



**malaria  
consortium**  
*disease control, better health*

# Factors associated with the use of insecticide-treated nets before and after mass distribution campaigns in Ondo and Anambra states, Nigeria

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8th MIM Society Conference, 21–27 April 2024

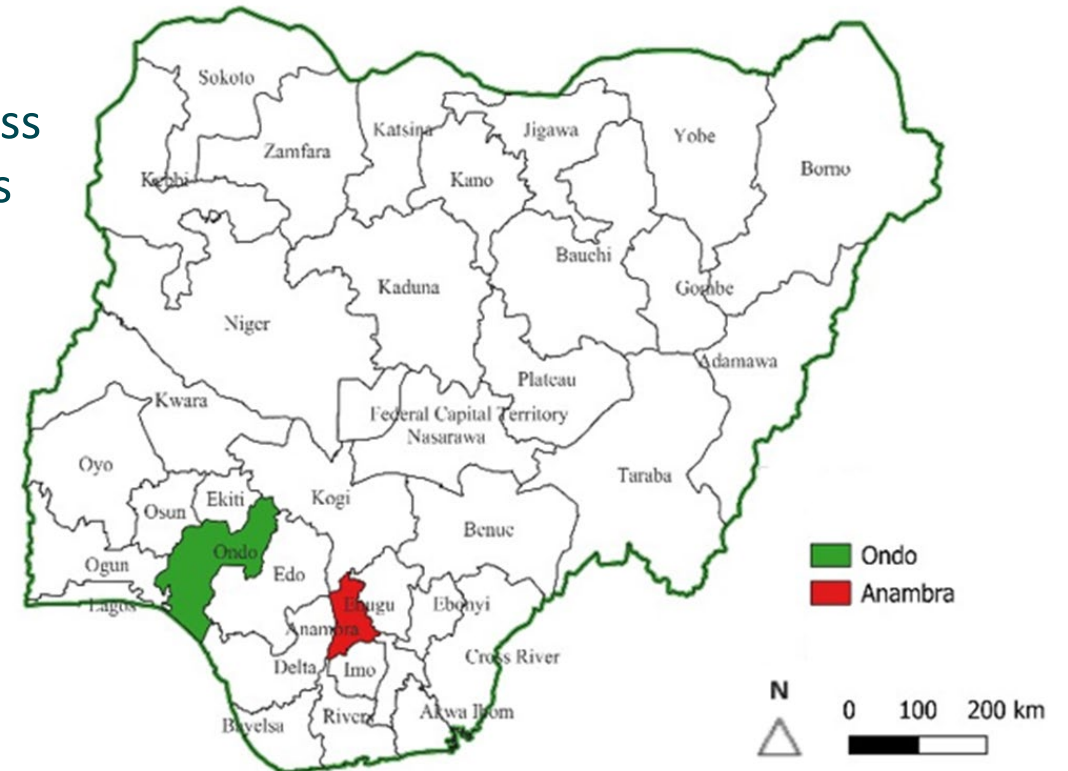
# Background

- Malaria cases have continued to increase in Nigeria, although the rate of increase appeared to slow during 2018–2022.
- In 2022, the estimated number of malaria cases in Nigeria exceeded 65m, accounting for more than a quarter of the total global number of cases (247m).\* Approximately 194,000 malaria-related deaths occurred.
- The risk of malaria transmission exists throughout Nigeria.
- Vector control through the use of insecticide-treated nets (ITNs) contributed substantially to the reduction of malaria in endemic African countries.

\*WHO: World Malaria Report 2023

# Objective

- Malaria Consortium, in collaboration with Nigeria's National Malaria Elimination Programme and State Malaria Elimination Programme, conducted ITN mass distribution campaigns in Ondo and Anambra states in December 2021 and August 2022, respectively.
- In Anambra and Ondo, the last campaigns were conducted in 2014 and 2017, respectively
- ITNs distributed were DuraNet Plus (alpha-cypermethrin + PBO)
- Nets were distributed using a single-phase door-to-door distribution strategy to prevent COVID-19 transmission.
- **Objective:** To explore factors associated with ITN use before and after mass distribution campaigns in both states.





