Malaria Behavior Survey

Overview, Use Cases, and Impact

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Filling a Behavioral Data Gap: Brief History of the MBS

2012

Need for systematic collection & use of theory-based malaria behavioral data recognized

Need for formative research and data on factors associated with behaviors for strategies

Need for standard behavioral indicators and tested survey questions to measure them

2014-2015

RBM SBC WG developed RBM Malaria SBC Indicator Reference Guide (now in 3rd edition)

Based on this guide, fielded 4 behavioral surveys:

- Madagascar (2014)
- Liberia (2014)
- Nigeria (2015)
- Mali (2015)

2016-2017

Request to consolidate a standardized survey questionnaire

CCP developed draft questionnaire based on prior surveys, which became the first iteration of the MBS

2018

Piloted first MBS in Côte d'Ivoire

Pilot survey proved comprehensive and robust

Survey was refined based and a standardized yet flexible questionnaire resulted

2018-2024

MBS implemented in multiple countries

With support from PMI and the Global Fund, MBS provided formative data for 13 countries with refinements and validation over time

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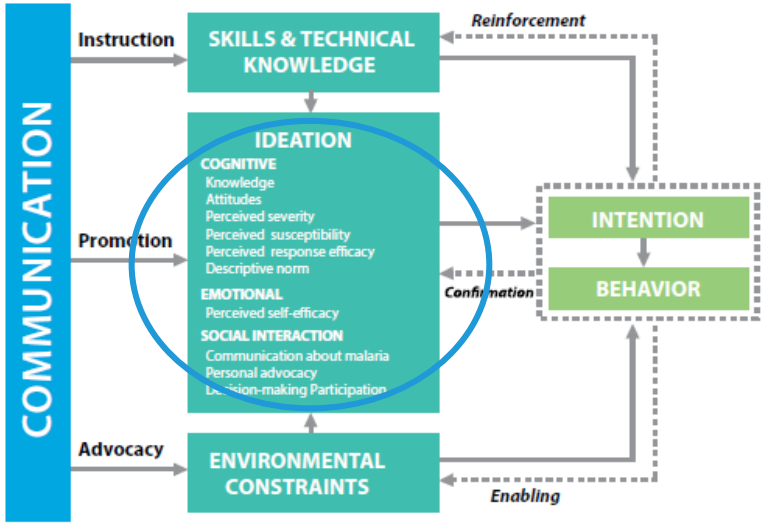
Overview of MBS

- **Study design:** Theory-driven, cross-sectional, household survey based on the Ideation Model
- **Respondents:** Women and men of reproductive age from randomly selected households and enumeration areas
- **Geography:** Survey area divided into zones of contiguous subnational areas, determined with stakeholders
- **Low transmission adaptation:** Adapted questionnaires, interviewee selection, and sampling frames
- **Complementarity:** Complements other large household surveys to provide broader picture of malaria behaviors, individual and social factors that motivate specific demographics, and barriers to utilization of health services

Figure 1. Ideation model of strategic communication and behavior change



Source: Adapted from Kinkaid (2000)

Informs Tailored Malaria Programs:
SBC, Case Management, MiP & Vector Control Interventions

Behavioral Outcomes	Drivers & Barriers (Intermediate Outcomes)	Other factors
• Use (previous night and every night of the week) of ITNs • Care of ITNs • Care seeking for children with fever • Prevention of malaria in pregnancy • Acceptance of household IRS and SMC interventions	• Attitudes • Knowledge • Perceived threat • Perceived self-efficacy • Perceived response efficacy • Social norms • Communication about malaria with others • Decision-making participation • Perceptions of health workers and health services	• Media habits • Exposure to and recall of malaria SBC interventions • Access to ITNs within households • Distance to nearest health facility
Demographic disaggregates by age, sex, urban/rural, geographic zone, wealth, education		

