Breakthrough ACTION Liberia: Baseline Report for Men and Women

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Breakthrough ACTION FOR SOCIAL & BEHAVIOR CHANGE

Breakthrough ACTION Liberia

Breakthrough ACTION Johns Hopkins Center for Communications Programs

111 Market Place, Suite 310 Baltimore, MD 21202 U.S. A.

Telephone: +1-410-659-6300 Fax: +1-410-659-6266
https://breakthroughactionandresearch.org/breakthrough-action/

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Acronyms

ANC	Antenatal Care
CCP	Center for Communication Programs
CHA	Community Health Assistant
CHSS	Community Health Service Supervisor
CHV	Community Health Volunteer
DHS	Demographic and Health Survey
EA	Enumeration Area
FP	Family Planning
GEM	Gender-Equitable Men
GHSA	Global Health Security Agenda
IFA	Iron and Folic Acid
IPTp	Intermittent Preventive Treatment of Malaria During Pregnancy
IRB	Institutional Review Board
ITN	Insecticide-Treated Net
JHU	Johns Hopkins University
MDD	Minimum Dietary Diversity
MIS	Malaria Indicator Survey
PPS	Proportional Piling Scale
RDT	Rapid Diagnostic Test
RIH	Research Innovations Hub
RMNCAH	Reproductive, Maternal, Newborn, Child, and Adolescent Health
SBC	Social and Behavior Change
TB	Tuberculosis
USAID	United States Agency for International Development
WASH	Water, Sanitation, and Hygiene

Overall Study and Findings Summary

Breakthrough ACTION is a global project funded by the United States Agency for International Development (USAID) to lead social and behavior change (SBC) programs around the world. The project ignites collective action and encourages people to adopt healthier behaviors. This work harnesses the demonstrated power of communication and integrates innovative approaches from marketing science, behavioral economics, and human-centered design.

In Liberia, Breakthrough ACTION supports the increased adoption of health behaviors among individuals, families, and communities. The Breakthrough ACTION Liberia project uses an integrated health approach to promote a full suite of healthy behaviors across the areas of malaria; reproductive, maternal, newborn, child, and adolescent health (RMNCAH); family planning (FP); nutrition; zoonotic diseases; and water, sanitation, and hygiene (WASH)—all areas that have been identified as priority areas by the Liberian Ministry of Health and USAID.

To assess relevant baseline indicators and inform the SBC strategy across several health areas and audiences, Breakthrough ACTION Liberia conducted a household survey among men and women of reproductive age in three counties between September and October 2021. The baseline survey was cross-sectional and had the following objectives:

- Identify key determinants of health behaviors in the areas of maternal health, maternal and child nutrition, malaria, COVID-19
- Set benchmarks for impact assessment of the integrated SBC Breakthrough ACTION Liberia program
- Assess the roles of gender-equitable norms, social norms, couple communication, and decision-making in the adoption of health behaviors
- Inform an SBC strategy across several health areas and audiences
- Establish baseline measures to assess the effects of project activities

This report focuses on partnered women and men of reproductive age. We baseline the levels of priority health behaviors along with intermediate outcomes that offer the potential to affect priority behaviors in one or more health areas, including malaria, RMNCAH, WASH, zoonotic diseases, nutrition, COVID-19, and Global Health Security Agenda (GHSA). The intermediate outcomes include couple communication, decision-making, knowledge, attitudes, perceived norms around priority behaviors, and patient-provider interaction experiences. In addition, the report captures recall of Breakthrough ACTION Liberia program-related messages and describes how various demographic, psychosocial, cultural, and relational factors are associated with priority health behaviors

Methods and Data Collection

Data were collected in two intervention counties, Bong and Bomi, where USAID supports integrated programming for RMNCAH plus malaria, and in one control county, Gbarpolu, with no planned USAID or Breakthrough ACTION Liberia programs. These three counties were selected based on their similar contraceptive prevalence rates (24%–30%) among married women (Liberia Institute of Statistics and Geo-Information Services, Ministry of Health, and ICF, 2021). However, the two intervention counties have some differences: Bong is a larger county than Bomi and is predominantly Christian (95%), whereas Bomi has a substantial Muslim population (55%). The survey specifically targeted partnered women of reproductive age (20–49 years), partnered men (ages 20–55 years), unmarried adolescent girls (ages 1–19 years), unmarried adolescent boys (ages 15–19 years), and in-union young women (16–19 years). However, this report focuses only on the adult population, meaning women of reproductive age (20–49 years) and partnered men (ages 20–55 years).

The required sample size was estimated to be 2433 women and 1217 men. The study team selected study participants using a multi-stage sampling approach that involved selecting districts within each county, enumeration areas (EAs) within each district, households within each EA, and respondents within each household. Consequently, 102 EAs (42 in Bong and 30 in Bomi and Gbarpolu), 2161 partnered women, and 1362 partnered men were included in the survey. Ethical approval to conduct the study was obtained from the Johns Hopkins University (JHU) Institutional Review Board (IRB) and the UL-PIRE Africa IRB in Liberia. Informed consent was obtained from all study participants before the interview, using an oral consent process. Bivariate and multivariable analyses were performed using STATA16.

Key Findings

Sociodemographic Profile of the Sample

Overall, about two in five women were in the older age category (35–49 years), one-third were 25–34 years, and one-quarter were 19–24 years old. There were no significant differences in the age profiles of women in the intervention and control groups. More than half of the men in both the intervention and control counties were aged 35–55 years. Half of the women had no formal education, while about one-third had primary education, and less than one-fifth had secondary education or higher. Overall, the education level was higher in men than in women. In addition, the education level of men was higher, on average, in the intervention counties than in the control county. The respondents from Bong were predominantly Christian, whereas more than half of those from Bomi were Muslim. Overall, less than one-third of women and one-fifth of men were never married. Of women, 46.5% were cohabiting, almost one-fifth were married, and 1% were divorced, separated, or widowed. A vulnerability index was constructed using the following four items: lack of enough food to eat, lack of shelter/house to stay in, cannot afford to send children to school, and lack of money to buy medicine/medical treatment (in the past 12 months). Using these variables, only about one-tenth of women and men were classified as having a low vulnerability. In contrast, approximately half of the men and almost two in five women were classified in the high vulnerability category. There were differences in vulnerability between Bong

and Bomi and between the intervention and control counties for both men and women. For both sexes, a high vulnerability level was more common in Bong than in Bomi and in the control than in the intervention counties.

Factors Associated with Health Behaviors

We examined cross-cutting psychosocial and household factors that could affect several health behaviors. The survey assessed the following household factors: couple communication, decision-making, and the household environment, as well as community factors, such as social and gender-restrictive norms.

Couple Communication

Couple communication on health topics such as FP and maternal health was low. Regarding sanitation and child health, the communication level between couples was moderate. Couple communication was most common for malaria.

Household Decision-Making by Women and Men

The data showed that men were generally in charge of both minor and major decisions. Women played a weak role in primary decision-making across the four minor and four major decisions. For many decisions, women in the control county were likelier than their peers in the intervention counties to be primary decision-makers. Bong and Bomi were similar in terms of women's role in decision-making, except for the decisions on "how many children to have" and "using contraceptives," with women in Bong County being much less independent in decision-making than their peers in Bomi.

Gender Inequitable Norms

Most women and men endorse gender inequality in the household. Generally, women and men uphold the gender norms that support child-rearing and taking care of the house as a woman's responsibility and decision-making as a male responsibility. Support for inequitable norms was most evident in the reproductive health subscale (covering contraceptive use and childbearing) of the Gender-Equitable Man (GEM) scale. The partner violence subscale indicates low support for partner violence by both women and men, while the data reveal moderate support for sexual relationship inequity.

Descriptive Norms About Partner Violence

A significant proportion of women and men perceived a high level of partner violence against women in their community, while more than half perceived this type of violence as low. Regarding violence against pregnant women, most men and women perceived the prevalence of this type of violence to be low.

Maternal Health

The survey collected data on the prevalence of several behaviors related to maternal health. The expectation is that examining these behaviors and associated factors will provide a better understanding of the reasons for the high maternal mortality ratio despite high levels of prenatal services and facility-based delivery.

Early ANC Visit (< 12 Weeks)

Women attending antenatal care (ANC) early in pregnancy, that is, within the first three months, is very common in both intervention and control counties. This practice was reported by about four-fifths of the women who had a child in the last two years. For women who started ANC attendance early in their pregnancy, the main reasons were cost-related in Gbarpolu and distance-to-service in the intervention counties. The sociodemographic variables significantly associated with early ANC were educational level and urban residence. Women with a primary level of education were less likely to report early ANC than those with no education or urban women. In addition, having the woman accompanied to the health facility for ANC increased the odds of early ANC while receiving help with housework during pregnancy was negatively associated with early ANC.

Birth Preparedness

The data indicate that very few women who had children two years before the survey knew their due date; only 7.9% in the intervention counties and 12.7% in the control county had such information. About two-fifths of women who had children in the two years before the survey in the intervention counties had made a prior decision on where to deliver, compared with 74.6% of women from the control county. Making prior arrangements for transport to take the pregnant woman to a health facility in case of an emergency was more common in the control county (50.4%) than in the intervention county (33.3%). About 73% of women who had children two years before the survey from Bong, 63% from Bomi, and 84% from the control county reported saving money for a medical emergency during pregnancy. This is in contrast to maintaining an emergency contact number that can be accessed easily by the woman or her family, which was reported by only 18.1% in Bomi, 25.5% in Bong, and 22.8% in the control county. The overall level of birth preparedness across the board was low. Only 2.2% of the women who gave birth in the last two years reported all five elements assessed, 11.7% reported four or more elements, and 70.3% reported two or fewer.

Results of a multivariable logistic regression model revealed five variables that were positively and strongly associated with increased birth preparedness: age of the woman, receipt of information about danger signs during ANC, level of partner support during pregnancy, household ownership of at least one mobile phone, and residence in the control county.

Delivery and Postnatal Care

Most women delivered in health facilities; home deliveries accounted for only about one-tenth of the births in the last two years. Most facility-based deliveries occur at public health facilities. Furthermore, most women received postnatal care promptly, either within 24 hours of birth at the health facility or during a home visit by a community health professional 48 hours after birth.

Malaria

The survey collected data on several factors related to malaria prevention and treatment, including bed net use among adults and children younger than 5 years, completion of three or more doses of intermittent preventive treatment of malaria in pregnancy (IPTp3+), seeking care for fever, and rapid

diagnostic test (RDT) administration for children seeking care for fever. Of these factors, the daily use of bed nets and IPTp3+ completion were explored in the most detail, including models to determine the social and behavioral determinants of both outcomes.

Consistent Bed Net Use Among Women and Men

The daily use of bed nets in the week preceding the survey was better in the intervention counties than in Gbarpolu for both women (88%) and men (86%). Daily net use among women and men in Gbarpolu was 77%. In the multivariate analysis, frequent couple communication about malaria and recall of the Healthy Life campaign were positively associated with daily bed net use for both women and men.

IPTp3+ Use Among Pregnant Women

IPTp3+ completion rates were similar in both the intervention (63%) and control (65%) sites. A marked difference was noticed in IPTp3+ completion rates based on attendance at four or ANC appointments, with 65% of women who had attended at least four appointments reporting completion of IPTp3+, compared to a completion rate of 49% among those who had attended fewer appointments. As expected, attendance at four or more ANC appointments was positively associated with IPTp3+ completion. Respondents who reported that they experienced a supportive home environment during pregnancy were also more likely to receive three or more doses of IPTp.

Maternal and Child Nutrition

The survey collected data on several factors related to maternal and child nutrition, including similar or reduced nutrition intake during pregnancy (including the last trimester), iron and folic acid (IFA) 90+ supplementation, minimum dietary diversity (MDD) among children aged 6–23 months, and early initiation of breastfeeding among children born two years before the study. Of these factors, nutritional intake during pregnancy and MDD were explored in the most detail, including models to identify the social and behavioral determinants of these outcomes.

Maternal Nutrition and Supplementation

Forty-one percent of female respondents in the intervention counties stated that they had the same or reduced food intake during pregnancy compared with pre-pregnancy. There was a large disparity in these rates within the intervention countries, with rates of similar or reduced food intake during pregnancy being twice as high in Bomi (57%) than in Bong (33%). Multivariate analysis confirmed the hypothesis that there is a significantly higher likelihood of women living in Bong County reporting adverse maternal nutrition outcomes. Social norms related to supportive home environments for women during pregnancy were correlated with a lower likelihood of adverse maternal nutrition outcomes during their last pregnancy. Conversely, support for gender inequitable norms related to partner violence was associated with worse maternal nutrition outcomes during pregnancy.

Minimum Dietary Diversity

Only twenty-five percent of the respondents in the intervention counties stated that their children met the MDD benchmark. Results from the multivariate model highlight moderate and frequent couple communication and the decision-making autonomy of women regarding the purchase and consumption

of food for the household as positive determinants of MDD benchmark attainment. The results also highlight that weekly radio listenership positively correlates with MDD benchmark attainment.

Global Health Security Agenda

The survey collected data on stated knowledge of diseases and sources for each disease. For our analysis, we classified respondents' knowledge of Lassa fever, rabies, and bovine TB by capturing the proportion of respondents who could correctly identify the source of each disease.

The correct identification of Lassa fever was 44% among women and 58% among men in the intervention counties. The correct identification of Lassa fever was the lowest among women (15%) and men (27%) in Bomi. Men (51%) identified the correct source of rabies at the intervention sites more often than women (35%). The correct identification of bovine TB was low across all study sites. Men seemed to correctly identify the source more often than women, although the identification rates were still extremely low. An interesting observation tied to this question in the study revealed that respondents tended to compare bovine TB with other, more common forms of TB (primarily pulmonary). For example, many respondents cited smoking (a pulmonary irritant) as a source of bovine TB.

COVID-19

The survey explored vaccine acceptance and preventive behaviors against COVID-19. Vaccine acceptance was defined as the number of respondents who had either received a vaccine at the time of the survey or stated that they would take the vaccine if it were available. The primary outcome for COVID-19 prevention behaviors was based on respondents stating that they practiced three priority prevention behaviors: masking, physical distancing, and handwashing to prevent COVID.

COVID-19 Vaccine Acceptance

Within the intervention counties, 42% of the female respondents accepted the COVID-19 vaccine versus 60% of the male respondents. Based on the results of multivariate analyses, both women and men with higher levels of education were more likely to accept the COVID-19 vaccine than those with lower levels of education. Women living in rural areas are less likely to report COVID-19 vaccine acceptance.

Ideational factors related to gender equity, decision-making autonomy, media exposure, and the concurrent practice of COVID-19 preventative behaviors were also significantly correlated with COVID-19 vaccine acceptance. Support for gender inequitable norms related to partner violence and reproductive health was associated with lower levels of vaccine acceptance among men. Couple communication was correlated with higher levels of vaccine acceptance among both women and men. Furthermore, women who reported autonomy in decision-making for their healthcare were more likely to accept the COVID-19 vaccine.

COVID-19 Preventative Behaviors

In the intervention counties, men (55%) reported higher adherence to prevention behaviors than women (48%). Multivariate analyses highlighted that both women and men with higher education were more likely to practice COVID-19 prevention behaviors than those with lower levels of education. Women who reported high levels of economic vulnerability also reported lower practices of COVID-19 prevention. Couple communication and decision-making autonomy for one's healthcare were positively associated with COVID-19 prevention behavior practices for both women and men. Men who reported supporting gender inequitable norms related to partner violence were less likely to practice COVID-19 prevention behaviors.

Media Habits and Exposure to Health Programs

Exposure to radio is moderate among women but relatively high among men. Only about two-fifths of women, compared to almost three-quarters of men from the intervention communities, reported listening to the radio at least once a week. For both men and women, exposure to radio was lower in the intervention counties than it was in the control county. Exposure to television is generally low, particularly among women in the intervention counties. Most respondents had at least one mobile phone in their household. Mostly, these mobile phones are basic cell phones, and very few households have at least one smartphone. Not all respondents with mobile phones in their households were primary users of such phones. For example, in the intervention counties, only 59.4% of women, compared to 74.4% of men, reported themselves as the primary users of such phones. Most primary mobile phone users use their phones only to make or receive calls. Relatively few (for example, only 13.5% of women in the intervention counties) use their mobile phones for text messaging, and fewer still use their phones for viewing media. The use of social media is equally uncommon, with only 6.8% of women and 15.8% of men from the intervention counties reporting ever using social media.

Approximately one-quarter of women and more than one-third of women were visited by community health personnel (community health volunteer [CHV], community health assistant [CHA], or community health service supervisor [CHSS]). For both the intervention and control countries, men were more likely than women to report being visited by community health personnel. In addition, two-fifths of women reportedly visited a health facility in the last six months. The level of satisfaction with the services received from health personnel varied by type of personnel and respondent's characteristics. In general, the level of satisfaction was higher with the services received from medical personnel and CHV than with those received from CHSS.

