9	17.3	4.4	510	11.527
Total	100.0	100.0	100.0	100.0	6,034	***
N	1,960	2,062	2,012	4,022		
Restore energy						
No	80.5	87.1	72.6	84.0	4,800	108.909
Yes	19.5	12.9	27.5	16.0	1,234	4.545
Total	100.0	100.0	100.0	100.0	6,034	*
N	1,960	2,062	2,012	4,022		
Other						
No	99.8	100.0	99.8	99.9	6,027	0.345
Yes	0.2	0.0	0.2	0.1	7	0.193
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Don't know						
No	78.2	76.4	84.4	77.2	4,724	48.944
Yes	21.8	23.6	15.7	22.8	1,310	2.121
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates $p<0.001$, ** indicates $p<0.05$ and * indicates $p<.0.01$ for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 7.3.9. DIARRHEA-RELATED BELIEFS, INTENTIONS, AND SELF-EFFICACY

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years reporting certain diarrhea-related beliefs, intentions, and self-efficacy, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
It is very common for children to get diarrhea in my community						
Agree	69.0	78.0	67.4	73.8	4,273	118.281
Disagree	23.1	14.0	28.7	18.2	1,339	2.348
Don't know	7.8	8.1	3.9	8.0	421	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
In young children diarrhea can lead to dehydration and even death						
Agree	81.5	87.3	93.8	84.6	5,227	203.744
Disagree	5.7	6.4	4.6	6.1	362	7.340
Don't know	12.8	6.4	1.6	9.4	444	**
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
I know how to prepare ORS						
Agree	50.5	53.1	80.8	51.9	3,674	568.968
Disagree	24.3	23.0	8.8	23.6	1,145	10.686
Don't know	25.2	23.9	10.4	24.5	1,214	***
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Likelihood to continue breastfeeding if child develops diarrhea						
Likely	89.3	89.2	97.3	89.3	2,682	82.268
Unlikely	6.0	4.9	1.7	5.4	129	6.385
Don't know	4.7	5.8	1.0	5.3	102	**
Total	100.0	100.0	100.0	100.0	2,913	
N	864	1,045	1,004	1,909		
Likelihood to continue ORS the next time child develops diarrhea						
Likely	85.0	73.7	92.8	78.9	5,042	254.019
Unlikely	6.2	16.4	4.5	11.6	529	6.685
Don't know	8.9	10.0	2.7	9.5	462	**
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Likelihood to give zinc the next time child develops diarrhea						
Likely	79.1	59.8	81.2	68.8	4,418	125.621
Unlikely	8.5	23.1	10.3	16.3	786	2.095
Don't know	12.4	17.1	8.5	14.9	829	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

7.4 Child health ideations

Key findings

Among respondents, nearly all (90%) agreed that a health provider was the best person to consult when a child is sick. Approximately 70 percent agreed that facilities in their community frequently have necessary treatment for sick children. Nearly all respondents (92%) also felt confident that they could convince their partner to seek care or advice for a sick child. The most common influencers of decisions about seeking care for a sick child were spouses (81%) followed by no one else (16%) and mothers-in-law (10%). Nevertheless, reported perceptions of quality care at health facilities do not appear to translate into correct behaviors; significant proportions of respondents choose pharmacies for care over health facilities, which merits further investigation.

TABLE 7.4.1. PERCEPTIONS OF HEALTH SERVICES QUALITY FOR SICK CHILDREN

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years reporting perceptions of health services quality for sick children, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
Health provider is always the best person to talk to when child is sick						
Agree	88.0	84.0	92.2	85.8	5,335	91.895
Disagree	9.0	12.2	7.2	10.7	544	2.398
Don't know	3.0	3.8	0.7	3.4	154	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Facilities in my community often have treatment needed for sick child						
Agree	67.9	65.7	72.8	66.7	4,184	56.050
Disagree	26.2	25.5	23.8	25.9	1,481	1.267
Don't know	5.9	8.7	3.4	7.4	368	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 7.4.2. SELF-EFFICACY IN CONVINCING PARTNER TO SEEK CARE FOR A SICK CHILD

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years reporting confidence to convince partner to seek care for a sick child, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
Confidence to convince partner to seek care for a sick child						
Confident	87.7	88.2	95.0	88.0	5,467	114.650
Uncertain	9.2	8.2	4.5	8.7	430	2.846
Don't know	3.1	3.6	0.6	3.4	136	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 7.4.3. WHO ELSE INFLUENCES DECISIONS ABOUT SEEKING CARE FOR A SICK CHILD?

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years reporting who else influences a woman's decision or seek care for a sick child, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
No one else						
No	82.1	86.8	83.0	84.7	5,032	3.047
Yes	17.9	13.2	17.0	15.3	1,002	0.084
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Husband/partner						
No	20.6	17.5	19.1	18.9	1,192	0.016
Yes	79.4	82.5	81.0	81.1	4,842	0.000
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Mother-in-law						
No	87.3	84.2	92.7	85.6	5,360	79.201
Yes	12.8	15.8	7.3	14.4	674	5.187
Total	100.0	100.0	100.0	100.0	6,034	*
N	1,960	2,062	2,012	4,022		
Mother						
No	89.6	93.7	93.0	91.8	5,535	2.806
Yes	10.4	6.3	7.0	8.2	499	0.167
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Friends						
No	99.0	98.4	95.8	98.7	5,885	42.471
Yes	1.0	1.6	4.2	1.3	149	4.158
Total	100.0	100.0	100.0	100.0	6,034	*
N	1,960	2,062	2,012	4,022		
Health provider						
No	98.4	97.0	95.8	97.6	5,859	15.493
Yes	1.6	3.0	4.3	2.4	175	1.202
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Religious/community leader						
No	99.5	99.9	99.6	99.8	6,017	0.865
Yes	0.5	0.1	0.4	0.3	17	0.279
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Partner's other family members						
No	99.9	99.2	99.2	99.5	6,002	2.505
Yes	0.1	0.8	0.8	0.5	32	0.389
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Own other family members						
No	99.6	99.4	99.8	99.5	6,007	3.024
Yes	0.4	0.7	0.2	0.5	27	1.487
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Other						
No	99.8	99.7	99.9	99.8	6,017	1.264
Yes	0.2	0.3	0.1	0.2	17	0.645
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

8 Gender

Key findings

Community participation: Among respondents, most (88%) reported regularly attending group or community meetings. Among those who reported regular meeting attendance, 44 percent participated in women's meetings, with slightly higher attendance in Zamfara (49%) than in Kebbi/Sokoto (35%). Attendance at other types of community meetings (e.g., agricultural, civic) was very low. This result could indicate potentially low participation of respondents in community meetings organized by Breakthrough ACTION/Nigeria to disseminate health messages, with possibly lower participation rates in Kebbi/Sokoto than in Zamfara. This should be considered during the planning of household visits and community events to ensure outreach targets women who may not be prone to community meeting participation, such as by engaging men and local leaders to support reticent women to attend these gatherings.

Household decision-making: Across study areas, many respondents reported that their spouse mainly makes decisions for the household, except in the case of how to use the respondents' own money, where half said they make that decision alone. Half (50%) of respondents said that household decisions about major purchases, schooling, work outside the home, and how to use the partner's money were made exclusively by their partner. In these cases, approximately one-quarter of respondents reported joint decision-making between themselves and their spouse, with significantly higher joint decision-making in Zamfara than in Kebbi/Sokoto for nearly all of these decisions.

Gender roles: Across study areas, most respondents agreed that it is a woman's job to mainly take care of the home and cook for her family (88%), that a good marriage is more important for a girl than a good education (79%), and that it is more important for boys to get an education than it is for girls (71%). Nevertheless, nearly all respondents (94%) agreed that it is also important for couples to discuss and make decisions about child health together, and 85 percent agreed that a woman should play a role in making decisions about the household, even though reported joint decision-making was relatively low.