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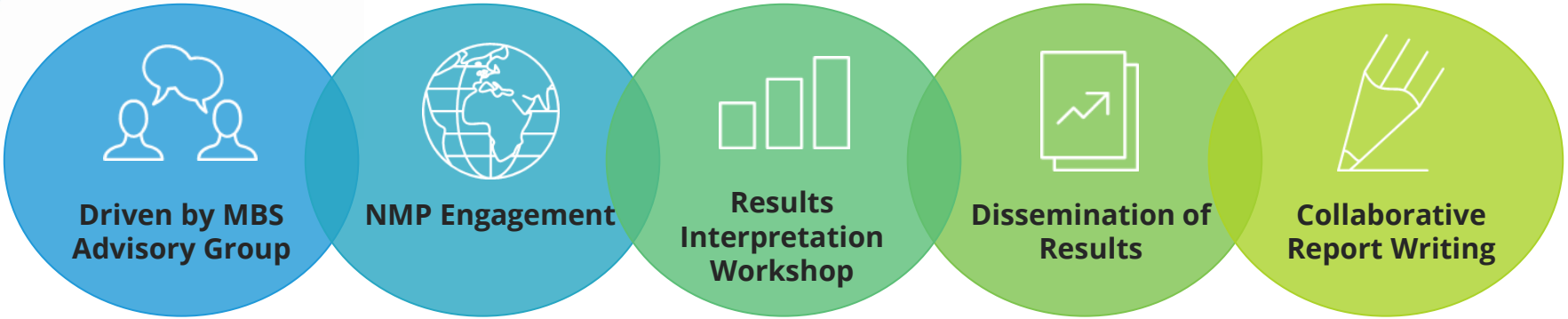
Use Cases for the MBS

Strategic Planning & Program Design	Questions about Program Effectiveness	Funding Requests
• Inform tactical shifts to National Malaria Strategic Plans • Updating (5-year) National Malaria SBC Strategy • Formative research for new programs • Historical or marked absence of robust quantitative behavioral data	• Establish baseline behavioral indicators for monitoring • Rates of behavioral uptake of interventions are below target • Mid-term revisions of projects or Malaria Program Reviews • Complement and provide context to other data sources	• Justify strategies proposed in Global Fund funding requests • Complement Malaria Matchbox Assessments

National Ownership & Capacity Strengthening



Stakeholder group that adapts questionnaires, resolves bottlenecks, secures permissions

NMP leads the Advisory Group, co-facilitates training, involved in questionnaire adaptation, report writing, and dissemination

Intensive collaboration on findings to ensure thorough understanding of the results and their implications

Collaborative dissemination via country-specific avenues, including a meeting hosted by NMP involving a broad group of stakeholders

Shared report writing, opportunities to co-author manuscripts and abstract, and to present findings at conferences

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Geographic Implementation of the MBS

15 surveys implemented in **13** countries over **7** years

48,097 households **72,978** individual respondents

Countries

Côte d'Ivoire (2018 & 2023)
Benin (2021)
Ghana (2022)
Sierra Leone (2019)
Kenya (2022)
Angola (2023)
Cameroon (2019)
Liberia (2022)
Zambia (2024)
DRC (2021)
Mainland Tanzania (2021)
Burundi (Dec 2024)
Malawi (2021)
Zanzibar (2021)

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MBS Validation Activities

MBS Questionnaire Validation

MBS captures nuances in complex psychosocial constructs about malaria-related behaviors

- No gold standard for standardized, quantitative measurement of constructs
- Multiple question items are combined in scales to measure each construct
- Items originally based on prior survey experiences, literature review, qualitative research, best practices from other health areas

Conducted validation exercises in 2023

- Purpose was to enhance internal and construct validity of the questions, reliability of MBS scales, align with behavior change theoretical constructs, reduce the questionnaire, and iteratively improve the MBS
- Close collaboration with PMI across Technical Teams

MBS Questionnaire Validation: Process

Face validity review

- Experiences from pre-testing questionnaire in every country
- Question by question review and discussions with PMI Technical Teams
- Recommended edits to wording of some questions

Scale validation analysis

- MBS data from Benin, DRC, and Malawi
- Reviewed results with PMI Technical Teams
- Revised some questions to improve scale performance