# Methods

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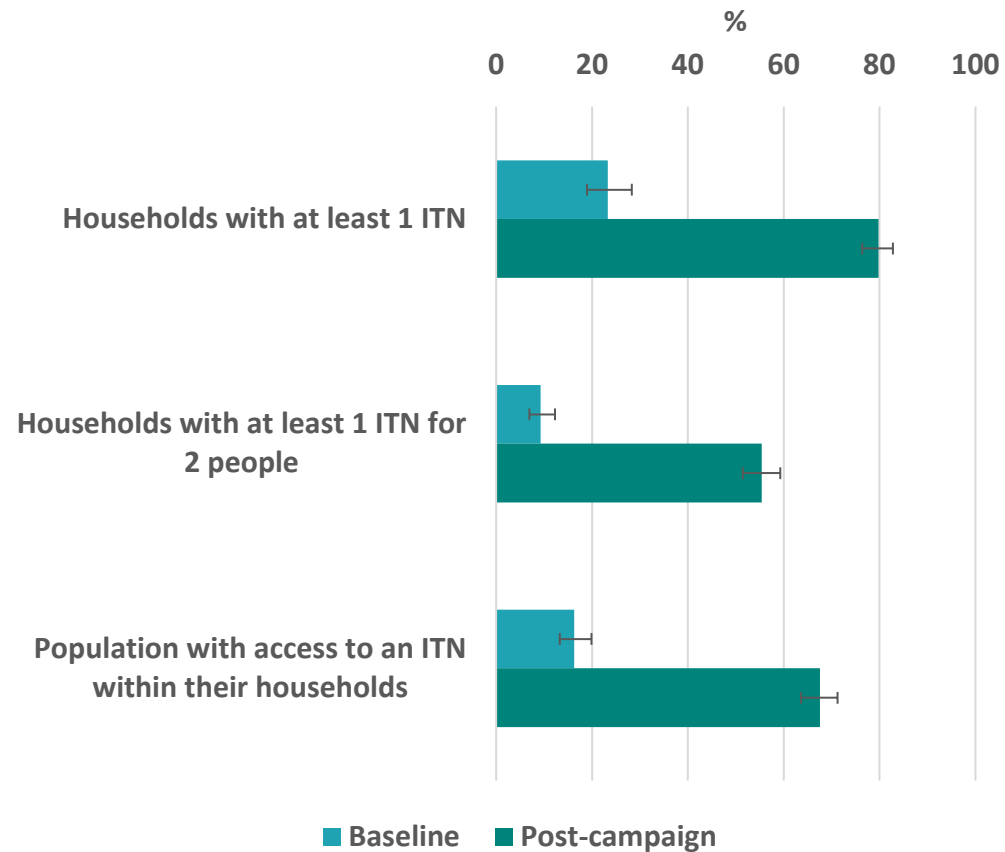
- A total of 2.97 and 3.85 million ITNs distributed in Ondo and Anambra, respectively.
- Used multi-stage stratified cluster sampling design to ensure samples were representative at:
  - state level
  - urban/rural residence
  - ecological zones (humid forest and derived savanna) in Ondo
  - areas with low and high security risk in Anambra
- 52 wards in Ondo and 48 wards in Anambra selected during baseline and post-campaign surveys
- One settlement selected in each sampled ward, followed by selection of 16 households using simple random sampling.
- Data gathered through interviews with household heads or adult members.



