

Increasing vaccination coverage with preventive small-quantity lipid-based nutrient supplements in children aged 6–23 months: the NutriVax cluster randomised controlled trial in Nigeria



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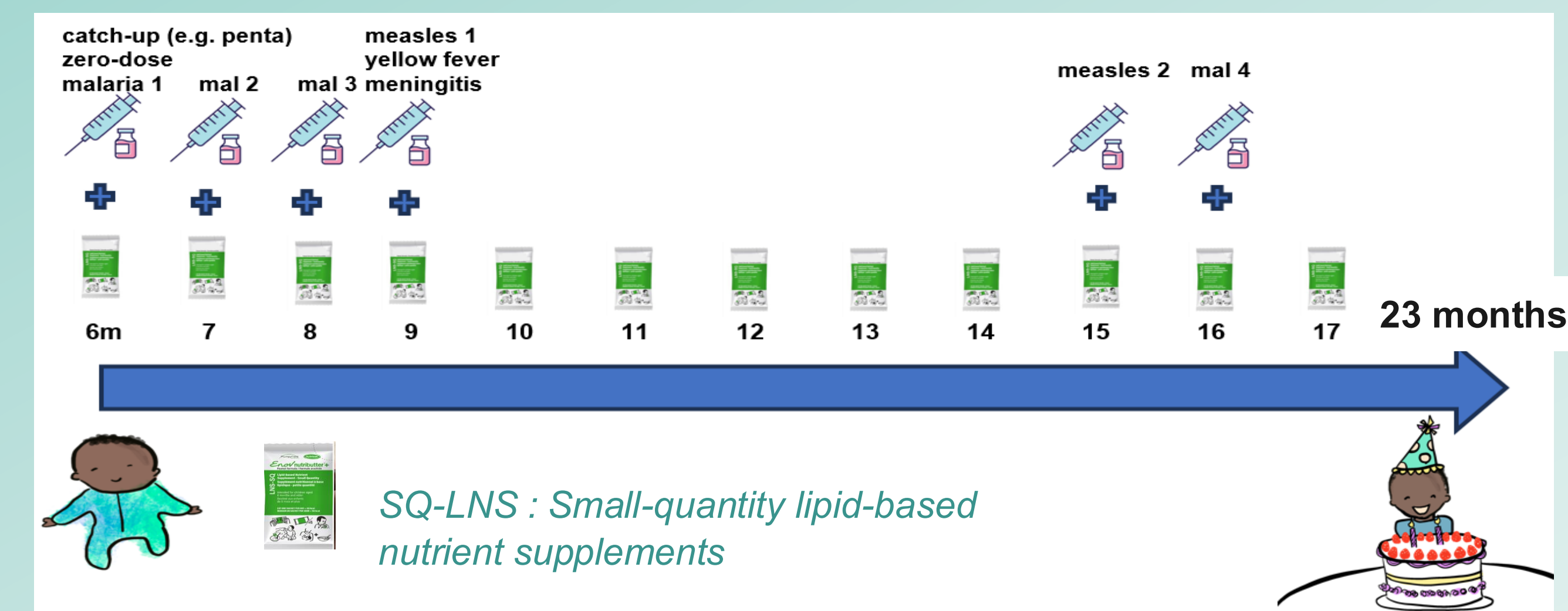
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Background and Methods

Undernutrition and infectious diseases pose a **double threat to child survival** especially in areas like Yobe State, northern Nigeria where there is a **high malnutrition burden** (14% global acute malnutrition) and **low vaccination coverage** (29.9% card-verified measles-containing-vaccine (MCV1)).

The NutriVax Hypothesis

SQ-LNS distributed alongside routine immunisation at health centres in children aged 6-23 months could serve as **an incentive** for caregivers to seek immunisation services, thereby vaccines uptake.



Objective

Evaluate whether the NutriVax approach improves **measles 1 vaccine coverage (primary outcome)** in the community compared to routine immunisation alone.

Methods

- ✓ A pragmatic, superiority, two-arm, parallel, **cluster-randomised**, controlled trial
- ✓ **20 clusters** publicly **randomised** (1:1) to NutriVax or control arms
- ✓ **Baseline and endline** cross-sectional **household immunisation coverage survey** in children 12-23 months
- ✓ Cluster-level **mixed-effect logistic** regression models
- ✓ **Difference-in-differences (DiD)** analyses
- ✓ Intention-to-treat approach.

Results

Table 1: Vaccination coverage at baseline (May 2024) and at endline (May 2025)

	Baseline N=1,597		Endline N=1,604	
	Control N = 796 ¹	NutriVax N = 801 ¹	Control N = 801 ¹	NutriVax N = 803 ¹
Measles 1 by card	238 (30%)	200 (25%)	330 (41%)	444 (55%)
Measles 1*	404 (51%)	399 (50%)	437 (55%)	550 (69%)
Zero-dose*	257 (32%)	279 (35%)	234 (29%)	151 (19%)
Zero-dose* and malnourished	62 (8%)	88 (11%)	51 (6%)	26 (3%)
SQ-LNS received	-	-	33 (4%)	386 (48%)

¹Data are n(%) * By card or maternal recall
Zero-dose: children who had not received any pentavalent vaccines according to WHO/GAVI definition.

Table 2: Cluster level analysis and DiD analysis of primary and secondary outcomes

	OR ¹	95% CI	DiD ³ (pp)	95% CI (pp)	p-value
Measles 1 by card	2.08²	(1.3–3.35)	+20.1	+13.7 to +26.5	< 0.0001
Measles 1*	1.93	(1.19–3.15)	+15.0	+8.3 to +22	< 0.0001
Zero-dose*	0.50	(0.31–0.83)	-12.4	-18.6 to -6.3	< 0.0001
Zero-dose* and malnourished	0.30	(0.13–0.72)	-4.5	-8.3 to -0.9	0.0176

¹ from mixed-effect logistic regression models ; ² adjusted on baseline coverage immunisation ; pp= percentage points
DiD pp = absolute difference in model-predicted probabilities × 100, with 95% CIs and p-values derived from parametric bootstrap.

The odds of receiving Measles dose1 vaccination two times higher in the NutriVax arm.

Translating to a **20-percentage point absolute increase** in measles vaccination coverage compared to control.



NutriVax also halved the risk of being zero-dose as well as a highly vulnerable subgroup of children simultaneously zero-dose and acutely malnourished.

Conclusion

The NutriVax strategy is a promising Immunisation-Nutrition-Integration strategy that should be considered for scale-up in contexts facing the dual burden of high malnutrition prevalence and low vaccination coverage.

Acknowledgements

We are indebted to the participants, the Nigerian MoH, the ALIMA operational team, the Eleanor Crook Foundation and Gavi, the vaccine alliance.

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