Scale Validation Statistical Analyses Performed

Descriptive Analysis	Reliability	Construct Validity	Criterion Validity
▶ Examine response distribution of each item for skewness	▶ Examine internal consistency of each scale by: - Inter-item correlation matrix - Cronbach's alpha - Exploratory factor analysis (EFA) - Raykov's rho	▶ Assess whether hypothesized structure of constructs is supported by the data by: - Confirmatory factor analysis (CFA)	▶ Evaluate how well each scale is measuring what it is intended to measure by examining its association with behavior indicators

Outcome of MBS Validation

Removed 38 questions	**Shortened** and streamlined survey
Added 15 questions	**Refined** scales to better capture constructs
Replaced 13 questions	**Improved** face validity of questions
10-point response scale	Significantly **reduced** skewing of responses
Refined wording	**Enhanced** clarity and consistency throughout
Revised analysis plan	Instructs on how scales are to be **constructed**

Achieved acceptable internal reliability for all scales

MBS Data Literacy & Visualization

MBS Website

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malariabehaviorsurvey.org

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Using MBS Results to Inform SBC Activities

- **Guidance** to help NMPs and partners use MBS findings to develop national malaria SBC strategies and activities.
- **Framework** emphasizes evidence-based, strategic decision-making at each step.
- **Overview** of prioritizing behaviors and audiences, analyzing ideational and structural factors, selecting SBC approaches, developing channel mix plans, and defining the tone and framing of content.

Step 1	**Behavior** *Which specific behavior is the priority to address?*	**Behavior objective** *What is the expected change for the priority behavior?*
Step 2	**Primary audiences** *Who is the priority group to reach?*	**Influencing audiences** *Who influences the primary audience in practicing the desired behavior?*
Step 3	**Ideational factors** *Which ideational factors related to the selected behavior need improvement?*	**Intermediate objectives** *What is the expected change for the priority ideational factors?*
Step 4	**Structural factors** *Which structural factors are feasible for the SBC program to address?*	**Intermediate objectives (if applicable)** *What is the feasible change that the SBC program can expect?*
Step 5	**SBC approaches and activities** *Which activities will be most appropriate for this behavior and this audience to address the ideational and structural (if applicable) factors?*	
	Primary audience activities To address ideational factors:	**Influencing audience activities** To address ideational factors:
		Activities to address structural factors (if applicable):
Step 6	**Channel mix plan** (for communication-based approaches) *What is the optimal blend of channels to maximize reach and effectiveness of a communication-based intervention?*	
Step 7	**Content framing** *How will the content address the ideational factor(s) that were prioritized?*	**Content tone** *What style or emotion will be used in presenting the content?*