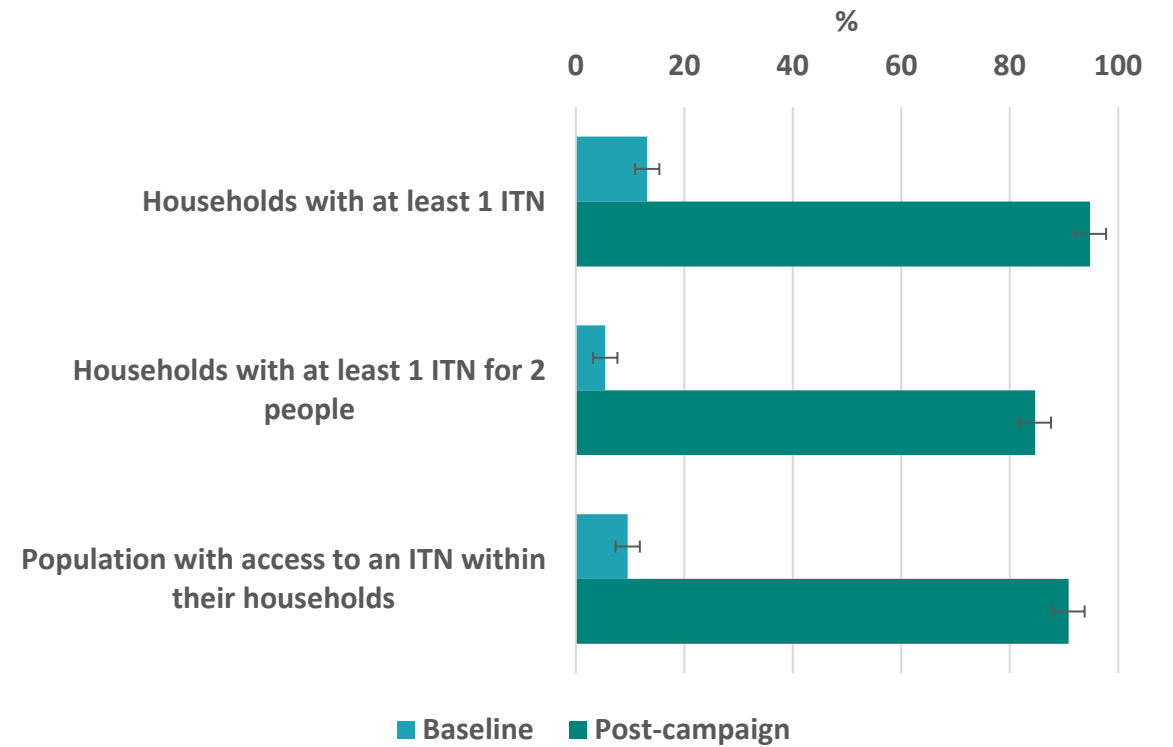
# Results

# Changes in ITN ownership

## Ondo



## Anambra



# Results: ITN use rates

## Ondo

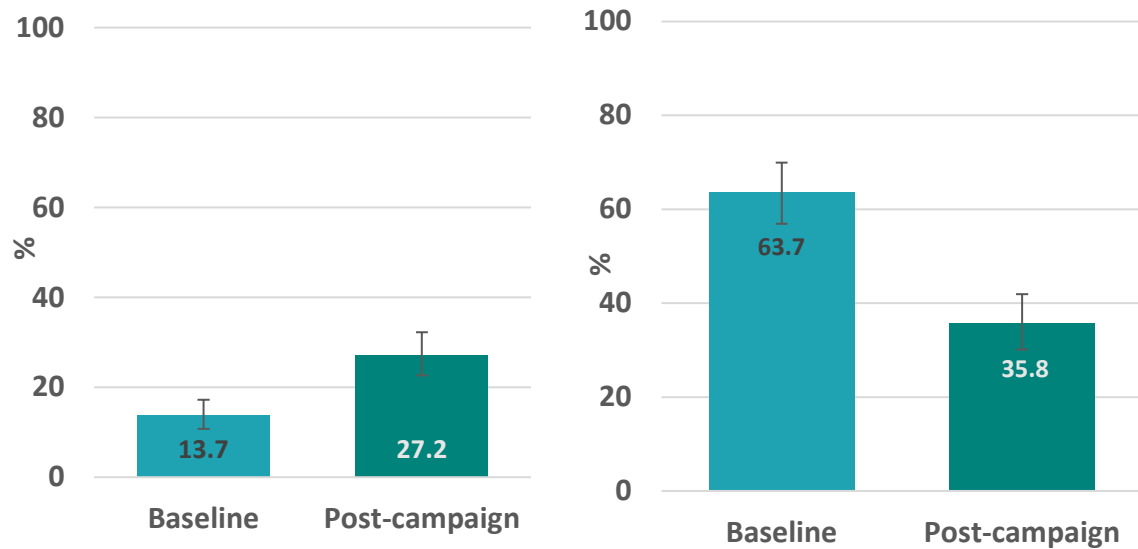


Figure 1. ITN use rates: (a) percentage of de facto population who slept under ITNs the previous night; (b) percentage of de facto population with access to an ITN