TABLE 8.1.1. WOMEN'S COMMUNITY PARTICIPATION

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years reporting regular attendance at group or community meetings by meeting type, September–October 2019

	KEBBI	SOKOTO	INTEGRATED (KEBBI/SOKOTO)	MALARIA-ONLY (ZAMFARA)	N	CHI² VALUE
	%	%	%	%		
Do you regularly attend any meetings in your community?						
No	10.8	6.6	8.6	10.5	579	6.343
Yes	89.2	93.4	91.4	89.5	5,382	0.255
Total	100.0	100.0	100.0	100.0	5,961	.
N	1,942	2,042	3,984	1,977		
What types of community meetings do you attend?						
Women's group						
No	97.5	96.6	97.0	94.8	5,741	17.211
Yes	2.5	3.4	3.0	5.2	220	0.838
Total	100.0	100.0	100.0	100.0	5,961	.
N	1,942	2,042	3,984	1,977		
Civic group						
No	96.7	99.8	98.4	98.5	5,878	0.049
Yes	3.3	0.2	1.6	1.5	83	0.001
Total	100.0	100.0	100.0	100.0	5,961	.
N	1,942	2,042	3,984	1,977		
Religious/church						
No	96.6	98.3	97.5	98.8	5,821	14.043
Yes	3.4	1.7	2.5	1.2	140	0.873
Total	100.0	100.0	100.0	100.0	5,961	.
N	1,942	2,042	3,984	1,977		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates $p<0.001$, ** indicates $p<0.05$ and * indicates $p<.0.01$ for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 8.1.2. WOMEN'S ROLE IN HOUSEHOLD DECISION-MAKING

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years reporting household decision-making roles by decision type, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
How your money will be used						
Respondent	35.8	56.2	54.4	46.8	2,920	148.221
Spouse	29.5	24.3	28.6	26.7	1,628	1.830
Both	27.0	15.1	15.8	20.6	1,153	.
Other	0.9	0.3	0.4	0.6	39	
Don't know	6.8	4.1	0.8	5.4	221	
Total	100.0	100.0	100.0	100.0	5,961	
N	1,942	2,042	1,977	3,984		
How husband's money will be used						
Respondent	4.2	4.2	17.5	4.2	549	345.879
Spouse	58.6	75.9	49.8	67.9	3,605	4.515
Both	29.6	19.3	30.7	24.1	1,601	**
Other	1.1	0.4	0.9	0.7	53	
Don't know	6.5	0.2	1.2	3.2	153	
Total	100.0	100.0	100.0	100.0	5,961	
N	1,942	2,042	1,977	3,984		
Major household purchases						
Respondent	4.2	3.5	11.7	3.8	416	246.854
Spouse	62.8	75.2	50.9	69.4	3,717	2.685
Both	24.1	20.1	32.4	22.0	1,532	*
Other	1.2	0.8	0.9	1.0	59	
Don't know	7.7	0.4	4.2	3.8	237	
Total	100.0	100.0	100.0	100.0	5,961	
N	1,942	2,042	1,977	3,984		
Schooling						
Respondent	3.5	2.7	7.9	3.1	306	347.146
Spouse	51.1	50.9	43.1	51.0	2,966	3.382
Both	17.4	9.3	29.2	13.1	1,072	*
Other	1.4	0.7	1.1	1.0	66	
Don't know	26.6	36.4	18.7	31.9	1,551	
Total	100.0	100.0	100.0	100.0	5,961	
N	1,942	2,042	1,977	3,984		
Working outside home						
Respondent	5.5	2.9	19.9	4.1	561	427.573
Spouse	59.2	70.7	48.9	65.4	3,544	3.863
Both	16.4	9.8	16.0	12.9	851	**
Other	1.6	0.9	4.3	1.2	127	
Don't know	17.4	15.7	10.9	16.5	878	
Total	100.0	100.0	100.0	100.0	5,961	
N	1,942	2,042	1,977	3,984		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates $p<0.001$, ** indicates $p<0.05$ and * indicates $p<.0.01$ for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 8.1.3. GENDER-RELATED BELIEFS, ATTITUDES, AND PERCEPTIONS

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years who agreed with certain gender-related beliefs, attitudes, or perceptions, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Important for couples to discuss and decide together about child health						
Agree	93.8	92.9	96.6	93.3	5,653	55.394
Disagree	4.3	3.4	2.8	3.8	205	1.930
Don't know	1.9	3.7	0.6	2.9	103	.
Total	100.0	100.0	100.0	100.0	5,961	
N	1,942	2,042	1,977	3,984		
A woman should play a role in making decisions about the household						
Agree	84.7	84.3	87.1	84.5	5,135	42.484
Disagree	13.9	12.2	12.4	13.0	732	0.848
Don't know	1.4	3.5	0.6	2.5	94	.
Total	100.0	100.0	100.0	100.0	5,961	
N	1,942	2,042	1,977	3,984		
It is more important for boys to get an education than it is for girls						
Agree	73.1	75.0	71.1	74.1	4,292	49.659
Disagree	25.1	21.4	28.0	23.1	1,554	1.392
Don't know	1.8	3.7	0.8	2.8	115	.
Total	100.0	100.0	100.0	100.0	5,961	
N	1,942	2,042	1,977	3,984		
A good marriage is more important for a girl than a good education						
Agree	78.3	86.7	77.9	82.9	4,841	62.878
Disagree	19.9	10.9	21.5	15.1	1,038	1.695
Don't know	1.8	2.3	0.6	2.1	82	.
Total	100.0	100.0	100.0	100.0	5,961	
N	1,942	2,042	1,977	3,984		
It is a woman's job to mainly take care of the home and cook for her family						
Agree	92.9	92.2	86.8	92.5	5,405	146.210
Disagree	5.5	5.3	13.0	5.4	486	6.481
Don't know	1.6	2.5	0.2	2.1	70	**
Total	100.0	100.0	100.0	100.0	5,961	
N	1,942	2,042	1,977	3,984		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

9 Media exposure

Key findings

Media exposure: Radio listening is the most common form of media exposure, with about one-third of respondents reporting regular radio listening across study areas. Only a small percentage of respondents—less than 10 percent—report regularly viewing television. Beyond radio and television, exposure to other media sources is extremely low, with less than one percent of respondents reporting regular reading of newspapers or magazines or regular Internet use.

Radio health messages: Radio is, therefore, the most viable communication channel for widespread dissemination of health messages. Approximately one in three respondents—28 percent in Kebbi/Sokoto and 38 percent in Zamfara—report that they listen to the radio. As a result, a much higher proportion of respondents (28%) across study areas report that they have heard any health messages or advertisements on the radio in the past 12 months compared with messages seen in other media forms. Among respondents who had heard any health messages, the most common topics were malaria (70%), importance of ANC (61%), and childhood immunizations (52%). Unsurprisingly, reporting of malaria messages was significantly higher in Zamfara (75%), where Breakthrough ACTION/Nigeria malaria programs have been ongoing, than in Kebbi/Sokoto (59%). The least commonly noted messages related to maternal care after birth (7%), newborn care (8%), cough with rapid or difficult breathing (9%), and maternal nutrition (9%).

***Albishirin Ku!* radio program exposure:** Awareness of Breakthrough ACTION/Nigeria's *Albishirin Ku!* campaign is already apparent, even as Breakthrough ACTION/Nigeria interventions are just beginning to roll out. In Kebbi/Sokoto, nearly one-quarter of respondents have heard the *Albishirin Ku!* slogan on the radio, as have 13 percent of respondents in Zamfara. Furthermore, 15 percent of respondents in Kebbi/Sokoto have heard the radio program with Frank and Jamila, 26 percent have heard "*iWannan Sakone Daga Ma'aikatar Lafiya Ta Kasa, Da Ta Jiha, Da Kuma*," and 23 percent have heard the *Albishirin Ku!* song. In Zamfara, more than one-quarter of respondents have heard the radio jingle about a mechanic and

driver discussing malaria. A similar percentage have heard the radio jingle involving a football coach and his son discussing malaria.

Nevertheless, awareness of Breakthrough ACTION/Nigeria's *Albishirin Ku!* campaign in Kebbi/Sokoto is lower among respondents living in the poorest households (12%) than in the wealthiest households (42%), and lower among respondents with no education (23%) or Islamic education (20%) compared with those having attended primary (37%) or at least secondary (35%) education. BSS baseline results point to the need for more focused Breakthrough ACTION/Nigeria outreach to these communities through other methods (e.g., household visits or community events) going forward since radio programming may not fully penetrate the poorest areas who also have worse health behaviors and outcomes.

Breakthrough ACTION/Nigeria community volunteer (CV) household visits or community events: Participation in a Breakthrough ACTION/Nigeria community volunteer (CV) community event or household visit was largely non-existent at the start of Breakthrough ACTION/Nigeria program implementation, as expected. Prior to Breakthrough ACTION/Nigeria program implementation, only 18 percent of respondents reported attending a community event in the past six months where a CV was present. These events included community dialogues, compound meetings, and naming ceremonies. Among all respondents, less than one percent reported participating in a community event in the past six months where a CV wearing either a Breakthrough ACTION/Nigeria, USAID, *Albishirin Ku!*, or Know Talk Go logo was present. Less than 2 percent reported participating in a household visit in the past six months with a CV wearing either a Breakthrough ACTION/Nigeria, USAID, *Albishirin Ku!*, or *Know Talk Go* logo.