Few respondents (9.4% of intervention counties and 14.5% of the control county) had heard of the "Share It, Act It" campaign. In comparison, approximately one-third of the men and women in the intervention counties reported exposure to the Healthy Life campaign. The variables positively associated with exposure include female sex, secondary or higher education, regular radio listening habit, visit from a CHV in the last six months, low household vulnerability index, the number of people in the household, and residing in the control county.

Recommendations

Maternal Health

This study confirms the findings of previous studies that indicators of maternal health behaviors are high in Liberia. Furthermore, through multivariable logistic regression, we identified predictors of recommended behaviors that could serve as a basis for developing potentially effective programs.

Early ANC

Efforts to maintain high levels of early ANC may prioritize women with little education and urban residents. Promoting the notion of friends or family accompanying pregnant women for ANC is equally important. In this regard, interventions that target potential influencers with information about the advantages of early ANC and that seek to strengthen their self-efficacy to support pregnant women in their entourage to go for early ANC are relevant. It is unclear why receiving help with housework during pregnancy is negatively associated with early ANC. However, women who need help with housework may have excessive workloads. In this respect, efforts to educate the community on the need for a reduced workload for pregnant women starting from the early months of pregnancy are relevant. Such efforts should also seek to strengthen the capacity of family and community members to support pregnant women and assist them with housework adequately.

Birth Preparedness

Birth preparedness is influenced by the level of partner support during pregnancy, household ownership of at least one mobile phone, and residence in the control county.

Given the generally low levels of birth preparedness in the studied counties, urgent efforts are needed to increase this essential outcome. These efforts must include demand-generation initiatives and actions targeting service delivery to be effective. The positive association between age and birth preparedness indicates that young people should be a priority group. Targeting this group of pregnant women requires special attention during ANC and CHV visits. It is also necessary to better understand and address the factors that hinder birth preparedness among this group.

Considering the positive link between partner support and housework during pregnancy, specifically targeting men as partners is indicated. A male involvement campaign may promote spousal communication about pregnancy care, educate men on the need to help their spouse with housework during pregnancy, make participation in housework a normative behavior, and encourage men to accompany their pregnant spouse to ANC.

The huge gap between the intervention and control counties indicates that the decision to focus on Bong and Bomi was justified. However, some lessons can be learned from Gbarpolu. Programs must consider what can be learned from Gbarpolu and applied to intervention counties.

From the provider's perspective, efforts to educate pregnant women, in particular, and the community in general, about birth preparedness are relevant. Not providing this information to women during ANC

visits is a misleading opportunity. To this end, existing job aids should be reviewed to assess their appropriateness and revised if necessary. Furthermore, the positive association of receiving information about danger signs during ANC with birth preparedness indicates that this element should be a consistent component of health talks and counseling during ANC and CHV home visits.

Malaria

Consistent Bed Net Use Among Women and Men

Results from the multivariate model suggest that a focus on behavioral maintenance among those living in rural areas will be important to consider in future messaging of SBC programs. At the same time, a greater scope may exist to expand efforts among urban and peri-urban populations at high risk of malaria exposure. Programs aimed at bolstering couple communication may help improve the uptake and continued use of nets by men. A significant finding of our model is that a healthy lifestyle campaign is associated with a greater likelihood of daily net use. Efforts should be made to understand what messages from this program have been particularly successful among women and men, and further scale-up or adaptation of this program for those living in urban areas may further increase the consistent use of bed nets among women and men. Further, programs that aim to bolster communication about malaria among couples may help increase the uptake and continued use of bed nets to prevent malaria in both women and men.

IPTp3+ Use Among Pregnant Women

The results presented for IPTp completion suggest that there will be continued importance to programs focusing on coupling demand-generation for ANC attendance with those focusing on the increased access and quality of these services. Given the impact of the COVID-19 pandemic on seeking care, it is important to consider how SBC programs can be coupled with the scale-up of programs that address access to services. Our analysis suggests that SBC programs focused on improving support within the home for women during pregnancy can complement continued or expanded facilities or community-based programs to increase the attainment of ANC and IPTp.

Mother and Child Nutrition

Minimum Dietary Diversity

Great needs and opportunities exist in intervention countries for programs to increase dietary diversity among children. Interventions in Bomi County are particularly recommended as respondents in this county reported the lowest rates of MDD among children. Adverse economic outcomes from the COVID-19 pandemic can have devastating effects on the nutrition and well-being of children, marking even further urgency to not only bolster complementary SBC programming with nutrition interventions but to further couple this with increased investments in growth monitoring and comprehensive primary healthcare. Our results suggest that programs focused on bolstering couple communication about nutrition and focusing on the greater decisional autonomy of women regarding purchasing and consuming food for their households can positively impact dietary diversity among children. This should be coupled with complementary programs targeted at reducing the impact of the pandemic's adverse

economic effects to ensure that, given a choice, women can purchase diverse and nutritious foods for themselves and their children.

Maternal Nutrition and Supplementation

Similar adverse economic events greatly affect maternal mortality, marking an urgency to couple SBC programs with increased investment in facilities and community-based services for women during pregnancy. A particular area of focus for interventions focused on maternal nutrition is Bong County. Our results suggest that gender-transformative programs aimed at bolstering couple communication about maternal and child nutrition, decision-making autonomy among women for their care, and further advocating for greater support in the home environment during pregnancy may have the best complementary effect on the existing or expanded facility and community-based programs focused on maternal and child nutrition.

Global Health Security Agenda

One channel of activities should focus on raising awareness and knowledge of the three diseases prioritized in this survey: Lassa fever, rabies, and bovine TB. Participants reported low awareness of each disease and its transmission, with some exceptions. Activities that increase community dialogue regarding these diseases and how they threaten the economic and physical well-being of the community can facilitate action. The timing of activities could be established around festivals, harvest periods, and other moments across the calendar when the community comes together. A priority focus within the GHSA portfolio should be on the differences between bovine TB and other more commonly known forms of TB.

COVID-19

Determinants of COVID-19 vaccine acceptance and prevention behaviors were similar. Areas of highest opportunity reside in the interpersonal communication and gender normative areas and will require activities that challenge local gender norms related to decision-making and how people discuss diseases like COVID-19 and those identified above.

One subset of the population that should be further supported is women who reported low decision-making autonomy related to their healthcare. This group may be harder to reach with messaging and may be limited by their spouse or others to arrive at a clinic to receive care. Therefore, interventions should consider this challenge. Activities could reduce women's travel burdens (time, physical, and financial). Another channel of gender-aware messaging may target husbands or relevant family members, who influence women's decisions on seeking care. Ideally, these messages would integrate gender-transformative considerations, but a combination of messages that seek to facilitate vaccine uptake and others that also challenge negative gender norms should be considered to promote the health of the overall community. Programs that encourage communication between couples on COVID-19 may also prove beneficial in bolstering both vaccine acceptance and the practice of preventative behaviors.

Approximately half of the participants reported adherence to all three COVID-19 prevention behaviors. These rates are high compared to other countries in the region, and many individuals in rural areas may experience a limited level of risk. The continued promotion of prevention behaviors may make some behaviors normative. Contextualizing adherence messages in ways that emphasize the moments when people are at the greatest risk for infection (i.e., at markets, weddings, and confined workspaces) may help fortify adherence. Complementing these messages with accurate information regarding the risks of infection and juxtaposing the benefits of vaccination may prove effective. Tailoring vaccine messages for particular subgroups may prove particularly fruitful.

Media Habits and Exposure to Messages

Reaching as many Liberians as possible with life-saving health information will require a multimedia approach. Using the radio and CHVs should be a critical component of a potentially effective strategy, but efforts should also be geared toward exploring and intensifying other community approaches, including community theater, folk media, and community mobilization events. The fact that most people with mobile phones use only the device for making and receiving calls limits the potential for using mobile technology to disseminate information. Nonetheless, this approach can be carefully considered for people (particularly men) who can access text messages. Efforts to reach women may capitalize on the fact that most women visit health facilities multiple times a year for pregnancy care, child health, or other forms of seeking care. During these visits to the health facility, patients and clients should be provided with the opportunity to receive relevant health information. The reason for the lower level of satisfaction with the services received from the CHSS is unclear. More data are needed to understand the situation and identify appropriate solutions.

Introduction

Breakthrough ACTION Liberia Integrated Social and Behavior Change Project Overview

Breakthrough ACTION is a global project funded by USAID to lead SBC programs around the world. Breakthrough ACTION ignites collective action and encourages people to adopt healthier behaviors, from using modern contraceptive methods to sleeping under bed nets and beyond. This work harnesses the demonstrated power of communication and integrates innovative approaches from marketing science, behavioral economics, and human-centered design.

The Johns Hopkins Center for Communication Programs (CCP), under the Breakthrough ACTION Liberia project, is working to support the increased adoption of health behaviors among Liberian individuals, families, and communities. The Breakthrough ACTION Liberia project is using an integrated health approach to promote a full suite of healthy behaviors across the areas of malaria, RMNCAH, FP, nutrition, zoonotic diseases, and WASH—all areas that have been identified as priority areas by the Liberian Ministry of Health and the USAID.

In Liberia, the non-adoption of healthy behaviors remains a critical barrier to improving health outcomes. While USAID Liberia has previously invested in community health, social mobilization, and community engagement, including outreach activities and facility strengthening, the need for household-level change continues, along with strengthened engagement of traditional leadership structures. To address these needs and contribute to USAID/Liberia's Development Objective 3, Breakthrough ACTION delivers effective quality SBC activities in Liberia that will result in behavior change across various health sectors. Breakthrough ACTION builds on and complements existing knowledge, information, and partner efforts, where possible, while building the capacity of Liberian institutions in SBC.

Breakthrough ACTION Liberia primarily works in 12 counties where USAID is active. Breakthrough ACTION Liberia works in both a vertical and integrated manner (integrated meaning across multiple health areas and channels). Integrated programs have the advantage of strengthening health systems as they deliver multiple health programs. Meanwhile, stand-alone or vertical programs have the advantage of rapid implementation owing to their focused approach.

Current Status of Liberia Health Areas

The below background section provides context for the current status of each relevant health area, in Liberia. FP is not included in this report as there is a separate report that covers the current status of family planning (modern and long-acting reversible contraceptive use) and related predictors among men and women in Liberia.

Malaria

The 2016 Liberia Malaria Indicator Survey (LMIS) showed that approximately half (49%) of women of reproductive age do not take action to prevent malaria because they think malaria does not pose a risk. The 2016 LMIS shows that in Liberia, people use nets if they have them. The 2016 MIS indicates that only 42% of Liberians had access to an insecticide-treated net (ITN), with 39% reporting using an ITN the previous night. This result suggests no significant gap exists between ITN access and use. ITN use was higher among households in rural areas (43%) than in urban areas (37%), and it was highest among households in the North Central Region (54%) and lowest in South Central (29%). In households with at least one ITN, use was highest in the North Western (69%) and North Central (70%) regions and lowest in the South Eastern region (49%). A 2014 attitudes, beliefs, and practices study[1] showed that the majority (85%) of the respondents believed that sleeping under a bed net was the best way to avoid malaria, but almost three-quarters (73%) agreed that the chances of getting malaria were the same whether or not they slept under a bed net.

Nutrition

Malnutrition continues to be a major public health problem in Liberia and is exacerbated by poverty, food insecurity, poor dietary practices, low literacy levels, and poor access to basic social services. The most vulnerable groups include women and children, the elderly, and people living with HIV and tuberculosis (TB). Liberia has made some progress toward reducing stunting in the last two decades, yet chronic malnutrition affects nearly one-third of all children younger than five years of age. With a stunting prevalence of 30%, Liberia is among the 21 countries with the highest stunting rates worldwide, depriving thousands of children of their full growth and development potential (DHS Liberia, 2019). Approximately 11% of children younger than five years of age in Liberia are underweight (DHS Liberia, 2019). Anemia among Liberian children 6–35 months is high, at 70.8% (DHS Liberia, 2019). Furthermore, anemia was prevalent (52 %) among pregnant women. To promote SBC for nutrition, the revised national nutrition policy (2019–2024) seeks to improve and promote the adoption of positive attitudes and behaviors for improved nutrition. The Ministry of Health, through the nutrition division, plans to develop a National Nutrition SBC communication strategy to help enhance coordination of SBC nutrition programming, as well as enable adequate use of resources toward effective SBC efforts and increase the uptake of healthy dietary behaviors.

Water, Sanitation, and Hygiene

According to the 2019-2021 Liberia Demographic and Health Survey (DHS), 84% of Liberian households have access to an improved water source (95% in urban areas and 69% in rural areas). The most common sources of drinking water in urban households are hand pumps, tube wells, or boreholes

[1] Johns Hopkins Center for Communication Programs. (2014). *Attitudes, Beliefs and Practices Relevant to Malaria Prevention and Treatment in Liberia*. Retrieved July 12, 2022, from https://www.thecompassforsbc.org/project-examples/attitudes-beliefs-and-practices-relevant-malaria-prevention-and-treatment-liberia

(48%); bottled water or mineral water in sachets (30%); and protected dug wells (6%). Access to improved water sources is lower in rural communities (63%) with 31% of rural households obtaining their drinking water from an unimproved source, as compared to 5% of urban households. The 2019-2020 DHS report also reported 47% of households in Liberia use an improved toilet facility and access to improved sanitation facilities is higher among urban households (66% of households) than for rural households (21% of households).

One of the existing challenges faced by health facilities in Liberia is the lack of basic WASH services. More than 60% of the rural and 20% of the urban populations in Liberia practice open defecation. A Community-Led Total Sanitation/Open Defecation, Free Ebola study conducted by the USAID-funded WASH project in 2015 found that all verified Open Defecation Free communities in Lofa County remained Ebola-free during the Ebola outbreak and had maintained Ebola-free status at the time of the study, whereas communities that did not participate in any Community-Led Total Sanitation/Open Defecation Free activities had higher rates of Ebola and more confirmed case fatalities. Additionally, market-based solutions for sustainable pump maintenance and improved access to WASH-related products at the community level need to be scaled up, including community cash box systems by local communities to help solve problems relating to WASH and health, such as repair of hand pumps. Limited access to improved WASH services poses a serious health threat to most Liberian communities.

Global Health Security Agenda

Zoonotic diseases are infectious diseases transmitted from animals to humans or vice versa. A One Health workshop for West African nations was held in Dakar, Senegal, in 2018 to address the challenges of zoonotic diseases, and Liberia participated in this meeting. As a result, Liberia has eight prioritized zoonotic diseases: Ebola, rabies, Lassa fever, Rift Valley fever, brucellosis, anthrax, highly pathogenic avian influenza, and zoonotic TB. Of these, Breakthrough ACTION Liberia will focus on three zoonotic diseases: zoonotic TB, rabies, and Lassa fever. The rationale for selecting these three diseases is that they can be tracked through a community-based information system quarterly, and early action can be taken for any outbreak or increase in cases. Additionally, Breakthrough ACTION Liberia will collaborate primarily with the National One Health Platform and relevant ministries and agencies to focus on incorporating One Health tenets and strengthening the foundation for implementing high-quality risk communication and community engagement at the national and sub-national levels. There will be an intentional effort to incorporate learning from COVID-19 into plans for One Health coordination. Furthermore, the government of Liberia conducted its joint external evaluation (JEE) on the International Health Regulations in 2016 which informed the development of its GHSA-National Action Plan for Health Security (NAPHS). Breakthrough ACTION will help address the issues identified in the NAPH

Report Outline

The purpose of the baseline study is to establish baseline levels in the priority health behaviors along with intermediate outcomes that offer the potential to affect the priority behaviors in one or more

health areas, including malaria, FP, RMNCAH, malaria, COVID-19, zoonotic diseases, and nutrition. These intermediate outcomes might include couple communication, knowledge, attitudes, care-seeking behaviors, patient-provider interaction experiences, and health information seeking. The baseline also measures the underlying social and gender norms, decision-making, and media exposure that promote or constrain key health behaviors, including social norms around priority behaviors. In addition, the activity captures the recall of Breakthrough ACTION Liberia program-related messages.

The study also allows Breakthrough ACTION to determine how various demographic, psychosocial, cultural, and relational factors contribute to these health outcomes of interest across all health areas. These outcomes will allow for tailored programs for specific counties and audiences. The survey will also help assess the effects of the Breakthrough ACTION Liberia project activities on its target audiences and related shifts occurring over time.