within their households who slept under an ITN the previous night

## Anambra

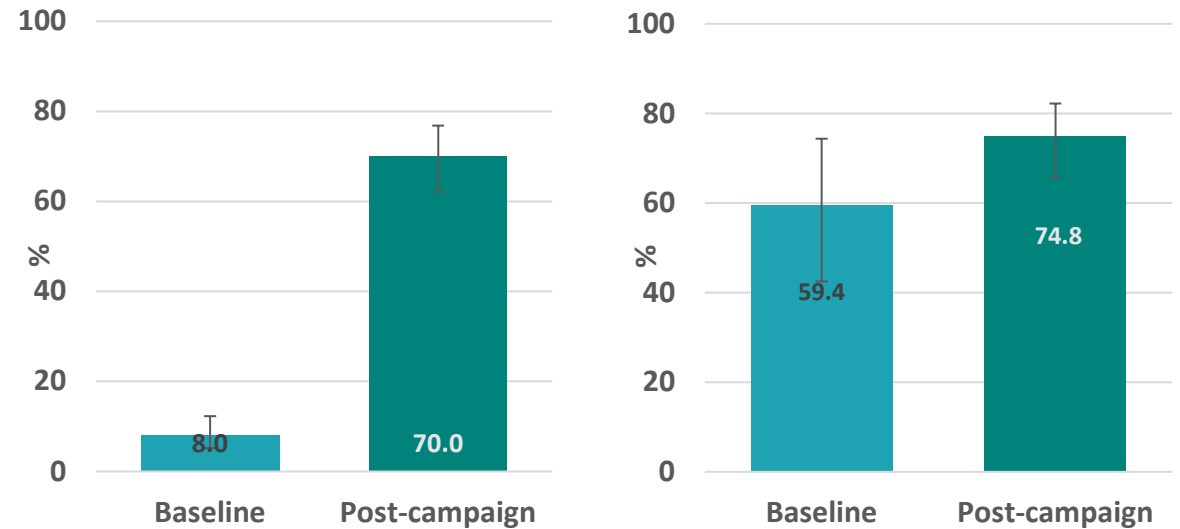


Figure 2. ITN use rates: (a) percentage of de facto population who slept under ITNs the previous night; (b) percentage of de facto population with access to an ITN within their households who slept under an ITN the previous night