TABLE 9.1. *ALBISHIRIN KU!* RADIO PROGRAM EXPOSURE BY SOCIODEMOGRAPHIC CHARACTERISTICS

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years who reported hearing *Albishirin Ku!* radio programming by sociodemographic characteristics, September–October 2019

	KEBBI		SOKOTO		MALARIA-ONLY (ZAMFARA)		INTEGRATED (KEBBI/SOKOTO)	
	%	N	%	N	%	N	%	N
Total	18.6	1,960	28.4	2,062	12.7	2,012	23.9	4,022
Household wealth								
Lowest	8.4	541	13.7	618	3.1	208	11.5	1,159
Second	14.5	419	27.1	407	5.6	341	21.1	826
Middle	23.9	63	36.1	408	9.9	407	30.7	771
Fourth	15.8	276	40.4	286	17.5	488	28.3	563
Highest	38.9	361	45.8	343	20.7	568	42.2	703
Maternal age (in years)								
15–24 years	19.7	866	28.1	1,015	10.3	834	24.4	1,880
25–34 years	17.5	850	27.4	837	13.7	888	22.7	1,687
35–49 years	19.0	244	33.3	210	16.9	289	26.1	455
Maternal education (highest level attended)								
None	17.1	1,487	27.2	1,624	10.2	1,300	22.7	3111
Primary	21.7	99	50.2	101	22.9	119	37.1	200
Secondary or higher	34.7	210	35.0	141	16.0	341	34.8	351
Islamic	13.9	164	25.0	196	19.4	251	19.8	360

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi^2 statistic comparing integrated versus malaria-only study areas.

9.1 Radio

TABLE 9.1.1. RADIO EXPOSURE

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years who reported listening to the radio and hearing health messages on the radio, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Do you ever listen to the radio?						
No	76.1	68.7	62.6	72.1	4,079	59.730
Yes	23.9	31.3	37.5	27.9	1,954	2.134
Total	100.0	100.0	100.0	100.0	6,033	.
N	1,960	2,062	2,011	4,022		
How frequently do you listen to the radio?						
Never	76.1	68.7	62.6	72.1	4,080	75.721
<1 time a week	6.4	7.4	9.1	6.9	461	1.347
Once a week	2.9	6.8	4.5	5.0	297	.
2–3 times a week	6.2	10.1	11.2	8.3	586	
4+ times a week	8.4	7.0	12.7	7.7	610	
Total	100.0	100.0	100.0	100.0	6,034	
N	1,960	2,062	2,012	4,022		
In the last 12 months, did you hear any health advertisements/messages on the radio						
No	82.0	73.4	68.8	77.4	4,421	53.284
Yes	18.0	26.7	31.2	22.7	1,602	2.025
Total	100.0	100.0	100.0	100.0	6,023	.
N	1,956	2,060	2,007	4,016		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 9.1.2. HEALTH MESSAGES HEARD ON THE RADIO

Percentage of women 15 to 49 years currently pregnant or with a child under 2 years having heard health messages on radio in past 12 months by type, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Using contraception to space births						
No	52.6	69.8	69.8	63.5	1,043	6.451
Yes	47.4	30.2	30.2	36.5	559	0.296
Total	100.0	100.0	100.0	100.0	1,602	.
N	357	583	662	940		
Using contraception for limiting births						
No	66.5	85.3	76.8	78.4	1,242	0.534
Yes	33.5	14.7	23.2	21.6	360	0.019
Total	100.0	100.0	100.0	100.0	1,602	.
N	357	583	662	940		
Giving birth in a health facility with SBA						
No	62.5	85.9	74.0	77.3	1,212	2.049
Yes	37.5	14.2	26.0	22.7	390	0.089
Total	100.0	100.0	100.0	100.0	1,602	.
N	357	583	662	940		
Formulating a birth plan						
No	76.6	91.1	85.5	85.8	1,350	0.018
Yes	23.4	8.9	14.5	14.2	252	0.001
Total	100.0	100.0	100.0	100.0	1,602	.
N	357	583	662	940		
Antenatal care						
No	46.7	37.6	37.7	40.9	640	1.575
Yes	53.3	62.4	62.3	59.1	962	0.164
Total	100.0	100.0	100.0	100.0	1,602	.
N	357	583	662	940		
Diarrhea						
No	66.8	81.9	76.6	76.4	1,239	0.014
Yes	33.2	18.1	23.4	23.6	363	0.001
Total	100.0	100.0	100.0	100.0	1,602	.
N	357	583	662	940		
Malaria						
No	47.2	37.3	25.4	40.9	583	40.578
Yes	52.8	62.7	74.6	59.1	1,019	3.957
Total	100.0	100.0	100.0	100.0	1,602	*
N	357	583	662	940		
Cough with rapid/difficult breathing						
No	78.9	91.8	93.5	87.1	1,418	18.477
Yes	21.1	8.2	6.5	12.9	184	0.680
Total	100.0	100.0	100.0	100.0	1,602	.
N	357	583	662	940		
Child nutrition						
No	79.2	89.9	86.9	86.0	1,378	0.256
Yes	20.8	10.1	13.1	14.0	224	0.017
Total	100.0	100.0	100.0	100.0	1,602	.
N	357	583	662	940		
Immunizations						
No	59.8	60.2	42.1	60.1	850	45.780
Yes	40.2	39.8	57.9	40.0	752	3.607
Total	100.0	100.0	100.0	100.0	1,602	.

N	357	583	662	940		
Breastfeeding						
No	74.8	83.8	68.7	80.5	1,233	24.695
Yes	25.2	16.2	31.3	19.5	369	1.369
Total	100.0	100.0	100.0	100.0	1,602	.
N	357	583	662	940		
Maternal nutrition						
No	86.6	93.4	90.9	90.9	1,447	0.001
Yes	13.4	6.6	9.1	9.1	155	0.000
Total	100.0	100.0	100.0	100.0	1,602	.
N	357	583	662	940		
Newborn care						
No	93.3	95.1	91.2	94.4	1,484	5.258
Yes	6.7	4.9	8.9	5.6	118	0.458
Total	100.0	100.0	100.0	100.0	1,602	.
N	357	583	662	940		
Maternal care after giving birth						
No	98.0	96.2	91.3	96.8	1,500	16.902
Yes	2.1	3.9	8.7	3.2	102	2.678
Total	100.0	100.0	100.0	100.0	1,602	.
N	357	583	662	940		
Water, sanitation and hygiene						
No	98.1	96.5	74.2	97.1	1,408	124.669
Yes	1.9	3.5	25.8	2.9	194	22.959
Total	100.0	100.0	100.0	100.0	1,602	***
N	357	583	662	940		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi^2 statistic comparing integrated versus malaria-only study areas.

9.2 *Albishirin Ku!*

TABLE 9.2.1. *ALBISHIRIN KU!* **RADIO PROGRAM EXPOSURE**

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years who reported hearing the *Albishirin Ku!* slogan on the radio, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Have you heard the slogan *Albishirin Ku!* on the radio?						
No	75.7	65.9	83.7	70.4	4,447	152.812
Yes	18.6	28.4	12.7	23.9	1,278	3.320
Don't know	5.7	5.7	3.5	5.7	308	*
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Heard radio program with couple Faruk and Jamila						
No	87.5	76.8	88.3	81.8	4,986	60.924
Yes	9.2	19.1	8.2	14.5	822	1.312
Don't know	3.3	4.1	3.5	3.7	225	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Heard iWannan Sakone Daga Ma'aikatar Lafiya Ta Kasa, Da Ta Jiha, Da Kuma						
No	77.0	63.0	65.0	69.5	4,079	20.676
Yes	18.7	33.0	31.7	26.4	1,733	0.353
Don't know	4.3	4.0	3.4	4.1	221	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Have you heard this song on the radio?						
No	79.7	68.0	80.3	73.4	4,509	43.130
Yes	17.1	28.1	17.8	23.0	1,346	1.589
Don't know	3.1	3.9	1.9	3.5	178	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 9.2.2. *ALBISHIRIN KU!* **HEALTH MESSAGES HEARD ON THE RADIO**