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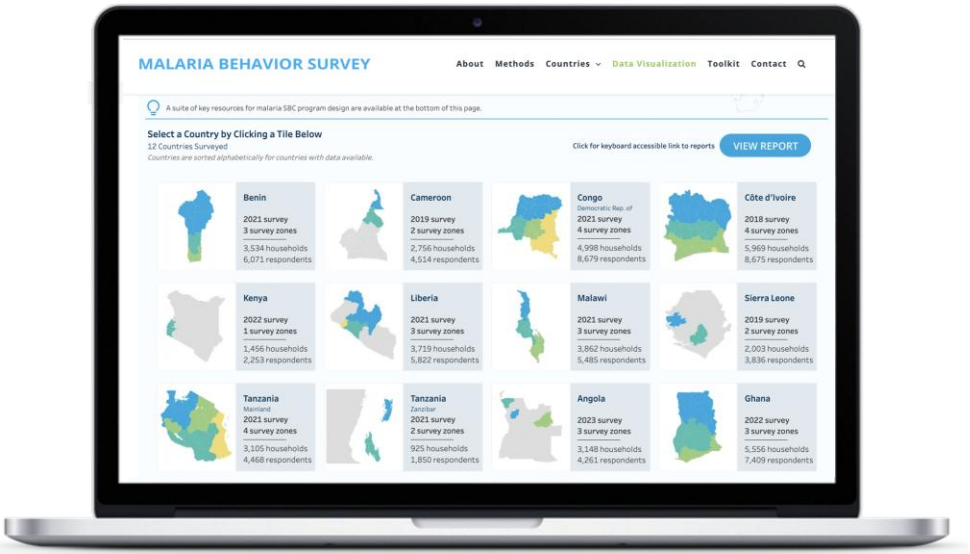
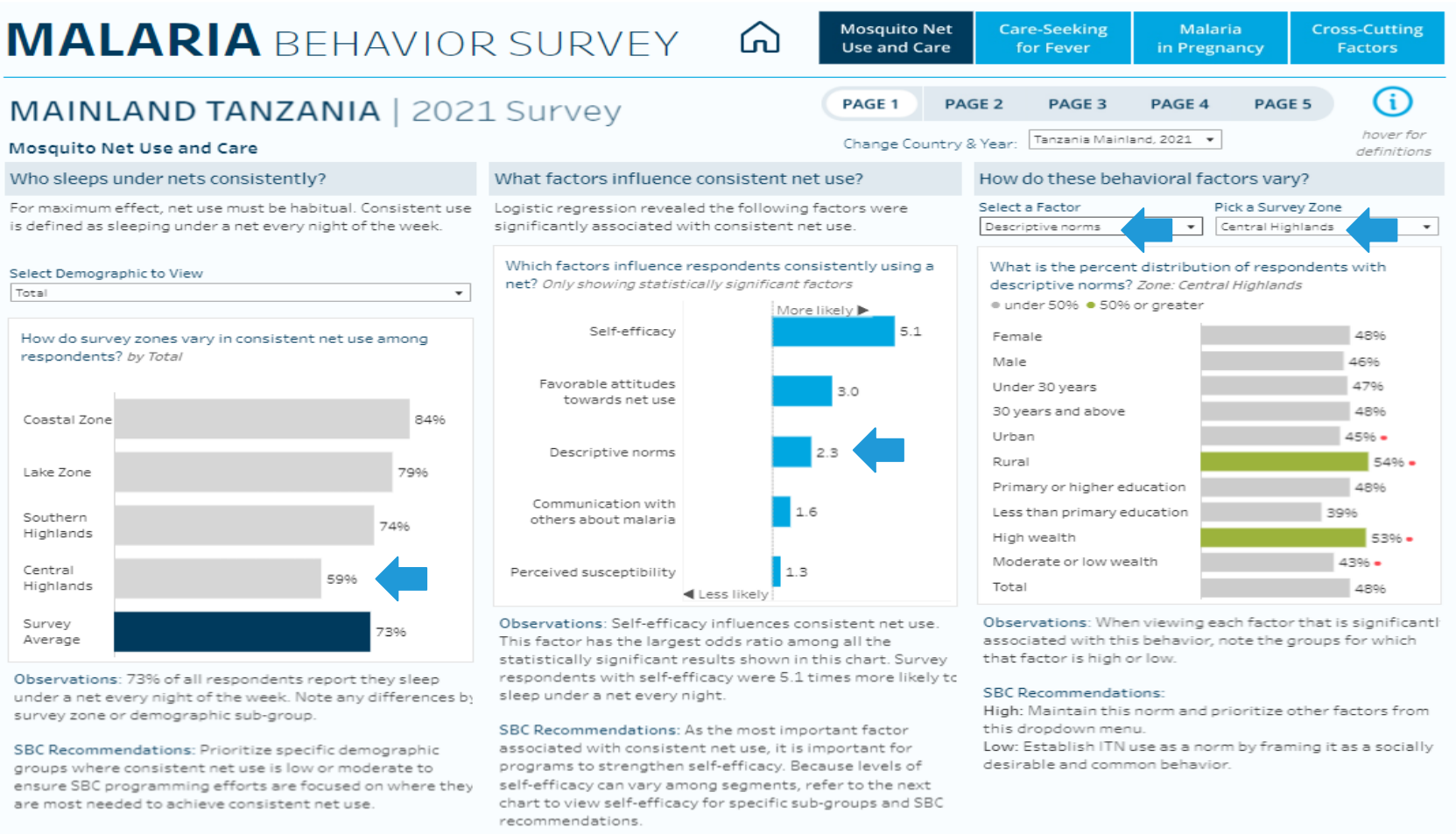
MBS Dashboard