# Use of existing ITNs

## Ondo

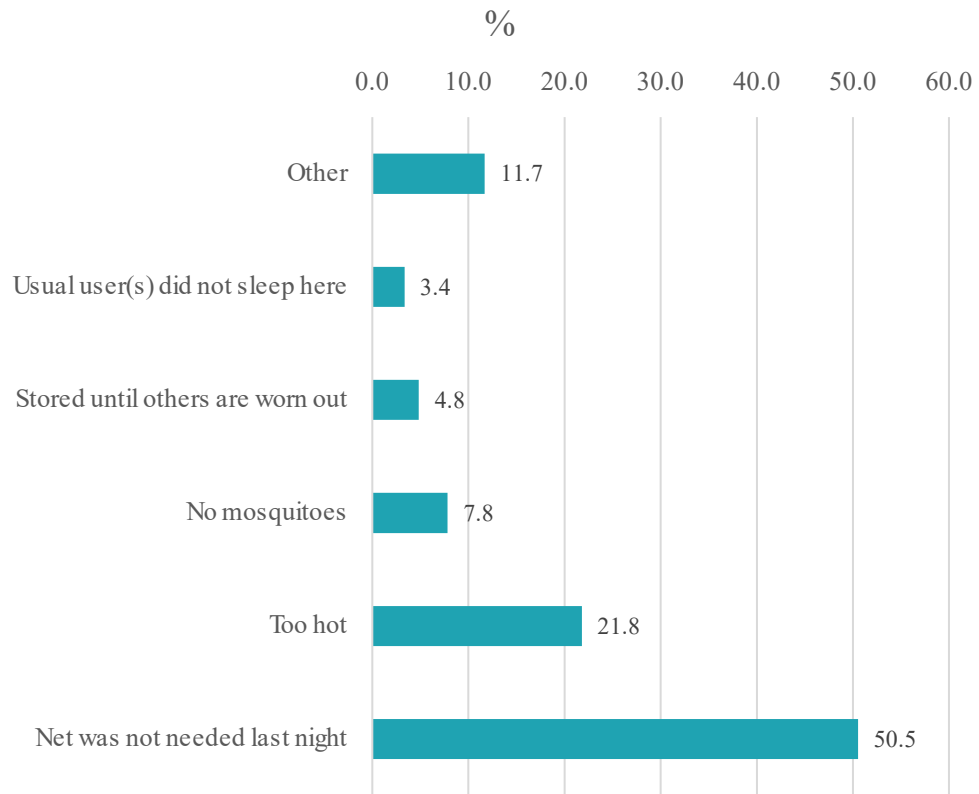
- Percentage of existing ITNs that were slept under:
  - Baseline: 78.4%
  - Post-campaign: 32.3%
- Significantly more existing ITNs were used in the forest zone (39.9%) than in the savanna zone (24.5%) during the post-campaign survey ( $p=0.002$ ).

## Anambra

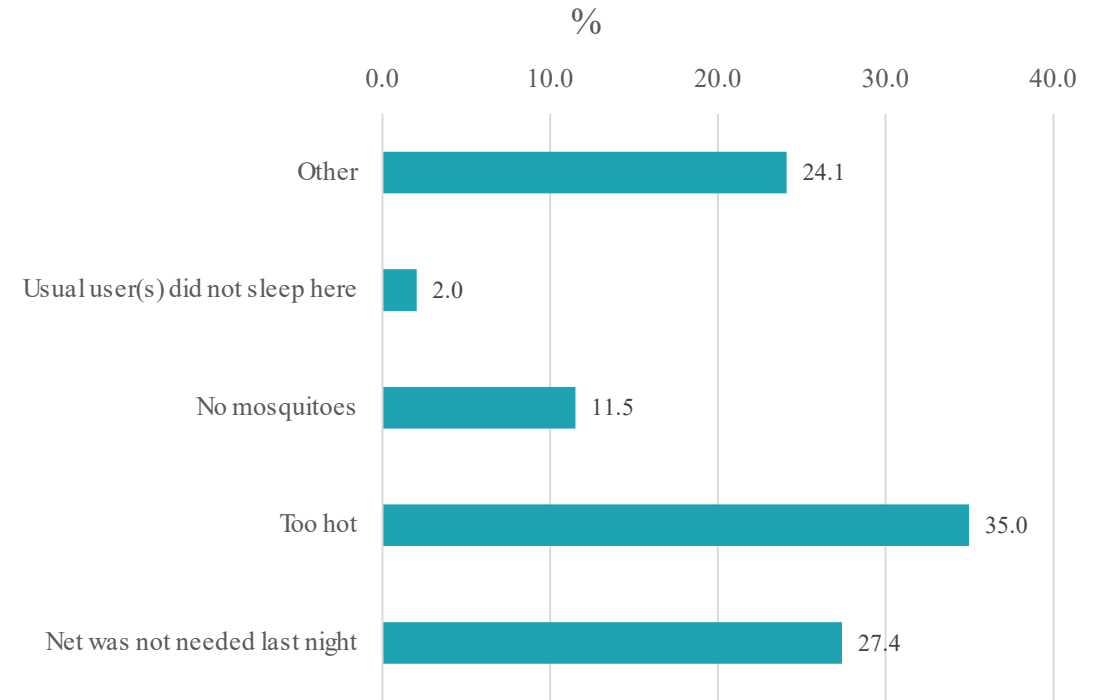
- Percentage of existing ITNs that were slept under:
  - Baseline: 79.9%
  - Post-campaign: 74.7%
- Significantly more existing ITNs were used in the high-risk areas (83.4%) than in the low-risk areas (49.3%) during the post-campaign survey ( $p<0.001$ ).