Percentage of women 15 to 49 years currently pregnant or with a child under 2 years who had heard the *Albishirin Ku!* messages on the radio by type, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Health						
No	45.3	79.3	82.2	67.6	934	38.555
Yes	54.7	20.7	17.8	32.4	412	3.153
Total	100.0	100.0	100.0	100.0	1,346	.
N	345	626	375	971		
Albishirin Ku!						
No	63.2	57.1	43.2	59.2	745	34.514
Yes	36.8	42.9	56.8	40.8	601	1.733
Total	100.0	100.0	100.0	100.0	1,346	.
N	345	626	375	971		
Pregnant women going to antenatal care						
No	48.6	75.8	70.7	66.4	877	2.798
Yes	51.5	24.2	29.4	33.6	469	0.148
Total	100.0	100.0	100.0	100.0	1,346	.
N	345	626	375	971		
Childbirth spacing/family planning						
No	65.5	82.2	76.7	76.5	1,001	0.009
Yes	34.5	17.8	23.3	23.5	345	0.000
Total	100.0	100.0	100.0	100.0	1,346	.
N	345	626	375	971		
Nutrition for children						
No	74.1	92.1	85.6	85.9	1,118	0.017
Yes	26.0	8.0	14.4	14.1	228	0.001
Total	100.0	100.0	100.0	100.0	1,346	.
N	345	626	375	971		
Prompt care for malaria						
No	76.0	97.4	85.2	90.1	1,164	7.316
Yes	24.0	2.6	14.9	10.0	182	0.282
Total	100.0	100.0	100.0	100.0	1,346	.
N	345	626	375	971		
Maternal nutrition during pregnancy						
No	80.7	90.4	86.0	87.1	1,137	0.363
Yes	19.3	9.6	14.0	12.9	209	0.015
Total	100.0	100.0	100.0	100.0	1,346	.
N	345	626	375	971		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 9.2.3. *ALBISHIRIN KU!* JINGLES OR SHOWS HEARD ON THE RADIO

Percentage of women 15 to 49 years currently pregnant or with a child under 2 years who had heard the *Albishirin Ku!* radio jingles or shows by type, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI^2 VALUE
	%	%	%	%		
Have you heard a radio jingle featuring an auto mechanic and a driver talking about malaria?						
No	86.4	76.4	71.6	81.0	4,650	124.067
Yes	9.1	19.4	26.1	14.7	1,176	2.701
Don't know	4.5	4.2	2.4	4.3	207	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Have you heard this radio jingle on the radio?						
No	86.1	71.4	69.5	78.2	4,520	141.258
Yes	9.8	24.9	29.3	17.9	1,348	4.403
Don't know	4.0	3.7	1.1	3.9	165	*
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Heard radio jingle about football coach and son discussing malaria?						
No	87.7	78.4	71.6	82.7	4,725	157.389
Yes	8.3	17.9	26.5	13.5	1,119	3.529
Don't know	4.0	3.7	2.0	3.8	189	*
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Have you heard this song on the radio?						
No	86.0	72.2	64.4	78.6	4,431	232.317
Yes	10.2	24.4	34.5	17.8	1,446	6.617
Don't know	3.8	3.4	1.0	3.6	156	**
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Have you heard of the following radio shows?						
Taka Naka Rawan						
No	87.3	81.7	87.3	84.3	5,150	34.136
Yes	7.5	12.9	10.2	10.4	631	0.866
Don't know	5.2	5.4	2.5	5.3	252	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Don Tuwon Gobe						
No	87.0	81.5	86.0	84.0	5,095	28.607
Yes	8.9	13.3	11.8	11.3	710	0.755
Don't know	4.1	5.3	2.3	4.7	228	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Kai da lafiya						
No	83.2	77.2	83.4	80.0	4,862	44.832
Yes	12.9	17.6	14.9	15.4	959	1.309
Don't know	4.0	5.2	1.7	4.6	212	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Lafiyar mata da kananan yara						
No	79.7	69.0	68.6	74.0	4,323	117.426
Yes	15.9	25.7	30.1	21.2	1,506	3.848
Don't know	4.4	5.3	1.3	4.9	204	*
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Lafiyar Uwar Komai						
No	80.5	70.1	77.1	74.9	4,554	44.572
Yes	15.7	24.3	21.1	20.3	1,259	1.324
Don't know	3.8	5.7	1.8	4.8	220	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi^2 statistic comparing integrated versus malaria-only study areas.

TABLE 9.2.4. *ALBISHIRIN KU!* **LOGO SEEN DURING HOUSEHOLD VISIT WITH COMMUNITY VOLUNTEER**

Percentage of women 15 to 49 years currently pregnant or with a child under 2 years who had a household visit with a CV in the past six months and saw the *Albishirin Ku!*, *Know Talk Go*, USAID or Breakthrough ACTION/Nigeria logos on their clothing, Sep–Oct 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
CV household visit in past 6 months						
No	84.2	85.5	89.1	84.9	5,245	33.963
Yes	11.1	10.7	9.0	10.9	521	0.759
Don't know	4.7	3.8	1.9	4.2	195	.
Total	100.0	100.0	100.0	100.0	5,961	
N	1,942	2,042	1,977	3,984		
Type of branding on CV clothing at household visit						
No special branding	44.4	12.4	19.8	26.3	117	195.934
Albishirin Ku!	11.8	6.5	0.0	8.8	27	5.320
Know Talk Go	0.0	0.0	0.4	0.0	1	***
Nigerian or state government	4.5	0.6	0.2	2.3	7	
USAID	3.2	2.2	7.0	2.6	22	
Breakthrough ACTION	11.8	2.1	0.4	6.3	22	
UNICEF	0.5	11.8	8.9	6.9	34	
Plan International	0.0	27.0	0.0	15.3	55	
Other	0.7	2.5	49.5	1.7	61	
Don't know	23.0	34.9	13.9	29.7	119	
Total	100.0	100.0	100.0	100.0	465	
N	140	208	117	348		
Participation in household visit with Breakthrough ACTION CV in past 6 months						
No	97.6	98.9	99.4	98.3	5,962	18.407
Yes	2.4	1.1	0.6	1.7	72	2.407
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Main messages discussed by Breakthrough ACTION CV during household visit						
Childbirth spacing/FP	74.7	39.6	63.9	63.0	37	17.530
Antenatal care	18.3	12.5	7.9	16.4	11	1.351
Pregnancy health/nutrition	0.8	1.9	0.0	1.2	2	.
Birth planning/delivery care	4.9	0.0	0.0	3.3	2	
Newborn care	0.0	4.5	0.0	1.5	2	
Breastfeeding	1.2	0.0	0.0	0.8	1	
Immunizations	0.0	35.3	0.0	11.7	7	
Malaria preventing/using mosquito nets	0.0	1.9	28.2	0.6	6	
Malaria diagnosis and treatment	0.0	2.6	0.0	0.9	1	
Malaria prevention during pregnancy/IPTp	0.0	1.9	0.0	0.6	1	
Total	100.0	100.0	100.0	100.0	70	
N	30	28	12	58		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 9.2.5. *ALBISHIRIN KU!* **LOGO SEEN DURING COMMUNITY EVENT WITH CV**

Percentage of women 15 to 49 years currently pregnant or with a child under 2 years who attended a community event with a CV in the past six months and saw *Albishirin Ku!, Know Talk Go,* USAID or Breakthrough ACTION/Nigeria logos on their clothing, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
Participation in event with CV in the last 6 months						
No	51.0	72.7	89.6	64.0	243	31.535
Yes	44.8	25.7	10.2	33.4	75	3.925
Don't know	4.2	1.5	0.3	2.6	9	*
Total	100.0	100.0	100.0	100.0	327	
N	94	119	114	213		
Type of CV event in past 6 months						
Compound meeting	51.7	18.3	0.0	36.4	20	44.455
Community dialogue	22.0	0.0	68.0	11.9	16	2.652
Marriage ceremony	0.0	14.3	19.8	6.6	7	.
Naming ceremony	9.4	62.2	0.0	33.7	19	
Religious gathering	10.6	0.0	0.0	5.7	5	
Household visit	0.0	5.2	9.6	2.4	4	
Other event	1.4	0.0	2.6	0.8	2	
Don't know	4.9	0.0	0.0	2.6	2	
Total	100.0	100.0	100.0	100.0	75	
N	35	29	11	64		
Type of branding on CV clothing at event						
No special branding	36.2	75.8	88.6	56.4	35	7.125
Albishirin Ku!	22.5	11.9	0.0	17.1	6	0.677
Know Talk Go	20.9	0.0	0.0	10.2	3	.
Nigerian or state government	2.7	0.0	0.0	1.3	1	
Don't know	17.7	12.3	11.4	15.0	11	
Total	100.0	100.0	100.0	100.0	56	
N	24	25	7	49		
Participation in community event with Breakthrough ACTION CV in past 6 months						
No	99.5	99.9	100.0	99.7	6,025	11.404
Yes	0.5	0.1	0.0	0.3	9	3.824
Total	100.0	100.0	100.0	100.0	6,034	.
N	1,960	2,062	2,012	4,022		
Main messages discussed by Breakthrough ACTION CV at community event						
Childbirth spacing/FP	100.0	0.0	77.8	77.8	.	
Postpartum care for mothers	0.0	50.0	11.1	11.1	.	
Breastfeeding	0.0	50.0	11.1	11.1	.	
Total	100.0	100.0	100.0	100.0		
N	7	2	9	9		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.01 for the chi² statistic comparing integrated versus malaria-only study areas.