This activity was led by CCP in close collaboration with Research Innovations Hub (RIH), a local research firm that collected data for the baseline study. The baseline survey is part of a socio-behavioral study that assesses determinants of key health behaviors, estimates the prevalence of behaviors, and tracks the adoption and maintenance of behaviors. In addition, the survey includes an in-depth exploration of influencing or intermediary factors, such as knowledge, social and gender norms, attitudes, couple communication, and access to and utilization of health services.

The objectives of the baseline study are:

- Identify **key determinants** of health behaviors in the areas of maternal health, maternal and child nutrition, malaria, and COVID-19
- **Set benchmarks** for impact assessment of the integrated SBC Breakthrough ACTION Liberia program
- Assess the roles **of gender-equitable norms, social norms, couple communication, and decision-making** in the adoption of health behaviors
- Inform an **SBC strategy across several health areas** and audiences in Liberia

As described in the next chapter, this study was conducted in only three of these counties, along with an endline study that will take place at the end of the Breakthrough ACTION Liberia project. The study will help assess the integrated and vertical activities compared to a control county without Breakthrough ACTION work ongoing.

Methodology

Study Goals

The Breakthrough ACTION Liberia baseline survey adopts a quasi-experimental design to collect data on various health behaviors, including FP, RMNCAH, maternal and child nutrition, malaria, COVID-19, and GHSA. The survey also assessed the sociodemographic and psychosocial determinants of these behaviors. The goal of the survey is threefold: 1) to provide a better understanding of the factors associated with relevant health behavioral outcomes in Liberia; 2) to determine the appropriate focus of programmatic activities designed to improve behavioral outcomes, and 3) to yield baseline indicators against which the effects of programmatic activities can be measured.

Study Design and Populations of Interest

Data were collected in two intervention counties, Bong and Bomi, where USAID supports integrated programming for RMNCAH plus malaria, and in one control county, Gbarpolu, with no planned USAID or Breakthrough ACTION Liberia programming. These three counties were selected based on their similar contraceptive prevalence rates (24%–30.0%) among married women (Liberia Demographic and Health Survey, 2019). However, differences exist between the two intervention counties: Bong is a more populous county than Bomi and is predominantly Christian (95%), whereas Bomi has a substantial Muslim population (55%).

The survey specifically targeted in-union women of reproductive age (20–49 years), their spouses (ages 20–55 years), unmarried adolescent girls (ages 15–19 years), unmarried adolescent boys (ages 15–19 years), and in-union young women (16–19 years). This report presents findings from in-union women and men of reproductive age. Two other reports presents findings on 1) family planning use among men and women in Liberia and 2) findings from in-union female and male adolescents in Liberia.)

Sample Size and Selection

Using a contraceptive prevalence rate of 24% and assuming an increase of six percentage points by the end of the project, a design effect of 1.25, a margin of error of 5%, and a power of 80%, we computed the overall required sample size to be 2433 households across the three counties. This sample size was divided among the three counties such that half of the sample (1250) was selected from Bong (the largest county) and one-quarter (625) from each of Bomi and Gbarpolu.

The households were selected through a multi-stage process that involved selecting districts within each county, EAs within each district, households within each EA, and respondents within each EA. A total of 102 EAs (42 from Bong and 30 from Bomi and Gbarpolu) were selected for inclusion in the survey. In each EA, the study team followed the following procedures to recruit eligible respondents:

1. In each EA, all households were enumerated using a household listing form. The household listing form allows the study team to specify for each of the households the number of partnered women aged 20–49 years, the number of partnered men aged 20–55 years, the numbers of unmarried male and female adolescents aged 15–19 years, and the number of married/cohabiting female adolescents aged 16–19 years.
2. From the list of eligible households (that is, with at least one woman aged 20–49 years) in each EA, 30 households in Bong and 21 each in Bomi and Gbarpolu were selected to participate in the study using a systematic random sampling method.
3. Upon arrival at a selected household, the study team used a random number generator to select partnered women aged 20–49 years based on the number of such women in the household. For example, if there were four such women and the random number generator yielded number 2, the study team would list the eligible women by their age in descending order and select the woman in the second position.
4. Eligible unmarried male and female adolescents and married/cohabiting adolescents in households were also selected using the same procedure.
5. In half of the selected households, the study team selected either the partner of the selected woman or any other partnered man who met the age requirements.

This process recruited 2,161 partnered women and 1,362 partnered men to participate in the study.

Ethical Considerations

Ethical approval to conduct the study was obtained from the JHU IRB and the UL-PIRE Africa IRB in Liberia. Training was provided to data collectors and supervisors on approved study protocols and ethics guidelines to protect human research subjects. Informed consent was obtained from all study participants before the interview, using an oral consent process. Through the oral consent script, data collectors explained the purpose of the survey, the types of questions that would be asked, the potential risks associated with participating in the survey, and the actions the study team would take to protect the confidentiality of the participants. In addition, the data collectors explained that participants did not have to participate in the study, that they could decide to discontinue their interview at any point, and that they did not need to answer any questions they did not want to.

Questionnaire Development and Pretesting

CCP developed the survey instruments and provided them to the local research firm, RIH. Many questions had been used previously, such as in the DHS, and some were original to the baseline study, such as questions on social norms, couple communication, decision-making, and household environment. Before data collection began, RIH translated the survey instruments into Liberian English, pretested them in a community outside Monrovia, made necessary modifications, and then back-translated them into English.

Recruitment and Data Collection

Data were collected between August and September 2021. The enumerators used a recruitment script to conduct a short screening with each potential participant to determine the individual's age and participation eligibility. Consent discussions and data collection were conducted in private using an appropriate approach, with each enumerator equipped with a selection criteria checklist. Surveys took 60–90 minutes to conduct. Participants received US$ 1 in phone credit as a token for their time responding to the survey.

Data Management

The research team used a Google app installed on encryption-protected electronic devices to collect the data. Personal identification information was collected on paper during household listings and recruitment in EAs. The research team destroyed all personal identifying information after completing all interviews in the EA. Before analysis, the data were fully de-identified. The dataset will be available in the USAID online data repository.

Data Analysis

STATA 16 was used to analyze quantitative survey data. Data analysis involved reviewing the differences and similarities across age groups, sex, education level, marital status, region, and other key aspects of people's social locations. Programmatic reach and message recall were also assessed. The strength of associations between program participation/reach or recall and key variables, such as knowledge, attitudes, norms, efficacy, and practice of priority behaviors, were also examined across target populations.

Bivariate and multivariate analyses were performed. We report bivariate results for all key questions (responses by key background characteristics and influencing factors, such as knowledge, social norms, gender norms, access to health services, and self-efficacy). The baseline survey explored the determinants of all key behaviors using logistic regression analysis. Regression analyses identified common determinants among health behaviors and located specific behavioral determinants simultaneously. The resultant data will inform the program design and assist in developing SBC strategies.

Characteristics of Study Participants

The characteristics reported in this chapter pertain to women of reproductive age (20–49 years) and the N male partners of some of these women (18–55 years). The sociodemographic characteristics examined in this chapter include age, education, religion, and marital status. This chapter also assesses vulnerability and standards of living. The total number of women in the study was 2,161, and the total number of men was 1,362. The study had two intervention counties, Bong and Bomi, and one control county, Gbarpolu.

The sociodemographic characteristics of the study participants are described in Table 1. Approximately two in five (39%) women were in the older age category (35–49), while 34% were aged 25–34 years, and 26% were aged 19–24 years. There were no notable differences in the age profiles of women in the intervention and control counties. About two-fifths (41%) of the women in the intervention counties and 37% in the control county were aged 35–49 years. Women aged 25–34 years accounted for 33% of the intervention counties and 36% of the control county. In both the intervention and control counties, 26% of women were aged 19–24 years. As for men, 56% of the intervention counties and 57% of the control county were aged 35–55 years. The percentage of men in the 25–34 age group was similar in both the intervention and control counties (29% and 28%, respectively), while 15% were in the age range of 19–24 years for both intervention and control counties.

Table 1: Sociodemographic characteristics of adult women and men

DEMOGRAPHICS	WOMEN					MEN				
	Intervention			Control	All	Intervention			Control	All
	Bong n=1,102	Bomi n=495	Both n=1,597	Gbarpolu n=564	n=2,161	Bong n=724	Bomi n=294	Both n=1,018	Gbarpolu n=344	n=1,362
Age of participant										
19–24	24.8	25.5	25.0	25.5	25.1	12.3	11.2	12.0	11.9	12.0
25–34	35.6	31.1	34.2	38.3	35.3	31.2	25.9	29.7	29.7	29.7
35–49 (women)/ 35–55 (men)	39.7	43.4	40.8	36.2	39.6	56.5	62.9	58.4	58.4	58.4
Education Level										
No formal education	53.4	44.9	50.7	48.6	50.2	26.1	41.2	30.5	18.9	27.5
Primary	32.2	36.4	33.5	32.6	33.3	36.7	29.6	34.7	32.9	34.2
Secondary or higher	14.4	18.8	15.8	18.8	16.6	37.2	29.3	35.9	48.3	38.3
Religion										
Christian	95.6	45.5	80.1	84.0	81.1	94.6	39.5	78.7	75.0	77.8

DEMOGRAPHICS	WOMEN					MEN				
	Intervention			Control	All	Intervention			Control	All
	Bong n=1,102	Bomi n=495	Both n=1,597	Gbarpolu n=564	n=2,161	Bong n=724	Bomi n=294	Both n=1,018	Gbarpolu n=344	n=1,362
Muslim	1.0	54.6	17.6	15.6	17.1	2.4	60.2	19.1	24.4	20.4
Other (traditional)	3.4	0.0	2.3	0.4	1.8	3.0	0.3	2.3	0.6	1.8
Marital status										
Never married	23.2	40.4	28.6	31.2	29.3	15.3	36.4	21.4	17.4	20.4
Cohabiting	58.4	22.8	47.4	43.8	46.5	60.9	11.6	46.7	39.8	44.9
Married	17.2	36.2	23.1	23.6	23.2	23.5	51.0	31.4	42.4	34.2
Divorced/ Separated/ Widowed	1.1	0.6	0.9	1.4	1.1	0.3	1.0	0.5	0.3	0.4
Vulnerability Index[a]										
Low	5.4	17.8	9.3	7.1	8.7	6.5	20.8	10.6	8.1	10.0
Moderate	53.6	70.7	58.9	33.9	52.4	48.2	46.6	47.7	23.6	41.6
High	40.9	11.5	31.8	59.0	38.9	45.3	32.6	41.7	68.3	48.4

[a] Vulnerability index was computed by combining four variables: lacking enough food to eat, lacking shelter/house to stay in, cannot afford to send children to school, and lacking money to buy medicines/medical treatment (in the past 12 months). The resulting index was divided into three categories: low ≤ 4; moderate = 5–7; and high = 8–12.

The distribution of the respondents by education level shows that half of the women had no formal education, while about one-third had primary education, and only 16.6% had secondary education or higher. There were significant differences in education level by county but not between the intervention and control groups. For example, women in Bomi were more likely to have completed primary and post-primary education than their peers in Bong were. Overall, the level of education was higher in men than in women. About one-quarter of the men had no formal education, whereas about one-third (34.2%) had primary education, and 38.3% had secondary or higher education. There were noticeable differences in education levels between the Bong and Bomi counties and between the intervention and control counties. Specifically, compared with their peers in Bomi, men from Bong were more likely to have completed primary or post-primary education. In addition, the education level of men was higher, on average, in the intervention counties than in the control county.

There were differences in religious affiliation between the intervention and control groups in both men and women. Additionally, there were significant differences between Bong and Bomi in both sexes. In general, the respondents from Bong were predominantly Christian (95.6% of women and 94.6% of men), while more than half of those from Bomi were Muslim.

Overall,among study participants, less than one-third of women and one-fifth of men were never married. Of women, 46.5% were cohabiting, almost one-fifth were married, and 1% were divorced, separated, or widowed. While women in the intervention and control counties did not differ regarding marital status, women from Bong did differ from their peers in Bomi. Women from Bong were less likely to have never married or formally married and more likely to be cohabiting than their peers from Bomi. The differences between men from Bong and their peers from Bomi were equally pronounced, as Bong men were more likely to cohabit and less likely to have never married or formally married than Bomi men.

The vulnerability index was constructed using the following four items: lack of enough food to eat, lack of shelter/house to stay in, cannot afford to send children to school, and lack of money to buy medicine/medical treatment (in the past 12 months). Only 8.7% of the women and 10% of the men were classified as having a low level of vulnerability using these variables. In contrast, over half (52.4%) of the women and about two-fifths (41.6%) of the men were classified in the moderate vulnerability category, while almost half of the men (48.4%) and almost two in five women (38.9%) were classified in the high vulnerability category. For both men and women, there were differences in vulnerability between Bong and Bomi and between the intervention and control counties. For both sexes, a high level of vulnerability was more common in Bong than in Bomi and in the control than in the intervention counties.

Psychosocial, Household, and Community Factors Associated with Health Behaviors

Understanding the factors underlying health behaviors is crucial for effective behavioral change interventions. Examining psychosocial and household determinants of behavior allows program planners to identify intrapersonal factors that should be the focus of effective intervention. Focusing on psychosocial variables alone may be insufficient in settings with cohesive social networks, where communities and families are prioritized over the self. In such settings, it is critical to look at household and community factors, which are complex and multidimensional, in addition to being difficult to measure. The baseline survey was designed to include a range of household and community behavioral determinants. The household factors included in the survey were couple communication, decision-making, and the household environment. Community factors include social norms, gender-restrictive norms, and social capital. The results are presented in Tables 2–4.

Couple Communication

During the survey, we asked women and men how much they had discussed specific health topics with their partners. We gauged "how frequently" a couple talked about each health area to assess their communication pattern. Only currently in-union men and women were asked relevant questions. The responses were recorded as a number between 0 and 100 and categorized based on where participants scored; low-frequency couple communication was defined as a score between 0-33, average couple communication was defined as a score between 34-66, and high-frequency couple communication was defined as a score between 67 and 100.

Family Planning

Overall, men (38%) were more likely than women (30%) to report talking to their partners about FP. However, this was only true in the control county, where 52% of men and 24% of women reported frequently engaging in this discussion. In the intervention counties, there were almost no differences between men and women; 31.3% and 31.5%, respectively, reported frequent FP discussions.

Pregnancy

Frequent discussions about pregnancy were reported by 46% of men and 28% of women. In both the intervention and control communities, men were more likely than women to report engaging in discussions regarding pregnancy with their partner.

Sanitation

A higher proportion of men (66.7%) reported frequent discussions about issues related to sanitation than did women (38.9%). This pattern was observed in both intervention and control counties, although the difference between men and women was much larger in the control county.

Table 2: Percentage of married or cohabiting respondents reporting a high level of couple communication, by topic and county intervention status; women and men, Liberia 2022

HEALTH TOPIC	INTERVENTION		CONTROL		TOTAL	
	Men (n=320)	Women (n=1,126)	Men (n=146)	Women (n=380)	Men (n=466)	Women (n=1,506)
Family planning	31.3	31.5	52.1	24.0	37.8	29.6
Pregnancy	41.1	31.2	56.8	18.7	46.0	28.0
Sanitation	57.7	40.9	86.3	33.0	66.7	38.9
Nutrition	54.5	45.5	87.0	48.5	64.7	46.2
Malaria	69.6	58.3	78.1	49.2	72.3	56.0
Child health	45.6	44.0	76.0	31.1	55.2	40.7

Nutrition

Overall, 46.2% of women and slightly over two-thirds (66.7%) of men reported frequently discussing nutrition with their partners. There was a considerable difference between men (87.0%) and women (48.5%) in the control group. In the intervention counties, men (54.5%) were more likely than women (45.5%) to report frequent discussions on sanitation with their spouses.

Malaria

Overall, frequent discussions about malaria were more common in men (72.3%) than in women (56%). Reports of frequent couple communication around malaria were more common among men than among women in both the intervention and control groups.

Child Health

As with other health topics assessed in this study, more men (55.2%) than women (40.7%) reported frequently discussing child health issues with their partners. However, there was almost no difference between men and women in the intervention counties, with 45.6% of men and 44.0% of women reporting frequent sanitation discussions with their partners.

Couples were more likely to talk about malaria than any other health topic. The reported frequency of couples' communication in FP and pregnancy is particularly low. For all health topics assessed, men were more likely than women to report frequent discussions. In addition, except for nutrition, women in the intervention counties were more likely to report frequent discussions on health topics than their peers in the control county. The reverse is true for men.

Household Decision-Making by Women and Men

Household decision-making and couple communication are inextricably intertwined, and they occur on a continuum of processes that finally result in health behavior change. Couple communication is a process, and the outcome is decision-making. The study used an eight-question decision-making index that included four minor and four major decisions (Appendix 1). The questionnaire asked female and male respondents to state the primary and secondary decision-makers for each of the eight decisions assessed. In this section, we compare the responses of men and women across intervention and control groups.