MalariaBehaviourSurvey.org/Dashboard

Designed for mobile and desktop

MBS Dashboard



Impact of the MBS

Translating Data into Practice: A Global Snapshot

National Malaria Strategic Plans and SBC Strategies	Midterm Review of National Strategic Plans	Global Fund Malaria SBC Funding Requests (NFM 4)
Côte d'Ivoire Cameroon DRC (both) Malawi Sierra Leone Zanzibar (both) Kenya (both) Liberia Zambia (upcoming)	Tanzania: Led to activity prioritization and implementation adjustments	Côte d'Ivoire Cameroon DRC Malawi Sierra Leone Liberia Kenya Tanzania Benin

Data Use Case Study: Malawi
National Strategic Guidance Informed by the MBS

	MBS Informed:	Outcome:
National Malaria SBC Strategy	Review of the retired strategy alongside MBS, MIS, and district-level data; identified technical, systemic, and programmatic gaps in malaria.	Updated strategy prioritized key thematic areas for improvement and corresponding behavioral and intermediate objectives to guide country programs.
Malaria Message Guide	Stakeholder workshop that identified priority audiences and tailored content around the behavioral determinants and key thematic area based on the National SBC Strategy.	Message Guide served as a reference framework for development and production of SBC activities across all malaria technical areas, including mass media.
National Research Agenda	Consultative meetings with stakeholders and secondary analysis of MBS, MIS, MCIS data.	Research Agenda provided guidance for decision-making to maximize impact and programmatic investments.
National SBC M&E System	In-depth situational analysis of M&E and SBC programming in Malawi, including reviewing data from the MBS and MIS.	Recommendations helped establish an M&E system that facilitated access to SBC data to better inform decisions among stakeholders across all malaria technical areas.

Data Use Case Study: Malawi
Malaria Interventions

National Moyo ndi Mpamba" ("Life is Precious") Campaign

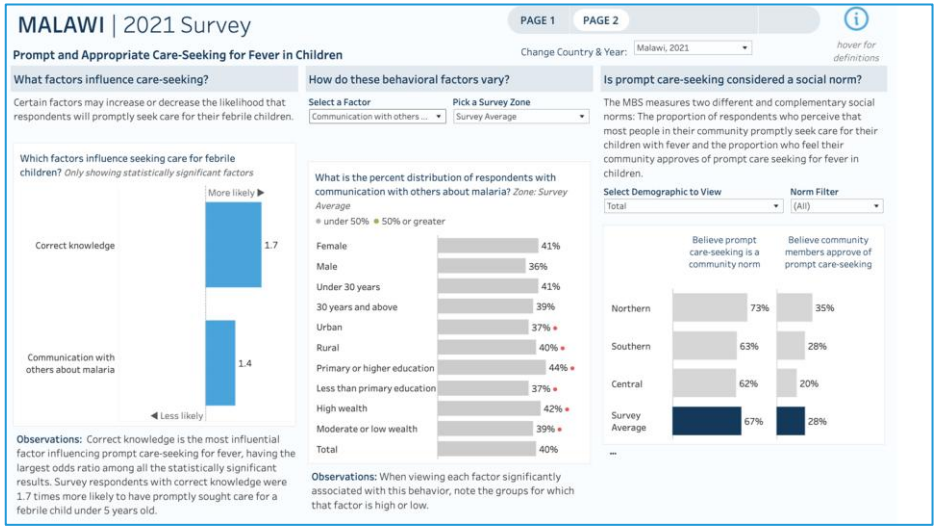
- Goal: Generate demand for malaria services, increase community ownership about malaria prevention, and increase priority malaria and family health behaviors that intersect with malaria services.
- Prioritized behaviors, communication objectives, and campaign materials were developed or updated using insights from the MBS and MIS.

Community Action Cycle

- The MBS results were used to inform training for community structures to develop community-led solutions through annual action plans focused on malaria-related behaviors.
- 1,094 CHAG members, 45 education officers, and 50 youth and women faith leaders were trained.
- Community Health Action Groups reached 60,344 people with malaria messages through community meetings, home visits, and events.