9.3 Television

TABLE 9.3.1. TELEVISION EXPOSURE

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years who reported watching TV and seeing health messages on TV, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Do you currently watch TV?						
No	92.2	95.0	89.4	93.7	5,411	34.114
Yes	7.8	5.0	10.6	6.3	622	2.026
Total	100.0	100.0	100.0	100.0	6,033	.
N	1,960	2,062	2,011	4,022		
About how many days in a normal week do you watch TV?						
0 times	92.2	95.0	89.4	93.7	5,412	62.407
1–2 days	1.2	1.7	1.2	1.5	108	2.744
3–4 days	3.5	0.9	2.0	2.1	168	.
5–7 days	3.1	2.4	7.5	2.7	346	
Total	100.0	100.0	100.0	100.0	6,034	
N	1,960	2,062	2,012	4,022		
In past 12 months, have you seen any health messages/ads on TV?						
No	97.3	97.4	93.7	97.4	5,717	41.843
Yes	2.7	2.6	6.3	2.7	317	4.005
Total	100.0	100.0	100.0	100.0	6,034	*
N	1,960	2,062	2,012	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 9.3.2. HEALTH MESSAGES SEEN ON TELEVISION

Percentage of women 15 to 49 years currently pregnant or with a child under 2 years who had seen health messages on TV in the past 12 months by type, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Using contraception for birth spacing						
No	58.0	63.7	78.7	61.0	223	9.168
Yes	42.0	36.3	21.3	39.0	94	2.966
Total	100.0	100.0	100.0	100.0	317	.
N	70	79	168	149		
Using contraception for limiting births						
No	69.1	79.3	87.4	74.4	256	7.080
Yes	31.0	20.7	12.6	25.6	61	2.364
Total	100.0	100.0	100.0	100.0	317	.
N	70	79	168	149		
Giving birth in a health facility with SBA						
No	63.8	69.9	89.1	67.0	254	20.240
Yes	36.2	30.1	10.9	33.0	63	10.788
Total	100.0	100.0	100.0	100.0	317	**
N	70	79	168	149		
Birth plans						
No	81.5	81.2	85.1	81.3	273	0.591
Yes	18.6	18.8	14.9	18.7	44	0.387
Total	100.0	100.0	100.0	100.0	317	.
N	70	79	168	149		
Antenatal care						
No	58.2	62.0	62.6	60.2	194	0.139
Yes	41.8	38.0	37.4	39.8	123	0.071
Total	100.0	100.0	100.0	100.0	317	.
N	70	79	168	149		
Diarrhea						
No	77.0	96.1	88.3	87.0	283	0.089
Yes	23.0	3.9	11.7	13.0	34	0.044
Total	100.0	100.0	100.0	100.0	317	.
N	70	79	168	149		
Malaria						
No	58.0	50.8	46.9	54.3	161	1.190
Yes	42.0	49.2	53.1	45.8	156	0.332
Total	100.0	100.0	100.0	100.0	317	.
N	70	79	168	149		
Cough with rapid or difficult breathing						
No	98.1	81.0	93.8	89.2	295	1.748
Yes	1.9	19.0	6.2	10.9	22	0.580
Total	100.0	100.0	100.0	100.0	317	.
N	70	79	168	149		
Child nutrition						
No	91.5	86.9	89.0	89.1	280	0.001
Yes	8.5	13.1	11.1	10.9	37	0.001
Total	100.0	100.0	100.0	100.0	317	.
N	70	79	168	149		

Immunizations

No	75.7	70.2	66.5	72.8	214	0.985
Yes	24.4	29.8	33.5	27.2	103	0.348
Total	100.0	100.0	100.0	100.0	317	.
N	70	79	168	149		

Breastfeeding

No	90.9	85.2	81.6	87.9	266	1.527
Yes	9.1	14.9	18.4	12.1	51	0.947
Total	100.0	100.0	100.0	100.0	317	.
N	70	79	168	149		

Maternal nutrition

No	97.6	90.3	91.9	93.8	289	0.292
Yes	2.4	9.7	8.1	6.2	28	0.121
Total	100.0	100.0	100.0	100.0	317	.
N	70	79	168	149		

Newborn care

No	99.2	97.3	96.7	98.2	305	0.442
Yes	0.8	2.7	3.4	1.8	12	0.581
Total	100.0	100.0	100.0	100.0	317	.
N	70	79	168	149		

Maternal care after giving birth

No	100.0	95.1	92.4	97.4	296	2.333
Yes	0.0	4.9	7.6	2.6	21	1.286
Total	100.0	100.0	100.0	100.0	317	.
N	70	79	168	149		

Water, sanitation, and hygiene

No	93.5	92.6	77.7	93.1	267	8.473
Yes	6.5	7.4	22.3	7.0	50	4.159
Total	100.0	100.0	100.0	100.0	317	*
N	70	79	168	149		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

9.4 Newspaper or magazine

TABLE 9.4.1. NEWSPAPER OR MAGAZINE EXPOSURE

Percentage of women 15 to 49 years currently pregnant or with a child under 2 years who had read newspapers or magazines and saw health messages, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
Do you ever read the newspaper or magazines?						
No	99.0	99.4	99.7	99.3	5,983	6.064
Yes	1.0	0.6	0.3	0.8	50	2.159
Total	100.0	100.0	100.0	100.0	6,033	.
N	1,960	2,062	2,011	4,022		
How frequently do you read the news-paper or magazines?						
4 or more times a week	32.0	20.7	52.0	27.5	10	8.097
2–3 times a week	15.1	3.4	20.6	10.4	6	0.819
Once a week	4.4	26.3	0.0	13.1	7	.
Less than once a week	16.6	49.6	6.9	29.8	18	
Never reads newspapers/magazines	32.0	0.0	20.5	19.2	9	
Total	100.0	100.0	100.0	100.0	50	
N	22	21	7	43		
In the last 12 months, did you read any health advertisements or message						
No	99.5	98.7	96.4	99.1	5,927	42.822
Yes	0.5	1.3	3.6	0.9	106	2.474
Total	100.0	100.0	100.0	100.0	6,033	.
N	1,960	2,062	2,011	4,022		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.01 for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 9.4.2. HEALTH MESSAGES SEEN IN NEWSPAPERS OR MAGAZINES

Percentage of women 15 to 49 years currently pregnant or with a child under 2 years who had seen health messages in newspapers or magazines in the past 12 months by type, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Using contraception to space births						
No	23.8	46.0	11.8	40.2	34	8.029
Yes	76.2	54.0	88.2	59.8	72	2.359
Total	100.0	100.0	100.0	100.0	106	.
N	14	33	59	47		
Using contraception for limiting births						
No	65.0	77.9	12.7	74.5	49	29.862
Yes	35.0	22.1	87.3	25.5	57	10.170
Total	100.0	100.0	100.0	100.0	106	**
N	14	33	59	47		
Giving birth in a health facility with SBA						
No	60.4	93.3	15.6	84.7	51	33.348
Yes	39.6	6.7	84.4	15.3	55	27.795
Total	100.0	100.0	100.0	100.0	106	***
N	14	33	59	47		
Birth plans						
No	41.6	90.9	97.0	78.0	95	8.816
Yes	58.4	9.1	3.0	22.0	11	3.339
Total	100.0	100.0	100.0	100.0	106	.
N	14	33	59	47		
Antenatal care						
No	33.0	43.6	16.4	40.8	37	5.006
Yes	67.0	56.4	83.6	59.2	69	3.027
Total	100.0	100.0	100.0	100.0	106	.
N	14	33	59	47		
Diarrhea						
No	67.0	93.9	48.9	86.9	73	7.813
Yes	33.0	6.1	51.1	13.1	33	12.704
Total	100.0	100.0	100.0	100.0	106	***
N	14	33	59	47		
Malaria						
No	80.9	58.3	14.6	64.2	42	19.244
Yes	19.1	41.7	85.4	35.8	64	18.341
Total	100.0	100.0	100.0	100.0	106	***
N	14	33	59	47		
Cough with rapid or difficult breathing						
No	89.7	89.3	98.1	89.4	100	3.200
Yes	10.3	10.7	2.0	10.6	6	10.566
Total	100.0	100.0	100.0	100.0	106	**
N	14	33	59	47		
Child nutrition						
No	96.1	91.7	96.4	92.9	100	0.430
Yes	4.0	8.3	3.6	7.2	6	1.473
Total	100.0	100.0	100.0	100.0	106	.
N	14	33	59	47		

Immunizations						
No	93.0	60.1	1.8	68.7	37	58.026
Yes	7.0	39.9	98.2	31.3	69	37.493
Total	100.0	100.0	100.0	100.0	106	***
N	14	33	59	47		
Breastfeeding						
No	93.0	85.3	14.0	87.4	52	38.555
Yes	7.0	14.7	86.0	12.7	54	33.744
Total	100.0	100.0	100.0	100.0	106	***
N	14	33	59	47		
Water, sanitation, and hygiene						
No	100.0	100.0	13.2	100.0	59	52.378
Yes	0.0	0.0	86.8	0.0	47	63.498
Total	100.0	100.0	100.0	100.0	106	***
N	14	33	59	47		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi^2 statistic comparing integrated versus malaria-only study areas.