The four minor decisions were buying soap for the house, buying fish/vegetables, buying new clothes for the children, and deciding what to cook for dinner. The four major decisions were how many children to have, whether to use contraceptives, going to the primary health center if the respondent was ill, and taking a child to the primary health center if they were ill.

Table 3: Percentage of married or cohabiting respondents reporting to be primary decision-maker, by type of decision and county intervention status; women and men, Liberia 2022

HEALTH TOPIC	INTERVENTION		CONTROL		TOTAL	
	Men (n=320)	Women (n=1,126)	Men (n=146)	Women (n=380)	Men (n=466)	Women (n=1,506)
Buy soap	77.5	28.2	78.8	41.6	77.9	31.5
Buy fish/meat/ vegetables	69.4	30.0	77.4	43.2	71.9	33.3
Clothes for children	77.5	29.4	84.9	40.3	79.8	32.1
What to cook	58.1	46.7	50.7	63.9	55.8	51.1
How many children to have	86.9	27.0	88.4	45.3	87.3	31.6
Whether to use contraceptives	62.5	46.9	70.5	72.9	65.0	53.5
Seek care in a health facility when respondent is ill	79.4	23.9	71.2	62.4	76.8	33.6
Seek care in a health facility for a sick child	75.0	32.7	70.5	66.1	73.6	41.1

Minor Decision-Making

Overall, for minor decisions, the primary decision-maker tends to be the male partner. Only about one-third of the women reported that they were the primary decision-makers about buying soap (31.5%), food items (33.3%), and children's clothes (32.1%) while about half of the women stated that they were the primary decision-makers about what to cook (51.5%). The dominant role of men in decision-making about minor issues is common in both intervention and control counties. However, compared to their peers in the control county, women in the intervention counties were considerably marginalized in decision-making about minor issues. For example, 41.6% of women in the control county compared to 28.2% in the intervention counties reported being the primary decision-makers when it came to buying soap, while 63.9% in the control county compared to 46.7% in the intervention counties reported being the primary decision-makers about what to cook.

Major Decisions

Similar to what was observed for decision-making about small items, men played a dominant role in major decisions, especially concerning how many children to have (87.3%), seeking care for one's health (76.8%), and seeking care for a sick child (73.6%). It is interesting to note that, even concerning their health, most women were not decision-makers. It is equally concerning that many women are not the primary decision-makers regarding care for their children, although they are typically the primary caregivers. The marginalized role of women in major decisions is more evident in intervention counties than in the control county. Women in the control county appear to play a role comparable to men in major decisions, except for the number of children to have. For example, in the control county, there was no difference in the proportion of men (70.5%) and women (72.9%) who reported themselves as the primary decision-makers about contraceptive use or seeking care for a sick child (men: 70.5%; women: 66.1%).

Gender-Equitable Norms (Women and Men)

The baseline study measured gender norms in women and men using the GEM scale. The GEM scale has 24 items divided into four subdomains. The GEM scale has been extensively validated.[2] Gender inequity is a critical cross-cutting variable in behavioral research, and equitable gender norms are associated with crucial health behaviors.[3] The 24 statements of the GEM scale are written in the direction of inequity (Appendix 2).

The GEM scale items were measured using the continuous Liberian proportional piling scale (PPS) described in Appendix 3. The PPS is a culturally relevant and statistically powerful continuous response

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[2] Pulerwitz, J., Barker, G., Segundo, M., & Nascimento, M. (2006). *Promoting more gender-equitable norms and behaviors among young men as an HIV/AIDS prevention strategy*. Retrieved July 12, 2022, from https://promundoglobal.org/wp-content/uploads/2015/01/Promoting-Equitable-Gender-Norms-and-Behaviors/

[3] Okigbo, C. C., Speizer, I. S., Domino, M. E., Curtis, S. L., Halpern, C. T., & Fotso, J. C. (2018). Gender norms and modern contraceptive use in urban Nigeria: a multilevel longitudinal study. *BMC Women's Health*, *18*(1). https://doi.org/10.1186/s12905-018-0664-3

scale involving 10 pebbles, out of which the respondent selects pebbles to indicate their agreement with the scale statement. The PPS uses ten pebbles, with each pebble representing 10%. The PPS scale is divided into three categories: 0–33, low support; 34–66, moderate support; and 67–100, strong support for inequitable gender norms. In one EA, people had problems using pebbles and suggested using "beans". The goal here is that whatever aids the respondent culturally in conceptualizing agreement or disagreement with the statement is applicable as long as the measure has a meaningful zero.

For example, if a woman agrees 80% with the statement, "There are times when a woman deserves to be beaten," then she has high support (67–100) for inequitable gender items on the scale. On the other hand, if another woman agreed 10% with the statement, she had low support for the inequitable gender item. The scale was calculated by adding the scores for each subdomain followed by a score for the overall scale. The subdomains were violence, sexual relationships, reproductive health, domestic chores, and daily living.

Sexual Relationships Subscale

About one-fifth (19.9%) of women in the intervention counties and 17% of women in the control county showed a high level of support for inequitable gender related to sexual relationships (Figure 1). About 75% of women in the intervention and control counties had moderate support for inequitable sexual relationships, and only 3%–8% of women had low support for inequitable sexual relationships.

Proportionally, more men than women in both the intervention and control counties showed a high level of support for sex-related gender inequitable norms. The proportion of men displaying moderate support for this gender norm was 69% in the intervention counties and 62% in the control county.

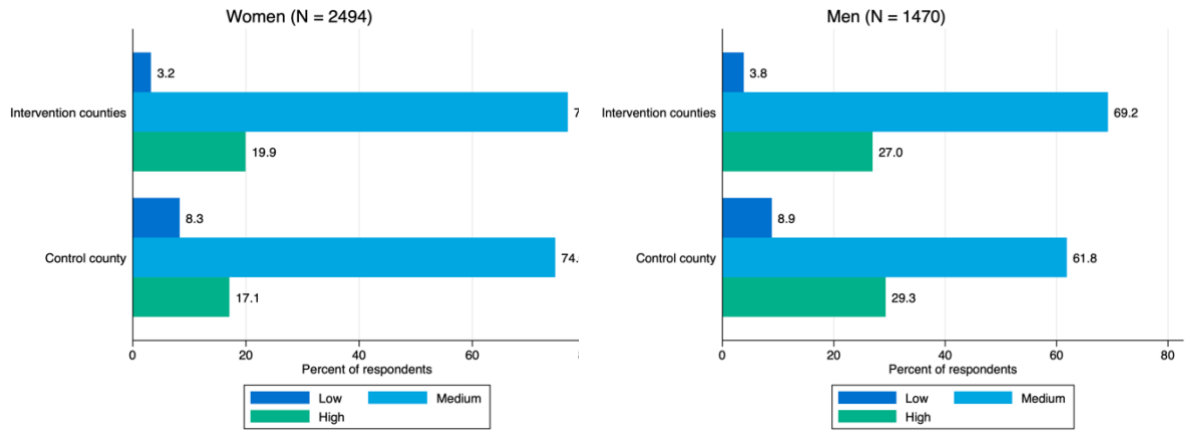

Figure 1: Percentage of gender inequitable norms in relation to sexual relationship, by level, county intervention status, and respondent's sex

Reproductive Health Subscale

Compared to the sexual relationship subscale, a high level of support for inequitable reproductive health norms was more prevalent for women in both the intervention (27%) and control (33%) counties (Figure

2). Only 4% of women in the intervention counties and 8% of women in the control county expressed low support for inequitable norms in relation to reproductive health.

For men, a high level of support for inequitable reproductive health norms was more common than what was observed for women. Approximately two-fifths (38%) of the men in the intervention counties and more than half (53%) of their peers in the control county indicated strong support for inequitable reproductive health norms. Conversely, only 5% of the men in the intervention counties and 7% of the men in the control county had low support for inequitable norms.

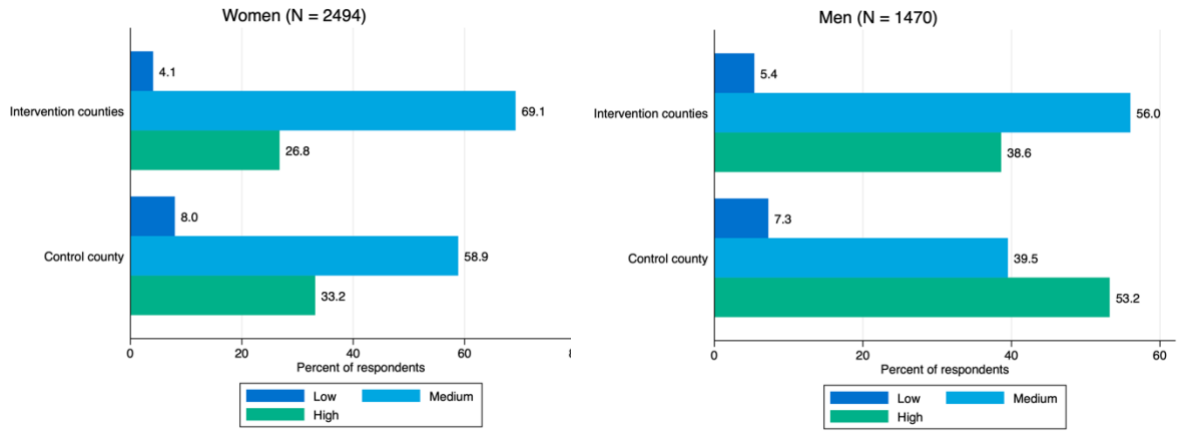

Figure 2: Percentage of gender inequitable norms in relation to reproductive health, by level, county intervention status, and respondent's sex

Domestic Chores and Daily Life Subscale

The domestic chores and daily life subscale is primarily about gender norms in the household sphere. It includes decision-making, child-rearing, and the roles of women and men within the household. The results of this subscale underscore the need for a major shift in gender norms.

The data showed strong support for gender inequitable norms within the household was common in both women and men. More than four out of five women in the control county (85%) and about nine-tenths in the intervention county (89%) showed a high level of support for inequitable gender norms within the household sphere (Figure 3). Similarly, approximately 90% of men in both the intervention and control counties strongly support inequitable gender norms within the domestic sphere.

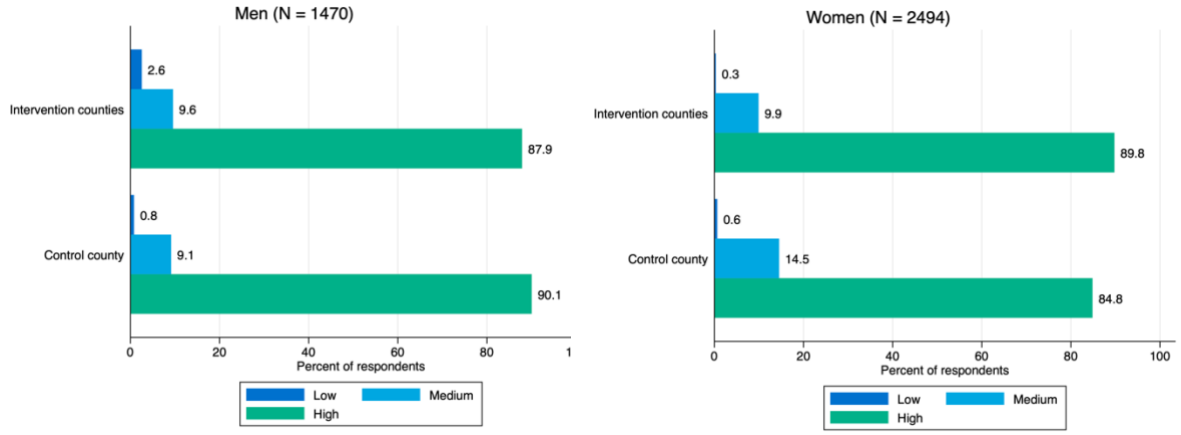

Figure 3: Percentage of gender inequitable norms in relation to domestic chores and daily living, by level, county intervention status, and respondent's sex

Violence Against Women

The data for the violence subscale showed a very different trend from the domestic chores and daily life trends. Violence against women was the most gender-equitable subscale among the subscales assessed. Low support for violence against women was relatively common in both sexes and in both intervention and control counties (Figure 4). About half of the women in both the intervention and control counties showed low support for this type of gender norm. For men, about two-fifths in the intervention counties and only about one-quarter in the control county demonstrate low support for violence against women. In the control county, strong support for violence against women was more common among men (20%) than women (4%). In the intervention counties, the prevalence of strong support for violence against women did not differ significantly between men and women.

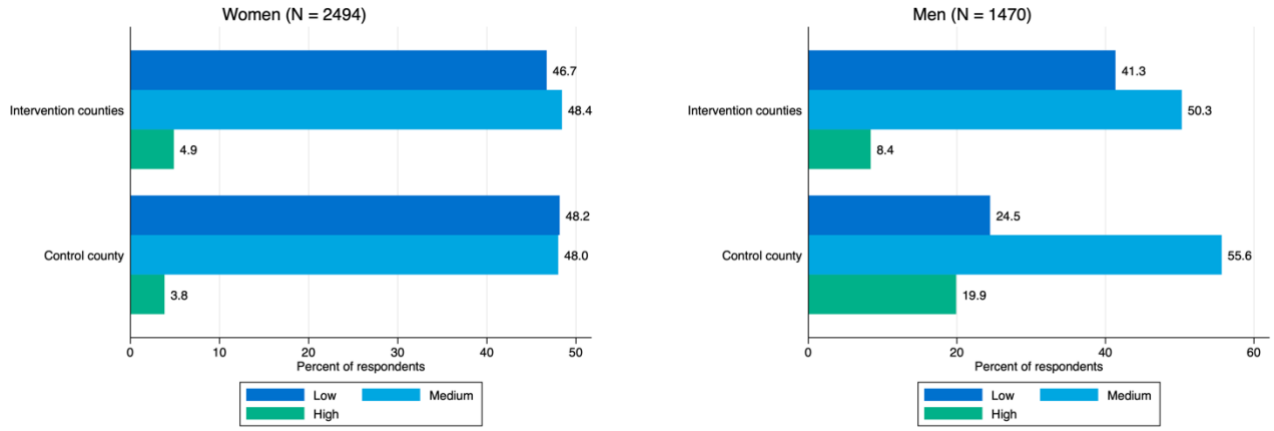

Figure 4. Percentage of gender inequitable norms in relation to violence against women, by level, county intervention status, and respondent's sex

Descriptive Norms

Table 4: Percentage of respondents perceiving specific behaviors related to physical violence as community norms by respondent's sex and county intervention status; Liberia 2022; women and men, Liberia 2022

HEALTH TOPIC	INTERVENTION		CONTROL		TOTAL	
	Men (n=1,018)	Women (n=1,597)	Men (n=344)	Women (n=564)	Men (n=1,362)	Women (n=2,161)
Norms Around Overall Physical Harm						
Low	53.3	57.4	50.9	52.8	52.7	56.2
Medium	31.2	19.7	29.1	28.2	30.7	21.9
High	15.4	22.9	20.0	19.0	16.6	21.9
Norms Around Physical Harm During Pregnancy						
Low	82.8	84.1	79.9	75.2	82.1	81.8
Medium	13.6	9.5	14.2	17.7	13.7	11.7
High	3.6	6.4	5.8	7.1	4.2	6.7

Partner Violence

Descriptive norms about physical violence perpetrated by the partner against the woman were assessed by asking the respondent to specify how many women out of ten in their neighborhood experienced physical violence. The responses were divided into a low level of perceived violence (0–3), a moderate level of perceived violence (4–6), and perceived violence (7–10).

Reports on the prevalence of physical violence against women differed slightly between men and women (Table 4). In the intervention communities, women (22.9%) were more likely than men (15.4%) to perceive a high level of physical violence against women in their neighborhood. In comparison, there was little difference in the control communities, with 19.0% of women and 20 % of men reporting a high level of violence in their neighborhood.

Partner Violence in Pregnancy

Violence against pregnant women was minimal, particularly in the intervention counties. Among women, approximately 6.4 in intervention communities and 7.1% in control communities reported a high level of violence against pregnant women in their neighborhood. For men, the comparable percentages were 3.6% in the intervention communities and 5.8% in the control communities.

Summary of Findings

Couple Communication

- A high level of free and frequent couple communication on some topics exists in Liberia, as reported by both men and women.
- Couple communication on health topics such as FP and maternal health was low.
- Medium levels of couple communication were characterized by sanitation and child health.
- Malaria had the highest level of couple communication among all the health topics.

Household Decision-making

- Decision-making is definitely in the hands of men; both women and men reported that men are in charge of both minor and major decisions.
- Women played a weak role in primary decision-making across the four minor and four major decisions.
- For many decisions, women in the control county are more likely than their peers in the intervention county to be primary decision-makers.
- Both Bong and Bomi were similar in terms of women's decision-making roles, except for the decisions on "how many children to have" and "using contraceptives," with women in Bong County being much less independent in decision-making than women in Bomi.