# Reasons why available nets were not used

## Ondo



## Anambra



# Factors associated with ITN use

Ondo ITN use rates		
	Baseline (December 2021)	Post-campaign (April 2022)
<b>Age</b>		
<5	19.4	30.9
5-9	11.7	24.8
10-14	12.5	31.1
15+	13.3	26.0
	(p=0.018)	(p=0.137)
<b>Sex</b>		
Male	13.4	26.8
Female	14.0	27.5
	(p=0.584)	(p=0.733)
<b>Residence</b>		
Rural	15.0	27.2
Urban	13.0	27.2
	(p=0.539)	(p=0.994)
<b>Ecological zone</b>		
Savanna	14.5	21.7
Forest	13.0	33.1
	(p=0.634)	(p=0.019)
<b>Wealth quintile</b>		
Lowest	15.6	37.7
Second	10.8	25.9
Middle	12.3	24.8
Fourth	11.8	20.5
Highest	17.3	28.8
	(p=0.380)	(p=0.132)

Anambra ITN use rates		
	Baseline (August 2022)	Post-campaign (November 2022)
<b>Age</b>		
<5	10.4	70.2
5-9	9.7	66.6
10-14	8.0	65.3
15+	7.4	71.1
	(p=0.423)	(p=0.485)
<b>Sex</b>		
Male	7.6	68.1
Female	8.4	72.0
	(p=0.514)	(p=0.034)
<b>Residence</b>		
Rural	16.2	66.1
Urban	6.3	70.8
	(p=0.007)	(p=0.386)
<b>Risk</b>		
Low	11.7	45.9
High	6.5	79.6
	(p=0.119)	(p=0.000)
<b>Wealth quintile</b>		
Lowest	6.3	75.8
Second	8.2	55.3
Middle	6.3	62.0
Fourth	9.6	77.9
Highest	10.3	78.2
	(p=0.710)	(p=0.030)

# Conclusion

- Important determinants of ITN use included feeling hot, climate, perception of mosquito abundance, socio-economic status (SES) and gender.
- Some differences were observed between states: in Ondo, climate was an important determinant of use and in Anambra, SES and gender were important factors.
- Variations in the use of available nets during surveys conducted at different times of the year indicated the potential effects of factors associated with different seasons, which need to be investigated.

# Author acknowledgements

Saliu Ogunmola,<sup>1\*</sup> Azuka Iwegbu,<sup>1</sup> Julianna Smith,<sup>2</sup> Abiola Oluwagbemiga,<sup>1</sup>  
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# Acknowledgements



**NATIONAL MALARIA  
ELIMINATION PROGRAMME**  
*Federal Ministry of Health, Abuja*



**Ondo State**  
ISÉ LOOGÜN ISÉ  
**Ministry of Health**

Both the campaign and the M&E research were funded by Open Philanthropy based on GiveWell's recommendation.

# About Malaria Consortium

Malaria Consortium is one of the world's leading specialist non-profit organisations. Our mission is to save lives and improve health in Africa and Asia, through evidence-based programmes that combat targeted diseases and promote universal health coverage.

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**Thank you**

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