9.5 Internet

TABLE 9.5.1. INTERNET EXPOSURE

Percentage of women aged 15 to 49 years currently pregnant or with a child under 2 years who report using the internet and seeing health messages, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
Have you ever used the internet?						
No	99.3	98.5	99.4	98.9	5,949	4.232
Yes	0.7	1.5	0.6	1.1	84	0.884
Total	100.0	100.0	100.0	100.0	6,033	.
N	1,960	2,062	2,011	4,022		
About how many days in a normal week do you use the internet?						
0 times	99.3	98.5	99.4	98.9	5,950	9.342
1–2 days	0.3	0.2	0.0	0.2	12	1.274
3–4 days	0.1	0.1	0.2	0.1	15	.
5–7 days	0.4	1.1	0.4	0.8	57	
Total	100.0	100.0	100.0	100.0	6,034	
N	1,960	2,062	2,012	4,022		
How do you access the internet?						
Public computer	3.2	1.1	0.0	1.7	2	2.472
Own phone	86.5	96.7	100.0	93.7	79	1.581
Someone else's phone	10.3	2.2	0.0	4.6	3	.
Total	100.0	100.0	100.0	100.0	84	
N	17	52	15	69		
How easy for you to access internet to look up health info						
Very easy	42.9	72.9	55.9	64.2	57	10.952
Somewhat easy	46.5	15.5	14.6	24.5	16	1.372
Somewhat difficult	10.6	8.1	3.5	8.9	8	.
Very difficult	0.0	3.5	26.0	2.5	3	
Total	100.0	100.0	100.0	100.0	84	
N	17	52	15	69		
In the last 12 months, did you see any health messages on internet?						
No	61.4	45.2	27.3	50.0	35	5.323
Yes	38.6	52.6	72.7	48.5	47	1.868
Don't know	0.0	2.2	0.0	1.6	2	.
Total	100.0	100.0	100.0	100.0	84	
N	17	52	15	69		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

9.6 Other information sources

TABLE 9.6.1. HEALTH INFORMATION RECEIVED FROM OTHER SOURCES

Percentage of women 15 to 49 years currently pregnant or with a child under 2 years who report receiving health messages from other sources by type, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Last 12 months received/heard/seen health information from other sources						
No	85.0	87.3	92.0	86.2	5,266	52.302
Yes	11.3	9.6	5.8	10.4	570	0.676
Don't know	3.8	3.1	2.3	3.4	197	.
Total	100.0	100.0	100.0	100.0	6,033	
N	1,960	2,062	2,011	4,022		
Health info source in the past 3 months						
Billboards						
No	70.8	86.3	27.6	78.6	390	148.210
Yes	29.2	13.7	72.4	21.4	180	5.756
Total	100.0	100.0	100.0	100.0	570	*
N	235	224	111	459		
Mobile phone/SMS						
No	96.3	95.1	99.7	95.7	545	9.428
Yes	3.8	4.9	0.3	4.3	25	8.415
Total	100.0	100.0	100.0	100.0	570	**
N	235	224	111	459		
Cinema						
No	99.3	100.0	100.0	99.7	569	0.850
Yes	0.7	0.0	0.0	0.3	1	0.847
Total	100.0	100.0	100.0	100.0	570	.
N	235	224	111	459		
Live drama/puppet show						
No	98.9	98.9	99.1	98.9	565	0.029
Yes	1.1	1.1	1.0	1.1	5	0.011
Total	100.0	100.0	100.0	100.0	570	.
N	235	224	111	459		
Leaflet/brochure						
No	98.3	98.8	98.3	98.5	562	0.042
Yes	1.7	1.2	1.7	1.5	8	0.013
Total	100.0	100.0	100.0	100.0	570	.
N	235	224	111	459		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates $p<0.001$, ** indicates $p<0.05$ and * indicates $p<.01$ for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 9.6.2. HEALTH INFORMATION RECEIVED FROM HEALTH SYSTEM SOURCES

Percentage of women 15 to 49 years currently pregnant or with a child under 2 years who received health messages from health system sources by type, September–October 2019

	KEBBI %	SOKOTO %	MALARIA-ONLY (ZAMFARA) %	INTEGRATED (KEBBI/SOKOTO) %	N	CHI² VALUE
Government hospital/health center						
No	57.3	68.6	16.8	63.0	298	123.298
Yes	42.7	31.4	83.2	37.1	272	5.101
Total	100.0	100.0	100.0	100.0	570	*
N	235	224	111	459		
Government post/dispensary						
No	96.7	99.2	33.3	97.9	497	275.033
Yes	3.3	0.8	66.7	2.1	73	37.753
Total	100.0	100.0	100.0	100.0	570	***
N	235	224	111	459		
Women and children hospital						
No	98.3	98.8	68.7	98.5	533	99.190
Yes	1.8	1.2	31.3	1.5	37	43.198
Total	100.0	100.0	100.0	100.0	570	***
N	235	224	111	459		
Child welfare clinic						
No	99.6	99.5	100.0	99.5	567	1.179
Yes	0.4	0.5	0.0	0.5	3	1.229
Total	100.0	100.0	100.0	100.0	570	.
N	235	224	111	459		
Church/mission/hospital						
No	100.0	99.8	100.0	99.9	569	0.257
Yes	0.0	0.2	0.0	0.1	1	0.655
Total	100.0	100.0	100.0	100.0	570	.
N	235	224	111	459		
Private hospital/clinic						
No	100.0	97.4	100.0	98.7	565	3.388
Yes	0.0	2.6	0.0	1.3	5	0.932
Total	100.0	100.0	100.0	100.0	570	.
N	235	224	111	459		
Nursing/maternity home						
No	98.5	100.0	99.7	99.2	565	0.609
Yes	1.5	0.0	0.3	0.8	5	0.469
Total	100.0	100.0	100.0	100.0	570	.
N	235	224	111	459		
Kiosk						
No	95.9	100.0	100.0	97.9	560	5.363
Yes	4.1	0.0	0.0	2.1	10	1.165
Total	100.0	100.0	100.0	100.0	570	.
N	235	224	111	459		
Community health worker						
No	93.5	92.0	94.2	92.7	527	0.498
Yes	6.5	8.1	5.8	7.3	43	0.088
Total	100.0	100.0	100.0	100.0	570	.
N	235	224	111	459		
Traditional birth attendant/healer						
No	95.7	96.6	96.4	96.2	551	0.018
Yes	4.3	3.4	3.6	3.8	19	0.003
Total	100.0	100.0	100.0	100.0	570	.
N	235	224	111	459		
Mobile clinic						
No	100.0	99.8	100.0	99.9	569	0.231
Yes	0.0	0.2	0.0	0.1	1	0.633
Total	100.0	100.0	100.0	100.0	570	.
N	235	224	111	459		
Pharmacy						
No	97.3	98.6	94.5	97.9	550	4.623
Yes	2.7	1.5	5.5	2.1	20	0.600
Total	100.0	100.0	100.0	100.0	570	.
N	235	224	111	459		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates $p<0.001$, ** indicates $p<0.05$ and * indicates $p<.0.01$ for the chi² statistic comparing integrated versus malaria-only study areas.