Gender Inequitable Norms

- Most women and men endorse gender inequality in the household.
- This finding implies that women and men both uphold gender norms that support child-rearing and caring for the house as a woman's responsibility, and decision-making as a male responsibility.
- The partner violence subscale indicated low support for partner violence by both women and men.
- The data showed medium support for the sexual relationship inequity scale.

Descriptive Norms About Violence Against Women

- A significant proportion of women and men perceived a high level of partner violence against women in their community, while more than half perceived this type of violence as low.
- Regarding violence against pregnant women, most men and women perceived the prevalence of this type of violence to be low.

Media Habits

This chapter summarizes the findings related to media consumption in the study population. The indicators examined included radio and television consumption, phone ownership, and social media usage (Table 23).

In both intervention and control counties, more men than women reported regularly listening to the radio, that is, listening at least once a week. The gap between women and men was wider in the intervention counties, where 44% of women compared to 71% of men reported regular radio listening. In comparison, in the control county, 60% of the women and 76% of the men reported listening to the radio at least once a week. Television viewing was uncommon in the study population. Among women, only 11% in the intervention counties and approximately one-third in the control county reported watching television at least once a week. Among men, 21% and 28% of the intervention and control countries, respectively, were regular television viewers.

Most respondents (78% in intervention counties and 83.4% in the control county) had at least one mobile phone in their households. In contrast, few respondents reported using household smartphones (Table 23). For both men and women, household ownership of smartphones was more common in the control county (reported by 16.5% of women and 27.6% of men) than in the intervention counties (10.3% for women and 18.7% for men). Not all reported that the owner of mobile phones in their household was the primary user of such phones. Being the primary user of a mobile phone was less common for women in the intervention counties (59.4%) than for men in the intervention counties (78.5%), women (74.4%), and men (78.1%) in the control county.

Most primary mobile phone users only used their phones to make calls; less than one-fifth reported using phones to send and receive text messages. In general, the use of mobile phones for text messaging was less prevalent in the intervention counties than in the control ones. Women in the intervention counties (13.5%) were least likely to report using their mobile phones for text messaging (Table 23). The use of mobile phones for viewing media was still less common, reported by only 15.3% of the primary users. Again, the use of mobile phones for viewing media was less common in the intervention counties, particularly among women, than in the control county (Table 23).

The survey asked about their use of social media. Very few people reported ever using social media, varying between 6.8% and 29% of women in the intervention and control counties, respectively (Table 23). In both intervention and control counties, the use of social media was more prevalent among men than among women. In addition, for both men and women, respondents from the control county reported a higher level of social media use than their peers in the intervention counties.

Table 23: Percentage of respondents reporting exposure to various media sources, county intervention status; women and men, Liberia 2022

TYPE OF MEDIA EXPOSURE	WOMEN		MEN	
	Intervention (n=1,597)	Control (n=564)	Intervention (n=1,018)	Control (n=344)
Percentage that listen to the radio at least once a week	43.9	60.3	71.4	75.9
Percentage that watch the television at least once a week	11.1	33.9	20.8	28.2
Percentage with any type of mobile phone in their household	78.1	82.4	77.7	85.2
Percentage with a Smartphone in their household	10.3	16.5	18.7	27.6
Percentage of respondents with mobile phones in their household who reported themselves as the primary user	59.4	74.4	78.5	78.1
Percentage of primary phone users that use their mobile phone for text messaging	13.5	33.5	26.4	31.6
Percentage of primary phone users that use their mobile phone for viewing media (short video, film, music, photo)	4.7	24.3	12.5	43.9
Percentage of respondents that have ever accessed social media	6.8	15.8	16.1	29.7

Exposure to Health Programs

About one-quarter of women (intervention: 25.7%; control: 29.4%) and more than one-third of men (intervention: 37.3%; control: 42.7%) reported having been visited by CHVs, CHAs, or CHSS in the last six months (Table 24). In addition, about two-fifths of women reportedly visited a health facility during the same period. This behavior has not been assessed in men.

Table 24: Percentage of respondents that were exposed to health services in the last six months, by county intervention status; women and men

HEALTH SERVICES RECEIVED	WOMEN		MEN	
	Intervention (n=1,597)	Control (n=564)	Intervention (n=1,018)	Control (n=344)
Percentage of respondents that visited a health facility in the last 6 months	42.2	43.6	--	--
Percentage of respondents that were visited by CHA/CHV/CHSS in the last 6 months	25.7	29.4	37.3	42.7

The level of satisfaction with the services received from the health personnel varied by type of personnel and respondent's characteristics (Table 25). For example, about three-fifths of women in the intervention and control counties reported being very satisfied with the services received from CHSS compared to 84.7% of men in the control county. For women in both the intervention and control counties, the level of satisfaction with the services received from CHV was higher than that reported for CHSS. This tendency was also observed for men in the intervention counties. Higher still was the level of satisfaction with the services received by women from nurses and doctors: about four-fifths of women in both intervention and control counties reported a high level of satisfaction with the services received from this cadre of health personnel.

Table 25: Percentage of respondents reporting being very satisfied with health services received, by county intervention status; women and men, Liberia 2022

SATISFACTION	WOMEN		MEN	
	Intervention (n=1,597)	Control (n=564)	Intervention (n=1,018)	Control (n=344)
Very satisfied with CHA/CHV services	75.2	64.5	78.9	84.7
Very satisfied with CHSS services	59.3	55.5	63.4	85.7
Very satisfied with doctor or nurse's services	80.9	78.9	—	—

Respondents were asked whether they had heard of either the "Share it, Act It" or the "Healthy Life" campaigns. Few respondents (9.4% of intervention counties and 14.5% of control county) reported having heard of the "Share it, Act It" campaign (see Table 26). Exposure to this campaign was particularly low among women in the intervention communities. More than one-third of the respondents were exposed to the Healthy Life campaign. Exposure to this campaign was the highest among women in the control county and the lowest among women in the intervention communities.

Table 26: Percentage of respondents exposed to health campaigns, by county intervention status; women and men, Liberia 2022

SATISFACTION	WOMEN		MEN	
	Intervention (n=1,597)	Control (n=564)	Intervention (n=1,018)	Control (n=344)
Has heard of Share It, Act It	3.9	9.9	9.4	14.5
Has heard about the Healthy Life campaign	29.1	68.4	33.5	39.5

The results of the multivariable logistic regression reported in Table 27 reveal several variables are associated with exposure to the Healthy Life campaign. The variables positively associated with exposure include female sex, secondary or higher education, regular radio listening habit, visit from a CHV in the last six months, low household vulnerability index, the number of people in the household, and residing in the control county. Specifically, being female increased the odds of exposure by 50% compared to being male, while a secondary or higher level of education was associated with a 43% higher odds of exposure compared to a lower education level. The respondents who listened to the radio regularly were 30% more likely to report exposure to the campaign than their peers who did not regularly listen to the campaign. Similarly, respondents who resided in households with a mobile phone were 35% more likely than others to report exposure, while a low household vulnerability index was associated with 42% higher odds of reporting exposure. The larger the household, the higher the odds of reporting exposure. Having received a visit from a CHV is advantageous for exposure, increasing the odds by more than threefold. The odds of exposure were more than three times higher in the control county than in the intervention counties.

In comparison, the factors that were negatively associated with the odds of exposure to the Healthy Life campaign are ever married or cohabiting and regular television viewing.

Table 27: Results of the multivariable logistic regression on exposure to the Healthy Life campaign on sociodemographic and community factors, Liberia 2021 (n=3,312)

CORRELATES	ODDS RATIO (SE)
Respondent is female (RC=male)	1.50*** (0.14)
Religion (RC=Christian)	
Muslim	0.86 (0.09)
Other/Traditional	0.80 (0.25)
Marital Status (RC=Never married)	
Cohabiting	0.796* (0.08)
Married	0.724** (0.08)
Divorced/Widowed/Separated	0.39# (0.20)

CORRELATES	ODDS RATIO (SE)
Respondent's age in years	0.99 (0.01)
Education level (RC=None)	
Primary	0.98 (0.09)
Secondary and higher	1.43*** (0.16)
Listens to the radio at least once a week	1.30** (0.11)
Watches television at least once a week	0.76** (0.08)
Household has any type of mobile phone	1.35** (0.14)
Household has low vulnerability index	1.42*** (0.13)
Number of people in the household	1.07** *0.03)
Household has a child two years old or younger	0.94 (0.08)
Respondent visited by a CHSS in last six months	1.09 (0.15)
Respondent visited by a CHV in last six months	3.03*** (0.41)
Respondent lives in the control county	3.35*** (0.30)
Pseudo R-squared	**11.4%**

Notes:

#p<0.1; *p<0.05; **p<0.01; ***p<0.001.

RC = Reference category

Recommendations

Reaching as many Liberians as possible with life-saving health information will require a multimedia approach. Using the radio and CHVs should be a critical component of a potentially effective strategy, but efforts should also be geared toward exploring and intensifying additional community approaches, including community theater, folk media, and community mobilization events. The fact that most people with mobile phones use only the device for making and receiving calls limits the potential for using mobile technology to disseminate information. Nonetheless, this approach can be carefully considered for people (particularly men) who can access text messages. Efforts to reach women may capitalize on the fact that most women visit health facilities multiple times a year for pregnancy care, child health, or other forms of care-seeking. During these visits to the health facility, patients and clients should be provided with the opportunity to receive relevant health information.

Maternal Health

Maternal health in Liberia is a puzzling scenario for policymakers. Liberia's high maternal mortality ratio, estimated at 661 maternal deaths per 100,000 live births in 2017,[4] is a cause of great concern. Conversely, utilization of prenatal services during ANC and hospital deliveries is very high (Liberia DHS, 2019), and early initiation of ANC (checkup <12 weeks) was highest in Liberia among 36 countries in sub-Saharan Africa.[2] This data presents a problem that requires identifying the gaps in maternal health services. This chapter presents maternal health data from the Breakthrough ACTION Liberia baseline survey. This chapter aims to identify areas where maternal health may be compromised and to provide recommendations to address them.

The maternal health section of the survey included questions that asked women who had delivered in the past two years about their most recent pregnancy experience, specifically their utilization of maternal health services and their diet during pregnancy. The same questions were asked for men whose partners had delivered in the past two years. This allowed us to obtain data on male perspectives of their partners' pregnancy experiences to design a strategic SBC approach in which male involvement and support can improve the pregnancy experience of their partners. The chapter includes survey data on i) ANC, ii) the number of ANC visits and services received, iii) birth preparedness, and iv) birth delivery and postnatal care. At the end of the chapter, recommendations are included based on the survey results. Most data are presented by county, and in some cases, differences are noted between intervention counties (Bomi and Bong) and the control county (Gbarpolu) and between women and men.

Antenatal Care

Factors Associated with Use of ANC Within First Three Months of Pregnancy

In what follows, we describe the psychosocial factors potentially associated with the use of ANC within the first three months of pregnancy. These factors include perceived self-efficacy to use ANC, ANC gender roles, perceived norms about using ANC, communication with a partner about pregnancy, household support during pregnancy, exposure to health-related messages, and access to ANC information. The sample was limited to women who had a child in the last two years, and the results are shown in Table 5.

[4] Liberia Institute of Statistics and Geo-Information Services (LISGIS), Ministry of Health [Liberia], and ICF. 2021. Liberia Demographic and Health Survey 2019–20. Monrovia, Liberia and Rockville, Maryland, USA: Liberia Institute of Statistics and Geo-Information Services (LISGIS), Ministry of Health, and ICF.

Table 5: Percent distribution of women who had a child in the last two years by determinants of early ANC

PSYCHOSOCIAL DETERMINANTS	INTERVENTION			CONTROL (N=236)
	Bong (n=392)	Bomi (n=232)	Both (n=624)	
Perceived self-efficacy to seek early				
Low	7.4	4.7	6.4	11.9
Medium	13.8	8.6	11.9	20.3
High	78.8	86.6	81.7	67.8
Perceived self-efficacy to go for ANC at least four times				
Low	4.8	3.4	4.3	7.6
Medium	13.5	12.5	13.1	19.5
High	81.6	84.1	82.5	72.9
Perceived self-efficacy to have partner accompany to ANC				
Low	44.6	47.4	45.7	44.5
Medium	20.9	19.0	20.2	16.1
High	34.4	33.6	34.1	39.4
Level of agreement with need for wives to have husband's permission for ANC				
Low	27.4	21.4	25.5	31.2
Medium	22.4	27.5	24.0	17.6
High	50.2	51.1	50.5	51.2
Level of agreement with need for husbands to accompany their wives to ANC				
Low	19.6	19.6	19.6	16.8
Medium	21.7	20.6	21.4	18.3
High	58.7	59.8	59.0	64.9
Descriptive norm: Early ANC				
Low	21.5	9.5	17.8	31.0
Medium	28.9	27.7	28.5	31.9
High	49.6	62.8	53.7	37.1

PSYCHOSOCIAL DETERMINANTS	INTERVENTION			CONTROL (N=236)
	Bong (n=392)	Bomi (n=232)	Both (n=624)	
Descriptive norm: Women attend at least four ANC				
Low	19.7	12.5	17.5	23.8
Medium	35.4	27.9	33.1	37.4
High	44.9	59.6	49.5	38.8
Descriptive norm: Stressful home environment during pregnancy				
Low	46.0	49.5	47.1	48.2
Medium	27.2	42.8	32.1	34.8
High	26.8	7.7	20.9	17.0
Respondent is the primary decision-maker about the number of children to have	26.3	34.5	28.9	55.5
Respondent is the primary decision-maker about whether to seek care when ill	23.7	34.9	27.2	68.3
Relative workload during pregnancy				
Less	70.4	57.8	65.7	60.6
Same	15.1	25.9	19.1	25.4
More	14.5	16.4	15.2	14.0
Amount of support provided by the partner with housework during pregnancy				
Low	19.6	34.1	25.0	27.5
Medium	18.1	30.2	22.6	25.8
High	62.2	35.8	52.4	46.6
Amount of support provided by family members with housework during pregnancy				
Low	11.0	20.7	14.6	25.4
Medium	12.5	11.2	12.0	25.8
High	76.5	68.1	73.4	48.7

Perceived Self-efficacy in Using ANC

The participants were asked three perceived self-efficacy questions related to ANC. The first question asked was whether the woman could visit a clinic for a pregnancy checkup during the first three months of pregnancy. The results showed that most women in the intervention counties (81.7%) expressed a high level of confidence in visiting a clinic for a pregnancy checkup during the first three months of pregnancy. The confidence level was lower in the control county, Gbarpolu (67.8%). The second question asked women about their confidence level in ANC at least four times. The results also indicate that more women in the intervention counties (82.5%) reported confidence in engaging in this behavior than in the control county (72.9%). The third question asked the women about their confidence level in getting their spouse or partner to accompany them for ANC. In contrast to the two prior questions, the participants did not feel confident. Only about one-third of the women in the intervention counties and two-fifths in the control county felt highly confident in taking this type of action.

Gender Roles Around ANC

Two questions explored gender roles related to ANC. Women were asked about their agreement with the statement that a pregnant woman should have her husband's permission before going to the ANC. They were also asked about their agreement with the statement that their husband/partner should accompany their pregnant wife/partner for ANC. The results showed that the level of agreement with both questions was relatively high. Half (50.5%) of the women in the intervention counties strongly agreed that a woman needed her partner's permission before going for a pregnancy checkup, while 59.0% strongly agreed that a husband should accompany his wife for pregnancy checkups. In Gbarpolu, the corresponding percentages were comparable to those in the control county.

Decision-making About ANC

Two relevant decision-making questions are included in the questionnaire. One question asked who was most likely to decide the number of children to have, while the other asked who would decide whether to seek care if the woman fell ill. In the intervention counties, 28.9% indicated that they were the primary decision-makers regarding the number of children, compared to 55.5% in the control county. Regarding seeking care when ill, 27.2% of women in the intervention counties and 68.3% of women in the control county indicated that they were the primary decision-makers.

Descriptive Norms About ANC

Two questions explored descriptive norms about ANC, that is, beliefs about the prevalence of specific behaviors in the community. Women were asked to use the bean scale to indicate how many out of ten pregnant women in their community went for their first ANC visit within the first three. They were also asked to indicate how many out of ten pregnant women in their community went for at least four ANC visits during pregnancy. The results show that about half of the women in the intervention counties and less than two-fifths in the control county perceived these two behaviors as normative. There were differences between Bong and Bomi in their perception of these behaviors as the norm. On average, behaviors were more likely to be perceived as normative in Bomi than in Bong.