Data Use Case Study: Malawi
MBS Dashboard Used by Local NGOs and NMCP

Multiple meetings with stakeholders to walk through MBS results using the data visualizations and disaggregate filters on the MBS Dashboard



- National partners: NMCP, HES, Health Promotion Technical Working Group
- USAID Implementing partners: Momentum 1 & 2 (supporting iCCM, ICMI), Akhule ndi thanzi (child health), TOME (malaria service delivery)
- District partners: District Health Promotion Officers

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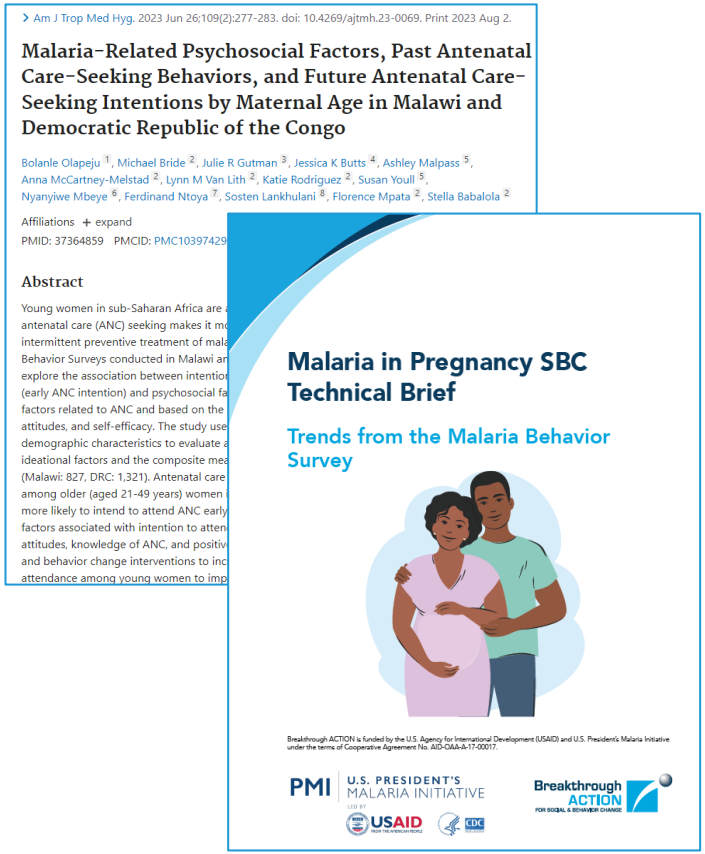
Data Use Case Study: Malawi
Additional Analyses

- Manuscript on ANC among younger vs older women in Malawi and DRC
- Conferences abstracts
- Malaria in Pregnancy SBC Technical Brief: Trends from the Malaria Behavior Survey (multi-country)
- Poster presentation triangulating durability monitoring and MBS data on net care behaviors and attitudes (PMI Malawi and PMI Evolve)
- Data integration of outdoor/indoor human nighttime behavior with entomological surveillance data (with PMI Evolve)



Am J Trop Med Hyg. 2023 Jun 26;109(2):277-283. doi: 10.4269/ajtmh.23-0069. Print 2023 Aug 2.

Malaria-Related Psychosocial Factors, Past Antenatal Care-Seeking Behaviors, and Future Antenatal Care-Seeking Intentions by Maternal Age in Malawi and Democratic Republic of the Congo

Bolanle Olapeju [1], Michael Bride [2], Julie R Gutman [3], Jessica K Butts [4], Ashley Malpass [5], Anna McCartney-Melstad [2], Lynn M Van Lith [2], Katie Rodriguez [2], Susan Youll [5], Nyanyiwe Mbeye [6], Ferdinand Ntoya [7], Sosten Lankhulani [8], Florence Mpata [2], Stella Babalola [2]

Affiliations + expand

PMID: 37364859 PMCID: PMC10397429

Abstract

Young women in sub-Saharan Africa are
antenatal care (ANC) seeking makes it m
intermittent preventive treatment of mal
Behavior Surveys conducted in Malawi ar
explore the association between intentio
(early ANC intention) and psychosocial fa
factors related to ANC and based on the
attitudes, and self-efficacy. The study use
demographic characteristics to evaluate a
ideational factors and the composite mea
(Malawi: 827, DRC: 1,321). Antenatal care
among older (aged 21-49 years) women
more likely to intend to attend ANC early
factors associated with intention to atten
attitudes, knowledge of ANC, and positiv
and behavior change interventions to inc
attendance among young women to imp

Malaria in Pregnancy SBC Technical Brief

Trends from the Malaria Behavior Survey

Breakthrough ACTION is funded by the U.S. Agency for International Development (USAID) and U.S. President's Malaria Initiative under the terms of Cooperative Agreement No. AID-OAA-A-17-00017.