TABLE 9.6.3. HEALTH INFORMATION RECEIVED FROM OTHER PERSONS OR SOURCES

Percentage of women 15 to 49 years currently pregnant or with a child under 2 years who received health messages from other persons or influencers, September–October 2019

	KEBBI	SOKOTO	MALARIA-ONLY (ZAMFARA)	INTEGRATED (KEBBI/SOKOTO)	N	CHI² VALUE
	%	%	%	%		
Parents						
No	85.4	85.2	99.5	85.3	501	37.653
Yes	14.6	14.8	0.5	14.7	69	20.064
Total	100.0	100.0	100.0	100.0	570	***
N	235	224	111	459		
Sisters/brothers						
No	81.9	96.5	99.7	89.2	515	27.255
Yes	18.1	3.6	0.3	10.8	55	19.596
Total	100.0	100.0	100.0	100.0	570	***
N	235	224	111	459		
Teacher/peer educator						
No	97.4	99.7	100.0	98.5	561	3.791
Yes	2.6	0.4	0.0	1.5	9	1.473
Total	100.0	100.0	100.0	100.0	570	.
N	235	224	111	459		
Spouse/partner						
No	71.9	79.4	98.5	75.6	452	60.996
Yes	28.1	20.6	1.5	24.4	118	14.373
Total	100.0	100.0	100.0	100.0	570	***
N	235	224	111	459		
Friends/neighbors						
No	58.1	56.8	96.2	57.5	380	112.824
Yes	41.9	43.2	3.8	42.6	190	12.512
Total	100.0	100.0	100.0	100.0	570	***
N	235	224	111	459		

Estimates based on low Ns (approx. <30 obs) have large relative standard errors and should be interpreted with caution. *** indicates p<0.001, ** indicates p<0.05 and * indicates p<.0.01 for the chi² statistic comparing integrated versus malaria-only study areas.

Discussion

This technical report presents complete results of the baseline BSS survey undertaken between September and October 2019. Over the period from 2019 to 2021, baseline, midline, and endline waves of the BSS will be used to assess the effectiveness of the Breakthrough ACTION/Nigeria integrated SBC activities for malaria, family planning, and MNCH+N in Kebbi and Sokoto relative to malaria-only SBC activities in Zamfara.

As part of this evaluation, the BSS not only measures changes in behavioral outcomes across family planning, malaria, and MNCH+N, but also measures whether certain behavioral drivers, or ideations, have been modified by SBC activities over the life of the Breakthrough ACTION/Nigeria project. Indeed, the BSS is unique in its focus on measuring these psychosocial influences—or emotional, social, and cognitive domains—that have been posited by various theories as intermediate determinants of behavioral outcomes. For some health areas, the BSS is pioneering in its collection of new metrics for behavioral drivers (e.g., pneumonia, breastfeeding, ANC, delivery care) while in other areas, the BSS has adapted published metrics for the Nigerian context (e.g., vaccination, diarrhea).

Based on this new data collection work, the BSS baseline report provides important program-relevant evidence to inform Breakthrough ACTION/Nigeria SBC adaption and scale-up during this early implementation period. In this report, we answer some key learning questions for Breakthrough ACTION/Nigeria programs, including: To what extent are respondents aware of health behaviors being promoted (e.g., how to prevent and treat certain diseases); To what extent are certain myths or beliefs held by respondents that could impede progress across health areas; How do respondents view health services in their communities, and what are the main reasons for choosing certain treatment locations or for not seeking care at all; Who mainly influences decisions and practices across health areas; What are key social norms around health behaviors; and Do respondents feel confident in their ability to take up promoted practices.

Key findings and recommendations for different health areas are outlined in the following sections. Going forward, in-depth analyses of the BSS baseline dataset will provide further evidence about the relative importance of different ideations on behavioral outcomes across health areas. We will also examine the differences among doers and non-doers of promoted behaviors, and take a deeper dive into the role of spousal communication, or other important topic areas, in the uptake of promoted behaviors by Breakthrough ACTION/Nigeria.

Key Findings and Recommendations

Albishirin Ku!

- Awareness of Breakthrough ACTION/Nigeria's *Albishirin Ku!* radio programming was already apparent even at this baseline period. In Kebbi/Sokoto, 24 percent of respondents had heard the *Albishirin Ku!* radio slogan as have 13 percent in Zamfara.

- *Albishirin Ku!* radio program awareness in Kebbi/Sokoto was significantly lower among respondents in the poorest households (12%) than in wealthiest households (42%) across study areas.

- This result suggests that Breakthrough ACTION/Nigeria radio programming may not penetrate to the poorest households that have demonstrably worse health outcomes according to BSS results (see below sections). Breakthrough ACTION/Nigeria may need to assure that additional outreach efforts through other channels or methods (e.g., household visits or community events) are targeted at the poorest areas, or consider ways to bring radios to communities (e.g., listening or discussion groups).

Family planning

- **Modern contraceptive use:** There was low modern contraceptive use among non-pregnant respondents, with higher use in Zamfara (15%) than in Kebbi/Sokoto (11%). Modern contraceptive use was lower among respondents in poorest households (6% and 7%) than in wealthiest households (24% and 34%). Most respondents had heard of at least one modern method, with the most recognized methods being injectables, implants, and daily pills. Higher recall of methods was noted in Kebbi/Sokoto (30%, 38%, 33%) than in Zamfara (16%, 23%, 19%). Unsurprisingly, the most common methods used by non-pregnant respondents were injectables (48%) and implants (25%), with similar proportions across study areas.

- **Reasons for non-use, attitudes, and social norms:** The most common reasons for not using contraception among current non-users were that "It's up to God" (25%), currently breastfeeding (23%), partner opposition (21%), and respondent opposition (18%). In line with this result, approximately half (52%) of respondents agreed that they do not personally approve of using contraception for birth spacing, underscoring a critical hurdle to Breakthrough ACTION/Nigeria SBC messaging for changing family planning practices. In addition, one in five respondents believed that people in their community would call them bad names or avoid their company if others knew they were using contraception for birth spacing, which further highlights the importance of addressing social norms in family planning. About half of respondents agreed that religious leaders should speak publicly about using modern contraceptives, which is a pillar of Breakthrough ACTION/Nigeria programming.

- **Contraceptive myths:** CCommon contraceptive myths also persist across study areas with firmer belief in these myths in Kebbi/Sokoto than in Zamfara. About one in three respondents in Kebbi/Sokoto agreed that contraception could make a woman permanently infertile, harm a woman's womb, or lead to health problems, compared with about one-quarter of respondents in Zamfara. About one in five respondents in Kebbi/Sokoto agreed that contraceptives cause cancer, give you deformed babies, increase promiscuity, or reduce sexual urges of women and men. SBC programming needs to actively work to dispel these specific myths going forward to help promote behavior change.

- **Spousal communication and decision-making:** There were low rates of spousal communication about contraceptive use, although rates were higher in Zamfara (22%) than in Kebbi/Sokoto (6%). Unsurprisingly, respondents also noted that contraceptive decisions were mainly made by their partners, with higher reports in Kebbi/Sokoto (30%) than in Zamfara (17%). When respondents were asked who else influences a woman's decision about contraceptive use, the most commonly mentioned influencers were no one else (61%) and partners/spouses (30%). Self-efficacy for negotiating contraceptive use with a partner was low. Only about half of respondents across study areas were confident in their ability to convince their partner to use modern contraception for spacing births. Finally, among non-users, only 15 percent intended to start contraceptive use in the next six months, representing another barrier to raising contraceptive use rates.

Malaria

- **Malaria prevention:** Overall, there was high long-lasting insecticide nets (LLIN) ownership. Approximately 75 percent and 69 percent of households in Zamfara and Kebbi/Sokoto, respectively, own at least one LLIN. However, fewer households had the recommended ratio of at least one LLIN for every two household members, with slightly higher proportions in Kebbi/Sokoto (25%) than in Zamfara (18%). In households where there were sufficient nets (at least one LLIN for every two household members), 81 percent and 88 percent of pregnant respondents slept under an LLIN the previous night in Kebbi/Sokoto and Zamfara, respectively, with little difference across wealth quintiles or maternal education. Similarly, in households with sufficient nets, over 90 percent of children under 2 years slept under an LLIN the previous night in integrated and malaria-only areas, with limited differences across sociodemographics. There was also extremely high overall awareness about the importance of LLINs in malaria prevention. Among respondents who were currently pregnant or with a child under 2 years, nearly all (97%) agreed that malaria was caused by mosquito bites and 93 percent reported that sleeping under mosquito nets was an effective malaria prevention method. In addition, there was also strong intent to get all children under 5 sleeping under a mosquito net (93%). The results suggest that resources building additional knowledge of the

modes of transmission are not needed, but improving access, acceptability, and efficacy of LLIN may be a useful programmatic focus.

- **Malaria during pregnancy:** Malaria prevention efforts during pregnancy are substantially lacking in all three states. Less than one in five respondents in study areas took intermittent preventive treatment (three or more SP/Fansidar doses) during their last pregnancy, with lower rates among respondents in the poorest households (10% and 12%), as compared with the wealthiest (33% and 34%) in Kebbi/Sokoto and Zamfara, respectively. Lower percentages were also observed among the less educated (15% and 14%) compared to respondents who attended at least some primary school (36% and 25%). The most common reasons for not taking SP/Fansidar during the last pregnancy were opposition by respondent (34%) or spouse (33%), which underscores a major barrier to increasing uptake. Among respondents attending ANC, few in Kebbi/Sokoto (11%) and Zamfara (18%) were given a mosquito net during the ANC visit. While 91 percent of respondents agreed that malaria in pregnancy can affect the fetus, far fewer could state the specific risks to the baby. Only about half across the study area reported fetal death (45%) or miscarriage (44%) as specific risks from malaria in pregnancy, while far fewer reported premature birth (26%) and low birth weight (17%) as specific risks. Building knowledge of malaria risks and specific health consequences for the fetus may be a driver toward greater adoption of prevention behaviors.