Descriptive Norms About the Stressful Environment During Pregnancy

Overall, approximately half of the women in the intervention (47.1%) and control (48.2%) counties believed that few women experienced a stressful home environment during pregnancy (zero to three beans). In contrast, 20.9% of the intervention counties and 17.0% of the control county believed that most women in their community experienced a stressful home environment during pregnancy.

Household Support During Pregnancy

The questionnaire included several questions to investigate whether and how women received support during pregnancy and the nature of their home environments.

Women were asked whether their workload during pregnancy was less than, the same as, or more than typical to assess the relative workload during pregnancy. They were also asked whether they assisted them with housework during pregnancy and who that person was. About two-thirds (65.7%) of the women in the intervention counties and 60.6% in the control county reported that their workload was reduced during pregnancy. By contrast, only 15.2% of the intervention counties and 14.0% of the control county. The majority (88.1% in the intervention counties and 89.0% in the control county) of the women who had a child in the last two years received assistance with housework during pregnancy. For 36.5% of the intervention counties and 31.8% of the control county, the male partner was the major helper in housework during pregnancy. About half of the women in the intervention and control counties rated the help they received from housework as considerable (7 to 10 beans). Overall, women felt their families looked after them well during their last pregnancy. However, there were significant differences across counties:76.5% of women in Bong, 68.1% in Bomi, and 48.7% of those in Gbarpolu felt well supported.

About two-fifths (39.7%) of the women from the intervention counties and less than one-quarter (23.3%) of their peers from the control county stated that someone accompanied them to the health facility for ANC. Most often, the person that accompanied was a non-spousal relative (mentioned by 35.1% of the women that were accompanied in the intervention counties and 43.6% in the control county) or a traditional birth attendant (mentioned by 52.8% in the intervention counties and 20.0% in the control county). In the intervention counties, few women (12.1%) were accompanied by their spouses, compared to 36.4% in the control county.

Early ANC

For a healthy pregnancy experience, the World Health Organization recommends that pregnant women have their first contact during the first 12 weeks of gestation.[5] Survey results showed that among women who gave birth in the last two years, almost all (99.9%) reported receiving at least one ANC visit. The majority (83.1%) went for their first visit during the first three months of pregnancy (Table 6). The

[5] *New guidelines on antenatal care for a positive pregnancy experience*. (n.d.). Retrieved July 13, 2022, from https://www.who.int/news/item/07-11-2016-new-guidelines-on-antenatal-care-for-a-positive-pregnancy-experience

data show some differences in early ANC by county. This behavior was more common in Bomi (86.1%) than in Bong (82.6%) or Gbarpolu (81.2%). The main reasons for women who did not undergo ANC early in their pregnancy were cost-related in Gbarpolu and distance-to-service in the intervention counties.

Table 6: Percent distribution of women with a child in the last two years by the timing of the first ANC visit

TIMING	INTERVENTION			CONTROL (N=236)	ALL WOMEN (N =860)
	Bong (n=392)	Bomi (n=232)	Total (n=624)		
≤3 months	82.6	86.1	83.9	81.2	83.1
4–5 months	13.8	10.0	12.4	15.4	15.8
≥6 months	3.6	3.9	3.7	3.4	1.1

Determinants of Early ANC

This section presents the results of the multivariable regression analysis of ANC within the first three months of pregnancy (Table 7). Only variables significantly correlated in the bivariate analysis were included as predictors in the multivariate analysis. The results indicated that education level and urban residence were the only sociodemographic variables significantly associated with early ANC. While having secondary or higher levels of education made no difference to early ANC compared to no education, women with a primary level of education were 35% less likely than those without education to seek early ANC (OR:0.647, $p<0.05$). Urban women were 48% less likely to report early ANC than their rural peers were (OR:0.521, $p<0.01$). Additionally, having a woman accompanied by a health facility for ANC increased the odds of early ANC by 56%. By contrast, receiving help with housework during pregnancy was negatively associated with early ANC. It is possible that women who need help with housework overwork.

Table 7: Results of the multivariable regression of early ANC on selected sociodemographic and psychosocial variables, Liberia 2021

CORRELATES	ODDS RATIO	STD. ERROR
Education level (RC = No education)		
Primary	0.647*	0.145
Secondary and higher	0.839	0.238
Someone accompanied the woman to ANC (RC = nobody accompanied her)	1.561*	0.328
Someone helped with housework during pregnancy (RC = nobody helped)	0.483*	0.180
Urban residence (RC = rural)	0.521**	0.115

Number of observations	854

Notes: Model also controlled for household ownership of mobile phones, number of children ever-born, religion, household poverty level, county intervention status, relative household workload during pregnancy, level of support from spouse during pregnancy, level of care from family members during pregnancy. None of these variables was significant.

RC = Reference category

*p<0.05; **p<0.01

Frequency of ANC Visits and Services Received

Four or More ANC Visits

Most women who had children two years before the survey indicated that they attended four or more ANC visits in both the intervention (Bomi, 92.6%; Bong, 84.6%) and control (95.3%) counties.

Services Received During an ANC Visit

Survey data showed that, overall, the quality of maternal health services during ANC visits was high. We asked women about the five services they received during an ANC visit: abdominal checkup, blood sample testing, urine sample testing, nutrition counseling, and HIV counseling.

Almost all women in the intervention and control counties reported undergoing abdominal examinations and blood sample testing (Table 8). The proportion of participants reporting that they had received urine sample testing and nutritional counseling was noticeably high. The services the women were most likely to report were related to HIV counseling; even then, approximately four-fifths of the women reported such services. In contrast, very few women (5.2% in the intervention group and 8.2% in the control group) stated that they had received counseling about danger signs or birth complications during their ANC visits. Counseling women for possible danger signs during pregnancy and alerting them to possible birth complications are essential components of ANC counseling.

Table 8: Percentage of women who reported receiving maternal health services during most recent pregnancy

FACTORS	INTERVENTION (N=624)	CONTROL (N=236)	TOTAL (N=860)
Abdominal examination	99.5	100.0	99.6
Blood sample testing	95.1	97.0	95.6
Urine sample testing	88.2	91.4	89.1
Nutrition counseling	90.7	97.0	92.5
HIV counseling	79.2	86.9	81.3
Counseling about complications during pregnancy and childbirth	5.2	8.2	6.0

Birth Preparedness

We used the five-indicator World Health Organization birth preparedness index to assess the planning and preparation undertaken by women and/or their families for birth delivery. The survey results indicate that very few women who had children two years before the survey knew their due date; only 7.9% in the intervention counties and 12.7% in the control county had such information.

The second birth preparedness indicator was the decision regarding the place of delivery. About two-fifths of women who had children in the two years before the survey in the intervention counties had made a prior decision on where to deliver, compared to 74.6% of women from the control county (Table 9).

The third birth preparedness indicator was arranging emergency transportation to take pregnant women to a health facility in case of an emergency. This indicator was higher in the control county (50.4%) than in the intervention counties (33.3%).

Table 9: Selected indicators of birth preparedness by county intervention status; women with a birth in the last two years

PSYCHOSOCIAL DETERMINANTS	INTERVENTION			CONTROL (N=236)
	Bong (n=392)	Bomi (n=232)	Both (n=624)	
Knew baby's due date	7.1	9.1	7.9	12.7
Made prior decision about where the baby will be delivered	40.3	45.3	42.1	74.6
Made arrangement for emergency transport	33.9	32.3	33.3	50.4
Saved money that could be used for emergency	73.2	63.4	69.6	83.9
Kept an emergency contact number ready	25.5	18.1	22.8	44.1

Regarding saving up money for a medical emergency during pregnancy, about 73% of women who had children in the two years before the survey from Bong, 63% from Bomi, and 84% from the control county reported this behavior (Table 9).

The final indicator of birth preparedness was the number of emergency contacts that the woman or her family could easily access. Only 18.1% of women who had children two years before the survey in Bomi and 25.5% in Bong reported saving an emergency number, compared to 22.8% in the control county.

The overall level of birth preparedness across the board was low. Only 2.2% of the women who gave birth in the last two years reported all five elements assessed, while 11.7% reported four or more elements, and 70.3% reported two or fewer.

Determinants of Birth Preparedness

We fitted a logistic regression model to identify the determinants of birth preparedness and to provide guidance for an effective maternal SBC program that can help improve birth outcomes.

To do this, we divided birth preparedness into a dichotomous variable that indicated low birth preparedness (a score between 0 and 2, 70.3%) and high birth preparedness (between 3 and 5, 29.7%). The results revealed five variables that were positively and strongly associated with increased birth preparedness: age of the woman, receiving information about danger signs during ANC, level of partner support during pregnancy, household ownership of at least one mobile phone, and residence in the control county (Table 10).

Specifically, each year's increase in the woman's age is associated with a 4% increase in the odds of birth preparedness, indicating that young women are at a disadvantage in terms of birth preparedness. Receiving information about danger signs during pregnancy as part of ANC increased the odds of birth preparedness threefold, while a moderate level of partner support increased the odds twofold compared to a low level of partner support. Household ownership of mobile phones is associated with 57% higher odds of reporting a high level of birth preparedness. In addition, women from the control county were almost four times as likely to report a high level of birth preparedness as their peers from the intervention counties. In contrast, Christians were less likely to report a high level of birth preparedness than Muslims and other religious groups.

Table 10: Results of the multivariable regression of birth preparedness on selected sociodemographic and psychosocial variables, Liberia 2021

CORRELATES	ODDS RATIO	STD. ERROR
Respondent's age in years	1.036*	0.017
Christian religious affiliation (RC = non-Christian)	0.697#	0.133
Received information on danger during pregnancy from ANC	2.996***	0.774
Partner support with workload during pregnancy (RC = low)		
Moderate	2.000**	0.452
High	1.021	0.216
Household has at least one mobile phone	1.567*	0.311
Residence in control county (RC = intervention county)	3.624***	0.662
Number of observations	854	

Notes: Model also controlled for urban residence, number of children ever-born, household poverty level, relative household workload during pregnancy, whether the woman received help with housework during pregnancy, level of care from family members during pregnancy, and whether or not the woman was accompanied by someone to the health facility anytime during pregnancy. None of these variables was significant.

RC = Reference category

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

Birth Delivery and Postnatal Care

Delivery at a Health Facility

The data indicate that most births in the study counties were facility-based Liberia, with 84.8% and 92.8% in the intervention and control counties, respectively. Most facility-based deliveries occur at public health facilities. Overall, only 4.0% and 8.5% of the intervention and control counties, respectively, had a private health facility. The proportion of home deliveries was low, although it was higher in the intervention counties (14.4%) than in the control county (6.8%).

Postnatal Care

The data revealed that all women with facility-based delivery received postnatal care within 24 hours of delivery. In addition, most women (92.2% in the intervention counties and 92.0% in the control county) reported that they were visited at home by a health worker within 48 hours of returning home after delivery.

Recommendations

This study confirms the findings of previous studies that indicators of maternal health behaviors are high in Liberia. Furthermore, through multivariable logistic regression, we identified predictors of recommended behaviors that could serve as a basis for developing potentially effective programs.

Early ANC

Efforts to maintain high levels of early ANC may prioritize women with little education and urban residents. Promoting the notion of friends or family accompanying pregnant women for ANC is equally important. In this regard, interventions that target potential influencers with information about the advantages of early ANC and that seek to strengthen their self-efficacy to support pregnant women in their entourage to go for early ANC are relevant. It is unclear why receiving help with housework during pregnancy is negatively associated with early ANC. However, women who need help with housework may have excessive workloads. In this respect, efforts to educate the community on the need for a reduced workload for pregnant women starting from the early months of pregnancy are relevant. Such efforts should also seek to strengthen the capacity of family and community members to support pregnant women and assist them with housework adequately.

Birth Preparedness

Birth preparedness is influenced by the level of partner support during pregnancy, household ownership of at least one mobile phone, and residence in the control county.

Given the generally low levels of birth preparedness in the studied counties, urgent efforts are needed to increase this essential outcome. These efforts must include effective demand-generation initiatives

and actions targeting service delivery. The positive association between age and birth preparedness indicates that young people should be prioritized. Targeting this group of pregnant women requires special attention during ANC and CHV visits. It is also necessary to better understand and address the factors that hinder birth preparedness among this group.

Considering the positive link between partner support and housework during pregnancy, specifically targeting men as partners is indicated. A male involvement campaign may promote spousal communication about pregnancy care, educate men on the need to help their spouse with housework during pregnancy, make participation in housework a normative behavior, and encourage men to accompany their pregnant spouse for ANC.

The huge gap between the intervention and control counties indicates that the decision to focus on Bong and Bomi was justified. Some lessons can be learned from Gbarpolu. Programs must consider what can be learned from Gbarpolu and applied to intervention counties.

From the provider's perspective, efforts to educate pregnant women, in particular, and the community in general, about birth preparedness are relevant. Not providing this information to women during ANC visits is a misleading opportunity. To this end, existing job aids should be reviewed to assess their appropriateness and revised if necessary. Furthermore, the positive association of receiving information about danger signs during ANC with birth preparedness indicates that this element should be a consistent component of health talks and counseling during ANC and CHV home visits.

Malaria

Malaria was listed as the leading cause of death in Liberia from 2009 to 2019.[6] Effective prevention and treatment strategies for malaria make it possible to minimize malaria-related morbidity and mortality. This chapter focuses on malaria-related care-seeking behaviors, including the use of bed nets, adherence to IPTp, prompt treatment seeking for children (younger than five years) with fever, and use of malaria RDTs for children (younger than 5 years) presenting with fever. Multivariable regression models are presented to highlight the demographic and behavioral determinants of bed net use among women and men and determinants of IPTp completion (three or more doses) among women who gave birth in the 2 years preceding the study.

Research has increasingly demonstrated the effective role of SBC programs in promoting positive health behaviors, including those related to malaria prevention and treatment. To be effective, however, SBC program messages need to target specific ideational variables, including perceptions and beliefs, that influence individuals' decisions related to malaria-related behaviors, such as prompt care-seeking and the use of ITNs. The 2016 MIS and 2019 DHS in Liberia provided evidence on behavioral outcomes related to malaria, including using mosquito nets, prompt and appropriate treatment of malaria in children, and IPTp. Qualitative studies using focus groups and unstructured assessments have identified several attitudes and beliefs that may contribute to these behaviors. The findings from these qualitative studies are useful for identifying the underlying behavior-related factors that program planners can address. However, quantitative research is lacking to help programs prioritize their messages.

Malaria Prevention and Care-Seeking

Table 11 highlights bivariate results for several key malaria indicators, including prompt seeking of care for children with fever, the proportion of children receiving malaria RDTs, and daily net use for women, men, and children in the week preceding the survey. The results for seeking care and bed net use for children were based on responses from women to avoid double-counting children as both men and women were selected from the same households.

A total of 74% of female respondents in the intervention counties and 70% in the control county stated that they promptly (within 24 hours of the onset of fever) sought care for their children younger than five years of age with fever. The intervention counties differed significantly in terms of prompt behavior

[6] Vollset, S. E., Goren, E., Yuan, C. W., Cao, J., Smith, A. E., Hsiao, T., Bisignano, C., Azhar, G. S., Castro, E., Chalek, J., Dolgert, A. J., Frank, T., Fukutaki, K., Hay, S. I., Lozano, R., Mokdad, A. H., Nandakumar, V., Pierce, M., Pletcher, M., . . . Murray, C. J. L. (2020). Fertility, mortality, migration, and population scenarios for 195 countries and territories from 2017 to 2100: a forecasting analysis for the Global Burden of Disease Study. *The Lancet, 396*(10258), 1285–1306. https://doi.org/10.1016/s0140-6736(20)30677-2.

in seeking care. Whereas only 60% of the women in Bomi reported prompt seeking of care for children, 77% of their peers in Bong did.

There was a significant difference in the reported rates of RDT administration between the control and intervention groups. In the intervention counties, 85% of women reported that their febrile child had received an RDT in a health facility, compared to 70% in the control county. There was no significant difference between the two intervention counties (88% in Bomi and 84% in Bong).

Consistent use of bed nets (i.e., every day of the week) among male and female adults was relatively high across the sample, with individuals in the intervention counties reporting higher rates of net use than those in Gbarpolu, regardless of sex. Similarly, most children younger than 5 years reportedly slept consistently under a bed net, particularly in the intervention county. Consistent use among children was more prevalent in the intervention counties (86%) than in the control county (75%).