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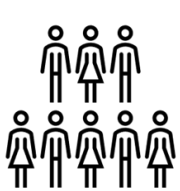
Data Use Case Study: Malawi
Human-Vector Behavior Data Integration

- **Activity**: Integrated MBS data with routinely collected entomological surveillance data to identify patterns of human exposure to malaria vectors and identify gaps in protection
- **Value Add:** MBS expands considerably the sample size of human behavioral data available for these analyses




Data Input:	Hourly nighttime indoor and outdoor human location estimates	Reported proportion of human population that used an ITN while asleep	Hourly nighttime indoor and outdoor human biting rates	Personal protection by ITN while in-use
Source:	Malaria Behavior Survey	Malaria Behavior Survey	Entomological Monitoring (HLCs)	Theoretical Maximum
Population:	Adults (aged 15-49) of participating HHs who stayed in the house the night prior to survey and responded to the individual questionnaire	Adults and children of participating HHs who stayed in house the night prior to survey	HLC data collectors	N/A
Timing:	May - July 2021	May - July 2021	June 2021	N/A

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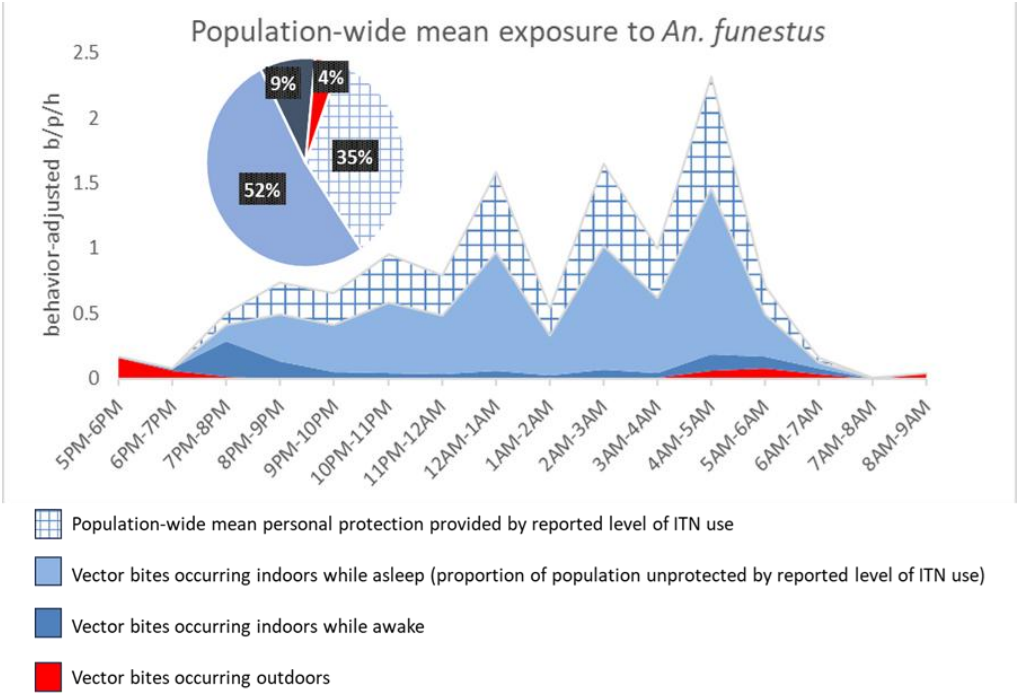
Data Use Case Study: Malawi
Human-Vector Behavior Data Integration

- Results helped characterize where and when human exposure to malaria vectors was happening
- Further information – ITN use, access, and durability - contextualized results to identify programmatic recommendations to close gaps in protection
- Manuscript in progress



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