- **Malaria treatment:** While there were high rates of care-seeking for children under 2 years of age with fever, many respondents (33% and 54% of those who sought care in Kebbi/Sokoto and Zamfara, respectively) went to a pharmacy where poor-quality care persists. The most important reasons for choosing the treatment location for pediatric fever care were trust (36%), nearby location (33%), and effective treatment (28%). These findings underscore the importance to women of convenient and high-quality health services provision in their communities. Importantly, few febrile children were tested for malaria (19% and 24%), and few were given ACT treatment (22% and 36%) in Kebbi/Sokoto and Zamfara. The low prevalence of testing may be due in large part to care-seeking from pharmacies. Nearly all respondents reported intentions to take a child with fever to care the same/next day (92%) and

to make sure the child takes the entire treatment course (92%), suggesting motivation is not a primary barrier to care-seeking. However, while 74 percent agreed that a blood test is the only way to know whether a person has malaria, most respondents (61%) agreed that they still worry the illness could be malaria even if the test result is negative. This implies some lack of confidence in negative malaria test results, which points to an area for future SBC programming.

MNCH+N

- **Antenatal care:** There is low ANC attendance across the three states, with approximately one-third (32% and 38%) of respondents attending ANC one or more times and one-quarter (20% and 26%) attending ANC four or more times during the last pregnancy in Kebbi/Sokoto and Zamfara, respectively. The most common reasons for not attending ANC were lack of perceived need (42%), spousal opposition (25%), fatalism ("It's up to God") (20%), and perceptions that ANC is not the norm (13%). More than two-thirds (67%) of respondents said their spouses influence their decision to go to ANC four or more times, making spousal support or opposition a critical facilitator or barrier to uptake. The strong influence of spouses on pregnancy and other health-related decisions underscores the need for continued and sustained engagment with men to improve the uptake of essential services for women and children in this area. There are also common ANC myths among respondents that persist. Overall, 48 percent and 35 percent of respondents agreed that pregnant women need ANC only when sick, and one-quarter of respondents agreed that only first-time mothers need ANC. A significant percentage of respondents—40 percent and 30 percent in Kebbi/Sokoto and Zamfara, respectively—noted that it is better to use a traditional provider than a health facility for ANC. Birth planning with a health worker during ANC does not appear to be standard practice, and only one in three respondents reported having discussed birth plans. These perceptions point to areas for SBC messaging to improve awareness of the benefits of ANC even for healthy pregnancies that could lead to additional ANC uptake going forward.

- **Facility delivery**: Facility delivery was an uncommon practice in Kebbi/Sokoto (14%) and Zamfara (16%) among respondents during their last pregnancy. More than 80 percent of respondents delivered at

their own or another home, and births are commonly assisted by family members (36%) or traditional birth attendants (29%). The most common reasons for not delivering at a facility were that they did not feel it was necessary (75% and 61%) followed by spousal opposition (15% and 36%) in Kebbi/Sokoto and Zamfara, respectively. When respondents were asked who influences the decision to have a facility delivery, partner/spouse (57%) was the most common response, making spousal opposition a critical barrier to service utilization. Only about half (54%) of respondents agreed that the health facility is the best place to deliver a baby, and even fewer (44%) felt confident that they could get to a health facility for delivery. Only about half (55%) were confident that they could start a conversation with their husband about facility delivery, and a similar proportion (51%) intended to deliver their next child at a health facility.

- **Breastfeeding:** Nearly all respondents (96%) reported ever breastfeeding their last-born child under 2 years. Yet initiating breastfeeding within one hour of birth was low across study areas, although higher in Zamfara (46%) than in Kebbi/Sokoto (36%). Exclusive breastfeeding for the first six months of life was also low across study areas, with higher rates in Zamfara (46%) than in Kebbi/Sokoto (26%). This low coverage is in large part due to high rates of giving non-breastmilk liquids to a child in the first three days after birth, with much higher practice rates in Kebbi/Sokoto (73%) than in Zamfara (50%). In relation to this practice, 23 percent of respondents also agreed that mother's breastmilk after birth is bad, suggesting an area for future SBC messaging. Taken together, these responses suggest ways SBC messaging may help promote exclusive breastfeeding in this study area. In addition, while there was high awareness of breastfeeding and its benefits among respondents, only 55 percent of respondents felt confident to exclusively breastfeed their child for the first six months, with higher confidence in Zamfara (64%) than Kebbi/Sokoto (42%). Forty-one percent of respondents believed that most other respondents in their communities gave breastmilk exclusively to their infants, suggesting perceived social norms about breastfeeding. There was also relatively low intent to exclusively breastfeed their next child in Zamfara (59%) and Kebbi/Sokoto (46%).

- **Vaccination:** There was very low vaccination coverage in study areas, with 4 percent and 8 percent of

children aged 12 to 23 months in Kebbi/Sokoto and Zamfara, respectively, fully vaccinated (BCG, measles, DPT3, and polio3) by the time of the survey interview. The most important reason for not vaccinating the child was spousal opposition (33%) followed by distance to the health facility (14%) and fear of needles (11%). Across study areas, 73 percent of respondents reported that their spouses influence their decision about child vaccinations, making spousal opposition an important barrier to vaccine uptake. While respondents gave generally positive reports about their own vaccine knowledge and attitudes, more specific questions elicited a less rosy picture. Specifically, only about half (52%) of respondents in Kebbi/Sokoto believed that health facilities frequently had vaccines available, as compared with 61 percent in Zamfara. Only 47 percent of respondents in Kebbi/Sokoto and 66 percent in Zamfara believed most respondents in their communities took children to facilities for routine vaccination. Approximately one in four respondents (26%) agreed that vaccines contain dangerous chemicals that could harm a child's health. Few respondents knew when a child should first be vaccinated and the number of vaccinations children should receive by their first birthdays. Taken together, results suggest relatively low vaccine knowledge, common perceptions of frequent vaccine stockouts at health facilities, spousal opposition to vaccine uptake, and the persistence of vaccine myths across the study area.

- **Acute respiratory infections:** While there were high rates of care-seeking for under-twos with cough, rapid breathing, and a chest-related problem, only 49 percent and 33 percent of those who sought care were taken to a formal medical source in Kebbi/Sokoto and Zamfara. Even fewer children with these respiratory symptoms were given antibiotics (41% and 26%). The most common reasons for choosing the source of care was nearby location (40%), provider trust (36%), family/friend recommendation (30%), and effective treatment (27%), which underscores the importance to women of convenient and high-quality health care provision in their communities. The most important reasons for not seeking care were expense/cost (33%) and symptoms not perceived as severe or home care was provided (25%). Pediatric pneumonia knowledge was low across study areas. Only 28 percent and 37 percent of respondents reported rapid or difficult breathing as a symptom of pediatric pneumonia, 45 percent and 31 percent could not report any way to

help prevent a child from getting pneumonia, and 62 percent and 56 percent could not report any effective medicine to treat pneumonia in Kebbi/Sokoto and Zamfara, respectively. These results point to the need to shift care-seeking from pharmacies to formal medical sources and to improve overall pneumonia knowledge in study areas.

- **Diarrhea:** Few children with diarrhea were given both ORS and zinc, although this proportion was higher in Zamfara (27%) than in Kebbi/Sokoto (13%). Among children with diarrhea, 36 percent and 56 percent were given ORS alone in Kebbi/Sokoto and Zamfara, respectively. While there were high rates of care-seeking for children under 2 years with diarrhea, 34 percent and 56 percent of these children were taken to a pharmacy, where poor-quality care persists. The most important reasons for choosing the source of care were provider trust (39%), nearby location (29%), and effective treatment (24%), which underscores the importance to women of convenient and high-quality health care provision in their communities. The most important reasons for not seeking care were expense/cost (32%), fatalism ("It's up to God") (29%), and symptoms not perceived as severe or care was provided at home (25%). Approximately one in four respondents (24%) had never heard of zinc across study areas. Across study areas, 63 percent of respondents reported that ORS replaces lost water in a child with diarrhea, while 44 percent incorrectly noted that it stops diarrhea. These results point to the need to shift care-seeking from pharmacies to formal medical sources and to improve overall diarrhea knowledge in study areas.

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