Table 11: Percentage reporting specific malaria prevention and care-seeking behaviors by county and sex

VARIABLE	WOMEN			
	INTERVENTION			CONTROL
	Bong % (n)	Bomi % (n)	Both % (n)	Gbarpolu % (n)
Prompt care-seeking	77.1 (179)	60.5 (43)	73.9 (222)	70.4 (71)
Malaria RDT administered	84.1 (138)	88.5 (26)	84.8 (164)	70.0 (50)
Adult daily net use (women)	92.8 (1102)	77.4 (495)	88.0 (1597)	76.8 (564)
Adult daily net use (men)	88.4 (724)	81.3 (294)	86.4 (1018)	76.7 (344)
Child under 5 years daily net use	89.7 (682)	77.3 (330)	85.7 (1012)	75.0 (352)

Notes: No information was collected on household net ownership, so net use indicators include all study participants.

Table 12 highlights the results (odds ratios) from a multivariate regression of daily net use in the week preceding the survey on demographic and ideational variables of interest. The results show that while no statistically significant difference existed in bed net use between those living in Bomi and Gbarpolu, there was a more frequent practice of bed net use among women (OR: 4.7, CI: 3.0–7.4) and men (OR: 2.9, CI: 1.8–4.6) in Bong, as compared with Gbarpolu. Furthermore, recall of the Healthy Life campaign was associated with increased daily use of bed nets for both women (OR:1.5, CI:1.0–2.2) and men (OR:1.7, CI:1.1–2.5). Frequent couple communication about malaria was also positively associated with bed net use among women (OR:1.5, CI:1.1–2.2) and men (OR:1.7, CI:1.0–2.8). Men living in rural areas (OR:2.1, CI:1.3–3.2) were more likely to use bed nets than those living in urban areas. Muslim women (OR:1.6, CI:1.0–2.6) were also more likely than Christian women to use bed nets consistently. Men (OR:2.1, CI:1.2–3.7) who reported high economic vulnerability were also more likely to use bed nets consistently.

These results highlight an important achievement of the Healthy Life campaign, as it positively predicted bed net use among both men and women. Reflection on the success and continuation of this campaign may prove to further support the increased uptake of daily bed net use. The results further highlight an opportunity for targeted intervention in Bomi, although this should not come at the expense of sustained intervention and support programs in Bong. An opportunity lies for the promotion of couple communication for men who are either married or living with their partners. Muslim women and men living in rural areas, particularly among the most vulnerable groups, will be important populations to focus on for behavioral maintenance. The results further suggest that expanding the focus of the program toward non-Muslim women and men living in urban areas may help bridge important gaps in net use.

Table 12:Results (odds ratios) for logistic regression models of daily net use the week preceding the survey by sex

FACTOR	WOMEN		MEN	
	Odds Ratio	Confidence Interval	Odds Ratio	Confidence Interval
Vulnerability Index				
Low (RC)	1.00	-	1.00	-
Medium	1.55	0.94 – 2.57	1.45	0.82 - 2.57
High	1.71	1.0 - 2.93	2.10**	1.19 - 3.72
Religion				
Christion (RC)	1.00	-	1.00	-
Muslim	1.63**	1.01 – 2.63	0.85	0.51 - 1.40
Traditional/Other	0.86	0.25 – 2.92	2.02	0.43 – 9.44
County				
Gbarpolu (RC)	1.00	-	1.00	-
Bomi	1.31	0.76 - 2.25	1.60	0.91 – 2.82
Bong	4.73***	3.04 - 7.36	2.88***	1.79 – 4.64
Residence				
Urban (RC)	1.00	-	1.00	-
Rural	1.12	0.74 - 1.70	2.07***	1.34 - 3.18
Couple Communication about Malaria				
Low Couple Communication (RC)	1.00	-	1.00	-
Moderate Couple Communication	1.47	0.93 - 2.31	1.30	0.85 - 2.00
Frequent Couple Communication	1.54**	1.05 - 2.24	1.69**	1.03 - 2.78

FACTOR	WOMEN		MEN	
	Odds Ratio	Confidence Interval	Odds Ratio	Confidence Interval
Respondent recalls the Healthy Life Campaign (Yes)	1.52**	1.03 - 2.23	1.67**	1.11 - 2.50
Observations	1,501		1,078	

Notes: Other demographic variables (not significant) controlled for in this model include age, education, labor force participation, household size, and marital status.

RC = Reference category

*** p<0.01, ** p<0.05

Malaria in Pregnancy

The analysis of receiving the recommended number of IPTp doses was limited to women who gave birth in the last two years. The completion of the three doses of IPTp was 63% in the intervention counties and 65% in the control county (Table 13). There was a significant difference between Bomi and Bong: 71% of the women in Bomi obtained at least three doses of IPTp compared to 59% in Bong. There were differences in the receipt of three doses of IPTp by the number of ANC visits in the intervention counties, with 65% of women who had attended at least four ANC consultations receiving at least three doses of IPTp, compared to 49% of the women who did not attend ANC consultations. In the control county, the two groups were not significantly different, mainly because only 12 women reported fewer than four ANC visits in the control county.

Table 13: Percentage of women who completed IPTp3+, by county and ANC attendance

INTERVENTION			CONTROL	ANC 4+ ATTENDED	
Bomi % (n)	Bong % (n)	Both % (n)	Gbarpolu % (n)	Yes % (n)	No % (n)
70.9 (230)	58.5 (390)	63.1 (620)	64.5 (234)	65.0 (543)	49.4 (77)

Table 14 highlights the results (odds ratios) from a multivariate regression of the completion of three or more doses of IPTp on the demographic and ideational variables of interest. The results showed no statistically significant differences between the intervention and control areas captured in the study. Furthermore, while other demographic factors such as economic vulnerability, education, and standard of living were captured, they did not significantly predict the completion of three or more doses of IPTp. The results confirm the observations in Table 13, showing that women who attended four or more ANC appointments during their last pregnancy were more likely than those who attended fewer than four ANC appointments (OR: 1.8, CI: 1.2–2.9). The model further shows that a supportive home environment during pregnancy is positively associated with IPTp3+ completion (OR: 1.7, CI: 1.1–2.7).

These results suggest that while well-understood drivers of IPTp3+ completion, such as ANC attendance, are important, an opportunity exists for promoting support for women within the household during their pregnancies.

Table 14: Results (odds ratios) for logistic regression models of IPTp3+ completion

CORRELATES	ODDS RATIO	STD. ERROR
County		
Gbarpolu (RC)	1.00	-
Bomi	1.46	0.94 - 2.28
Bong	0.81	0.56 - 1.16
Respondent attended 4+ ANC appointments during pregnancy (Yes)	1.82***	1.15 - 2.88
Respondent received support at home during pregnancy (Yes)	1.73**	1.11 - 2.68
Observations	853	

Notes: Other demographic factors (not significant) controlled for include age, residence, economic vulnerability, and marital status.

RC = Reference category

*** p<0.01, ** p<0.05

Recommendations

The results presented above highlight that the areas of highest opportunity reside in the interpersonal communication and household environment domains and will require activities that SBC projects that focus on support in the household during pregnancy, as well as interpersonal communication about malaria and pregnancy.

Overall, IPTp3 completion and net use outcomes were better in the intervention counties than in Gbarpolu. However, this does not mean that intervention should necessarily be scaled back in these areas, but rather that campaigns provide greater focus toward groups that are less likely to use nets or uptake IPTp, while further promoting maintenance of behaviors among those who do consistently practice malaria prevention behaviors.

Those living in rural areas with higher economic vulnerability were more likely to use nets, which is expected given that these populations are often the target recipients of mass net distribution campaigns. A focus on behavioral maintenance among this group will be important in future messaging of SBC programs. However, a greater scope may exist to expand efforts among urban and peri-urban populations at high risk of malaria exposure. Programs aimed at bolstering couple communication may help improve the uptake and continued use of nets by men. A significant finding of our model is that a healthy lifestyle campaign is associated with a greater likelihood of daily net use. Efforts should be made

to understand what messages from this program have been particularly successful among women and men, and further scale-up or adaptation of this program for those living in urban areas may further increase the consistent use of bed nets among women and men.

The results presented for IPTp completion suggest that there will be continued importance to focusing programs on coupling demand-generation for ANC attendance with those focusing on the increased access and quality of these services. It is well known that the COVID-19 pandemic has had not only adverse effects on seeking care but also affected the economic well-being of families, which impacts the interest and opportunity for individuals to attend services at the facility, particularly when structural barriers already inhibit access to care. Our analysis suggests that SBC programs focused on improving support within the home for women during pregnancy can complement continued or expanded facilities or community-based programs to increase the attainment of ANC and IPTp.

Maternal and Child Nutrition

Maternal and child nutrition play a major role in both the improvement of health outcomes of children and the reduction of pregnancy-related health issues, with malnutrition having been the top driver of death and disability among individuals in Liberia from 2009 to 2019.[7] Mothers and children are particularly susceptible to adverse nutrition-related outcomes, which can be caused by various economic and environmental factors. While many articles have highlighted the effects of economic well-being and sanitation on maternal and child nutrition and related mortality, a gap exists in research on the social and behavioral determinants of maternal and child nutrition. This chapter explores antenatal and postnatal maternal nutrition and child nutrition, primarily looking at food intake during pregnancy (including the last trimester), IFA supplementation during pregnancy, MDD among children aged 6–23 months, and early initiation of breastfeeding among children who were born in the 2 years before the survey. Multivariate models of (MDD) among children and similar or reduced food intake during pregnancy highlight the demographic, social, and behavioral determinants of each outcome.

Exploratory Analysis

Forty-one percent of female respondents in both Bomi County and Bong County stated that they had the same or reduced food intake during pregnancy compared to pre-pregnancy (Table 15). In the intervention counties, the percentage of women with the same or reduced food intake during pregnancy in Bong County was only 33%, while the percentage in Bomi County was 57%, meaning that the percentage of women with the same or reduced food intake during pregnancy in Bomi was roughly twice as high as in Bong County. No considerable difference was apparent in overall maternal nutrition based on attendance at ANC or between the intervention and control counties.

The total proportion of women in the intervention counties who underwent IFA for more than 90 days during their last pregnancy was 43% (Table 15). The frequency of consuming IFA for more than 90 days during their last pregnancy for women who did not attend ANC four or more times was only 45 (Table 15). The proportion of female respondents in the intervention group (Bomi County and Bong County) was 17% lower than in the control group (Gbarpolu County), which was a large difference between the intervention and control groups (Table 15).

Twenty-five percent of the respondents in the intervention counties stated that their children met the MDD benchmark (Table 16). Early breastfeeding initiation across both intervention counties was high,

[7] Vollset, S. E., Goren, E., Yuan, C. W., Cao, J., Smith, A. E., Hsiao, T., Bisignano, C., Azhar, G. S., Castro, E., Chalek, J., Dolgert, A. J., Frank, T., Fukutaki, K., Hay, S. I., Lozano, R., Mokdad, A. H., Nandakumar, V., Pierce, M., Pletcher, M., . . . Murray, C. J. L. (2020). Fertility, mortality, migration, and population scenarios for 195 countries and territories from 2017 to 2100: a forecasting analysis for the Global Burden of Disease Study. *The Lancet, 396*(10258), 1285–1306. https://doi.org/10.1016/s0140-6736(20)30677-2.

with an average of 91% of children breastfed within one hour after birth (Table 16). These results were 10 percentage points higher than those for early breastfeeding initiation in the control county.

On average, maternal and child nutrition outcomes were slightly higher in the control county except for early initiation of breastfeeding and maternal nutrition in the last trimester being higher in the intervention counties. This information is useful to clarify where intervention may be best targeted to achieve and surpass maternal and child nutrition benchmarks throughout the Breakthrough ACTION project.

Table 15: Nutritional intake and IFA supplementation during pregnancy, by county and ANC attendance

VARIABLE	INTERVENTION			CONTROL	ANC 4+ ATTENDED	
	Bomi n=353 %	Bong n=708 %	Total n=1,061 %	Gbarpolu n=382 %	Yes n=1,289 %	No n=154 %
Proportion of women with the same or reduced food intake during pregnancy	56.7	32.8	40.7	44.2	41.4	43.5
Proportion of women with the same or reduced food intake during last trimester	53.8	42.9	46.6	40.1	44.0	52.0
Proportion of women who took IFA for 90+ days during their last pregnancy	50.4	38.8	42.7	60.0	49.4	29.2

Table 16: Child dietary diversity and initial breastfeeding, by county and ANC attendance

VARIABLE	INTERVENTION			CONTROL	ANC 4+ ATTENDED	
	Bomi % (n)	Bong % (n)	Total % (n)	Gbarpolu % (n)	Yes % (n)	No % (n)
Minimum dietary diversity (child age 6–23 months ate from five or more food groups)	9.2 (119)	32.7 (263)	25.4 (382)	50.4 (123)	–	–
Proportion of children given breast milk (*taytay* water) one hour after delivery	91.6 (178)	91.1 (292)	91.3 (470)	81.2 (170)	89.2 (581)	83.1 (59)

Multivariate Analyses

Table 17 highlights the results (odds ratios) from a regression of similar or reduced food intake during a woman's last pregnancy on demographic and ideational factors of interest. These results highlight that women living in Bomi were more likely than those who lived in Gbarpolu to have similar or reduced food intake during their last pregnancy (OR:1.7, CI:1.0–2.9). Conversely, women in Bong were less likely to have the same or reduced food intake during their last pregnancy (OR:0.6, CI:0.4–1.0). Older mothers (aged 35–49 years) and those in the middle age category (age 25–34 years) were more likely than those in the youngest age group (19–24 years) to experience similar or reduced food intake during their last pregnancies. This effect increased with age for those in the middle-aged category (OR:1.5, CI:1.0–2.9) and the oldest age group (OR:1.9, CI:1.2–2.8).

Several ideational factors are associated with better maternal nutritional outcomes. Attendance at four or more ANC appointments during pregnancy was a strong norm within a woman's community and was associated with a 45% reduced likelihood of experiencing stagnant or reduced food intake during pregnancy (OR:0.55, CI:0.3–0.9). Strong community norms around supportive home environments during pregnancy were associated with a lower likelihood of adverse maternal nutritional outcomes (OR:0.5, CI:0.3–0.7). Gender inequitable norms related to partner violence were significantly correlated with similar or reduced food intake during pregnancy (OR:1.5, CI:1.1–2.2).

These results highlight the importance of the home environment for nutritional intake during pregnancy. While attendance at well-known point-of-care options, such as ANC, is certainly important, this analysis further highlights the importance of community norms and support within the household for pregnant women. Programs that address community norms around gender equity, supportive home environments during pregnancy, and attendance at prenatal care appointments may complement existing point-of-care interventions to improve maternal nutrition, particularly among older mothers.

Table 17: Results (odds ratios) for logistic regression model of similar or reduced food intake during pregnancy

CORRELATES	ODDS RATIO	CONFIDENCE INTERVAL
County		
Gbarpolu (RC)	1.00	—
Bomi	1.70**	1.00–2.88
Bong	0.64**	0.43–0.97
Age		
19–24 (RC)	1.00	—
25–34	1.47**	1.02–2.13
35–49	1.85***	1.21–2.82
Four or more ANC visits social norm		
Low (RC)	1.00	—

CORRELATES	ODDS RATIO	CONFIDENCE INTERVAL
Moderate	0.79	0.49–1.26
High	0.55**	0.33–0.93
Supportive home environment social norm		
Low (RC)	1.00	—
Moderate	0.86	0.59–1.26
High	0.51**	0.34–0.76
GEM partner violence subscale		
Low gender inequity (RC)	1.00	—
Moderate gender inequity	1.51**	1.06–2.16
High gender inequity	1.29	0.88–1.90
Observations	966	

Notes: Demographic variables (not shown) controlled for in this model include residence, economic vulnerability, standard of living, education, religion, labor force participation, and household size.

RC = Reference category

*** p<0.01, ** p<0.05

Table 18 highlights the results (odds ratios) for the regression of MDD among children on demographic and ideational factors of interest. This analysis shows a significantly lower likelihood of children in both Bomi (OR:0.1, CI:0.0–0.4) attaining MDD standards within their diets than children in Gbarpolu.

Moderate (OR:2.1, CI:1.2–3.6) and frequent (OR:3.2, CI:1.1–4.1) couple communication were positively associated with the attainment of MDD in children. Women's decision-making autonomy regarding purchasing and consuming food in the household was positively correlated with increased dietary diversity among children (OR:2.7, CI:1.6–4.8). Further, weekly radio listenership among women was positively associated with the achievement of MDD for children (OR:2.1, CI:1.2–3.6).

These results highlight the importance of decisional autonomy and gender equity within households for women as they relate to their children's nutrition. Further, partner involvement in decision-making is an important predictor of positive dietary outcomes in children. A great opportunity for intervention exists in Bomi and Bong, where programs aimed at bolstering couple communication and decisional autonomy for women have the potential to have a large positive impact on children's nutrition.

Table 18: Results (odds ratios) for logistic regression model of MDD among children ages 6–23 months

CORRELATES	ODDS RATIO	CONFIDENCE INTERVAL
County		
Gbarpolu (RC)	1.00	—

CORRELATES	ODDS RATIO	CONFIDENCE INTERVAL
Bomi	1.70**	1.00–2.88
Bong	0.64**	0.43–0.97
Age		
19–24 (RC)	1.00	—
25–34	1.47**	1.02–2.13
35–49	1.85***	1.21–2.82
Four or more ANC visits social norm		
Low (RC)	1.00	—
Moderate	0.79	0.49–1.26
High	0.55**	0.33–0.93
Supportive home environment social norm		
Low (RC)	1.00	—
Moderate	0.86	0.59–1.26
High	0.51**	0.34–0.76
GEM partner violence subscale		
Low gender inequity (RC)	1.00	—
Moderate gender inequity	1.51**	1.06–2.16
High gender inequity	1.29	0.88–1.90
Observations	966	

Notes: Demographic variables (not shown) controlled for in this model include residence, economic vulnerability, standard of living, education, and religion. MDD was calculated as consumption from at least five of eight food groups, as reported in the 2019 Liberia DHS and defined by the World Health Organization.[8, 9]

RC = Reference category

*** p<0.01, ** p<0.05

Recommendations

The results presented above highlight that the areas of greatest opportunity reside in the interpersonal communication, gender normative, and household environment domains and will require activities that

[8] World Health Organization & United Nations Children's Fund (UNICEF). (2021*). Indicators for assessing infant and young child feeding practices: Definitions and measurement methods.* World Health Organization. https://apps.who.int/iris/handle/10665/340706

[9] Liberia Institute of Statistics and Geo-Information Services (LISGIS), Ministry of Health [Liberia], and ICF. 2021. Liberia Demographic and Health Survey 2019-20. Monrovia, Liberia and Rockville, Maryland, USA: Liberia Institute of Statistics and Geo-Information Services (LISGIS), Ministry of Health, and ICF.

SBC projects challenge local gender norms related to decision-making, support in the household during pregnancy, as well as interpersonal communication about nutrition and pregnancy.

Great needs and opportunities exist in intervention countries for programs to increase dietary diversity among children. Interventions in Bomi County are particularly recommended as respondents in this county reported the lowest rates of MDD among children. Adverse economic outcomes from the COVID-19 pandemic can have devastating effects on the nutrition and well-being of children, marking even further urgency to not only bolster complementary SBC programming with nutrition interventions but to further couple this with increased investments in growth monitoring and comprehensive primary healthcare. Similar adverse economic events greatly affect maternal mortality, marking an urgency to couple SBC programs with increased investment in facilities and community-based services for women during pregnancy. A particular area of focus for interventions focused on maternal nutrition is Bong County.

Our results suggest that gender-transformative programs aimed at bolstering couple communication about maternal and child nutrition, decision-making autonomy among women for their care and the nutrition of those in their household, and further advocating for greater support in the home environment during pregnancy may have the best complementary effect to the existing or expanded facility and community-based programs focused on maternal and child nutrition.

GHSA and COVID-19

Global Health Security Agenda

USAID partners with the Department of State, Department of Health and Human Services, the Centers for Disease Control and Prevention, and other departments and agencies to implement the GHSA, an international initiative launched in 2014 to advance health security priorities multilaterally, bilaterally, and domestically. The GHSA brings together countries, international and non-governmental organizations, and the private sector to work toward common goals for global health security. GHSA supports one channel of the Breakthrough ACTION portfolio and includes initiatives such as One Health, zoonotic disease identification and management, and pandemic preparedness, among other topics.

Exploratory Analysis

Lassa Fever

Participants were administered a series of questions about COVID-19 and several GHSA-related diseases (i.e., Lassa fever, rabies, and bovine TB) and their transmission. Table 19 highlights the respondents' correct identification of disease sources for Lassa fever, bovine TB, and rabies. Among women, no differences in knowledge of Lassa fever were identified across the study sites; however, a higher percentage of men in the intervention counties (58%) correctly identified the source of Lassa fever than men living in Gbarpolu (41%). Correct identification of Lassa fever was the lowest among women in Bomi (15%), suggesting that they may be a priority group for intervention activities

Rabies

Men (51%) identified the correct source of rabies at the intervention sites more often than women (35%). Women in the intervention groups (35%) incorrectly stated the source of rabies more often than those in the control group (Gbarpolu, 50%). However, much of this general difference was influenced by the low identification rates in Bong. Among men, no difference was found between intervention and control counties.

Bovine TB

The correct identification of bovine TB was low across all study sites. An interesting observation tied to this question in the study revealed that respondents tended to compare bovine TB with other, more common forms of TB (primarily pulmonary). For example, many respondents cited smoking (a pulmonary irritant) as a source of bovine TB. This finding highlights the importance of differentiating bovine TB from other forms of TB during future GHSA health communication interventions.

COVID-19

With the rollout of the COVID-19 vaccine in Liberia, both vaccine acceptance and continued prevention practice are crucial to reducing the spread and burden of the disease within the country. This section explores the prevalence of COVID-19 preventative behaviors among women and men and the

demographic, social, and behavioral determinants of vaccine acceptance and practice of three priority COVID-19 prevention behaviors (handwashing, physical distancing, and masking).

Table 20 highlights the rates of vaccine acceptance and preventative behavior practices for COVID-19 by county and sex. Within the intervention counties, 42% of the female respondents accepted the COVID-19 vaccine versus 60% of the male respondents. Participants in the control communities reported similar rates of acceptance.

Reported adherence to COVID-19 prevention behaviors was inconsistent across study sites and sexes. In the intervention counties, men (55%) reported higher adherence to prevention behaviors than women (48%). More women (65%) and men (58%) in the control arm reported adherence than women and men in the intervention arms.

Table 19: Knowledge of GHSA priority diseases by county and sex

VARIABLE	WOMEN				MEN			
	Intervention			Control	Intervention			Control
	Bomi n=495 %	Bong n=1,102 %	Total n=1,597 %	Gbarpolu n=564 %	Bomi n=294 %	Bong n=724 %	Total n=1,018 %	Gbarpolu n=344 %
Respondents who correctly recognized source of Lassa fever	15.35	57.23	44.27	45.92	26.87	71.27	58.45	40.70
Respondents who correctly recognized source of rabies	45.86	29.4	34.5	50.53	47.96	51.66	50.59	50.29
Respondents who correctly recognized source of bovine TB	1.01	0.54	0.69	13.48	1.70	4.70	3.83	2.62
Respondents who stated source of bovine TB is smoking	35.35	16.88	22.60	13.48	45.58	45.30	45.38	46.80

Table 20: COVID vaccine acceptance and preventative behaviors, by county and sex

VARIABLE	WOMEN				MEN			
	Intervention			Control	Intervention			Control
	Bomi n=495 %	Bong n=1,102 %	Total n=1,597 %	Gbarpolu n=564 %	Bomi n=294 %	Bong n=724 %	Total n=1,018 %	Gbarpolu n=344 %
Respondents who accept the COVID-19 vaccine[a]	43.23	41.02	41.70	42.02	57.48	61.60	60.41	61.92
Respondents who stated practicing all COVID-19 preventative behaviors[b]	52.32	45.64	47.71	64.54	64.29	57.87	55.23	58.59

Notes:

[a] COVID-19 vaccine acceptance was captured based on whether an individual had already received a COVID-19 vaccine or would take the vaccine if it was made available to them.

[b] COVID-19 preventative behaviors included masking, physical distancing, and handwashing.

Multivariate Analysis

Vaccine Acceptance

Table 21 highlights the results (odds ratios) for a regression model of COVID-19 vaccine acceptance based on demographic and ideational factors of interest. Respondents in Bomi (OR: 1.65, CI: 1.0–2.6) and Bong (OR: 1.7, CI: 1.1–2.7) counties were significantly more likely than respondents in Gbarpolu to state acceptance for the COVID-19 vaccine. Furthermore, men in the oldest age group (35–49 years) were more than twice as likely (OR:2.1, CI:1.3–3.5) to report acceptance of the COVID-19 vaccine than were men in the youngest age category (19–24 years). Women in rural areas of Liberia were significantly less likely (OR:0.8, CI:0.6–1.0) to accept the COVID-19 vaccine.

Ideational factors related to gender equity, decision-making autonomy, media exposure, and the concurrent practice of COVID-19 preventative behaviors were also significantly correlated with COVID-19 vaccine acceptance. Men who stated moderate inequitable norms for partner violence (OR:0.7, CI:0.5–1.0) and a high reproductive health category (OR:0.6, CI:0.4–0.9) were significantly less likely than those reporting low support for gender inequity to accept the COVID-19 vaccine. Routine practices of COVID-19 prevention behaviors (OR:2.5, CI:1.6–4.0) and moderate or frequent couple communication (OR:1.3, CI:1.0–1.6) were positively associated with COVID-19 vaccine acceptance among women.

Moderate or frequent couple communication was also positively associated with vaccine acceptance among men (OR:1.4, CI:1.1–2.0). Women who reported decision-making autonomy for their healthcare were also more likely to report vaccine acceptance (OR:1.5, CI:1.1–1.9).

Both women (OR:1.4, CI:1.1–1.8) and men (OR:1.4, CI:1.1–1.8) who recalled the Healthy Life campaign were significantly more likely than those who did not recall the campaign to report COVID-19 vaccine acceptance.

Table 21. Results (odds ratios) for logistic regression models of COVID vaccine acceptance by sex

FACTOR	WOMEN		MEN	
	Odds Ratio	Confidence Interval	Odds Ratio	Confidence Interval
County				
Gbarpolu (RC)	1.00	—	1.00	—
Bomi	1.42	0.94–2.16	1.65**	1.04–2.63
Bong	1.17	0.86–1.59	1.71**	1.08–2.73
Residence				
Urban (RC)	1.00	—	1.00	—
Rural	0.77**	0.59–1.00	0.92	0.65–1.30
Age				
19–24 (RC)	1.00	—	1.00	—
25–34	0.89	0.66–1.20	1.61	0.97–2.67
35–49	1.15	0.84–1.56	2.13***	1.31–3.47
GEM Partner Violence Subscale				
Low Gender Inequity (RC)	1.00	—	1.00	—
Moderate Gender Inequity	0.94	0.72–1.24	0.70**	0.51–0.96
High Gender Inequity	0.75	0.56–1.00	0.89	0.62–1.28
GEM Reproductive Health Subscale				
Low Gender Inequity (RC)	1.00	—	1.00	—
Moderate Gender Inequity	1.12	0.85–1.47	0.86	0.63–1.19
High Gender Inequity	1.30	0.95–1.78	0.58**	0.40–0.85
Respondent is primary decision-maker for their own care-seeking (Yes)	1.45***	1.14–1.85	0.87	0.64–1.19

FACTOR	WOMEN		MEN	
	Odds Ratio	Confidence Interval	Odds Ratio	Confidence Interval
Respondent recalls the Healthy Life campaign (Yes)	1.43***	1.12–1.83	1.39**	1.05–1.84
Respondent routinely practices COVID-19 prevention behaviors	2.54***	1.61–4.00	0.97	0.68–1.40
Couple Communication Index				
Infrequent (RC)	1.00	—	1.00	—
Moderate or frequent	1.30**	1.00–1.60	1.44**	1.05–1.98
Observations	1,505		1,078	

Notes: Demographic variables (not shown) controlled for in this model include economic vulnerability, standard of living, education, religion, labor force participation, and household size.

RC = Reference category

*** p<0.01, ** p<0.05

COVID-19 Prevention Behaviors

Comparisons of prevention behaviors are presented in Table 22, highlighting the results (odds ratios) for a regression model of COVID-19 prevention on demographic and ideational factors of interest. Adherence is defined as the practice of all three behaviors: handwashing, physical distancing, and masking. Education level was significantly associated with adherence, as women (OR:1.7, CI:1.2–2.4) and men (OR:1.7, CI:1.2–2.5) with more than a secondary education were more likely to adhere to prevention behaviors than individuals with no formal education. Women in the oldest age category (35-39 years old, OR:1.6, CI:1.1–2.1) were more likely to practice prevention behaviors than those in the youngest age group. There were no significant differences between the three counties. Women who reported high economic vulnerability were also significantly less likely to consistently practice preventative behaviors against COVID-19 (OR:0.5, CI:0.3–0.9).

Women (OR:2.0, CI:1.6–2.6) and men (OR:1.4, CI:1.0–1.9) who reported moderate or frequent couple communication were more likely to practice COVID-19 prevention behaviors. Women (OR:2.1, CI:1.7–2.7) and men (OR:1.4, CI:1.0–1.9) reporting autonomy over their health decisions were more likely to adhere to COVID-19 prevention than participants without this decision-making power. Weekly radio listenership (OR:1.6, CI:1.2–2.1) was positively associated with the practice of COVID-19 preventative behaviors among men. Men categorized as having moderate (OR:0.7, CI:0.5–0.9) or high (OR:0.5, CI:0.4–0.7) inequitable gender norms related to partner violence were less likely to report adherence to preventive behaviors.

Table 22: Results (odds ratios) for logistic regression models of COVID prevention behaviors by sex

FACTOR	WOMEN		MEN	
	Odds Ratio	Confidence Interval	Odds Ratio	Confidence Interval
County				
Gbarpolu (RC)	1.00	—	1.00	—
Bomi	1.52	0.95–2.43	0.93	0.61–1.40
Bong	1.21	0.85–1.72	0.89	0.65–1.22
Age				
19–24 (RC)	1.00	—	1.00	—
25–34	0.74	0.44–1.24	1.28	0.94–1.74
35–49	0.89	0.54–1.47	1.55**	1.13–2.13
Education				
No Formal Schooling (RC)	1.00	—	1.00	—
Primary	1.10	0.80–1.53	1.27	0.98–1.63
Secondary+	1.74***	1.22–2.46	1.66***	1.16–2.39
Economic Vulnerability Index				
Low Vulnerability (RC)	1.00	—	1.00	—
Moderate or High Vulnerability	0.96	0.51–1.84	0.53**	0.32–0.88
Couple Communication Index				
Low Couple Communication (RC)	1.00	—	1.00	—
Moderate or Frequent Couple Communication	1.36**	1.00–1.86	2.07***	1.62–2.64
Respondent is primary decision-maker for their own care-seeking (Yes)	1.45**	1.07–1.96	2.12***	1.65–2.73
Respondent listens to radio at least once per week (Yes)	1.56***	1.17–2.08	0.88	0.70–1.10
GEM Partner Violence Subscale				
Low Gender Inequity (RC)	1.00	—	1.00	—
Moderate Gender Inequity	0.68**	0.49–0.93	1.14	0.86–1.50
High Gender Inequity	0.52***	0.36–0.74	0.97	0.72–1.30
Observations	1,505		1,078	

Notes: Demographic variables (not shown) controlled for in this model include residence and religion.

RC = Reference category

*** p<0.01, ** p<0.05

Recommendations

The GHSA and COVID-19 relevant results presented above provide opportunities for intervention and points that the research team will note for pre-post comparisons. Areas of greatest opportunity reside in the interpersonal communication and gender normative areas and will require activities that challenge local gender norms related to decision-making and how people discuss diseases like COVID-19 and those identified above.

One channel of activities should focus on raising awareness and knowledge of the three diseases prioritized in this survey: Lassa fever, rabies, and bovine TB. Participants reported low awareness of each disease and its transmission, with some exceptions. Activities that increase community dialogue regarding these diseases and how they threaten the economic and physical well-being of the community can facilitate action. The timing of activities could be established around festivals, harvest periods, and other moments across the calendar when the community comes together.

Approximately half of the participants reported adherence to all three COVID-19 prevention behaviors. These rates are high compared to other countries in the region, and many individuals in rural areas may experience a limited level of risk. The continued promotion of prevention behaviors may normalize certain behaviors. Contextualizing adherence messages in ways that emphasize the moments when people are at the greatest risk for infection (i.e., at markets, weddings, confined workspaces) may help fortify adherence. Complementing these messages with accurate information regarding the risks of infection and juxtaposing them with the benefits of vaccination may prove effective. Tailoring vaccine messages for particular subgroups may prove particularly fruitful.

One sample subset that should be further explored is women who reported low decision-making autonomy related to their care. This group of women may be harder to reach through messaging and may be limited by their spouses or others to arrive at a clinic to receive care. Therefore, interventions should consider this challenge. Activities could reduce women's travel burdens (time, physical, and financial). Another channel of gender-aware messaging may target husbands or relevant family members, who influence women's care-seeking decisions. Ideally, these messages would integrate gender-transformative considerations, but a combination of messages that seek to facilitate vaccine uptake and others that also challenge negative gender norms should be considered to promote the health of the overall community. Programs that encourage communication between couples on COVID-19 may also prove beneficial in bolstering both vaccine acceptance and the practice of preventative behaviors.