



Piloting Tom Brown, a locally produced supplementary food for the management of moderate acute malnutrition in Gombe state, Nigeria

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Background

- ~50,000 children in Gombe have MAM
- TSFP prevents deterioration to SAM → reduces morbidity & mortality
- Locally-produced treatment products can reduce cost, reduce supply chain issues and may be more acceptable and accessible



TFSP - Targeted Supplementary Feeding Programme
MAM - Moderate acute malnutrition
SAM - Severe acute malnutrition



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Background

Tom Brown

- Turns brown when cooked
- Cooked into porridge (*kunu*) with some sugar
- 876Kcal energy, 41g protein, 28g fat per day
- WHO nutrient recommendations¹:
 - ✓ Macronutrients
 - ✗ Micronutrients
- Part of cost transferred to caregiver → fuel & labour



900g
Sorghum



450g
Soybeans



150g
Peanuts

Dry roasted, milled, and blended

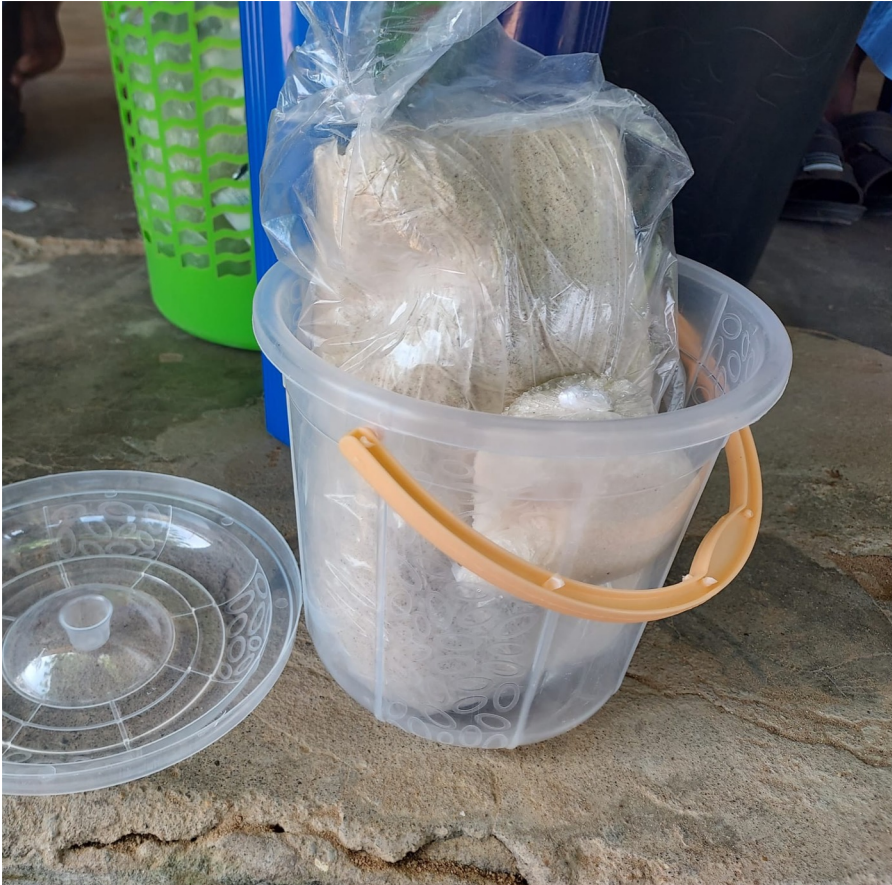


1500g
Tom Brown

¹World Health Organization. (2012). *Technical note: Supplementary foods for the management of moderate acute malnutrition in infants and children 6–59 months of age*. World Health Organization.



Objectives and Setting



- **Objectives**
 - Primary: Assess treatment outcomes, avg. length of stay & avg. weight gain
 - Secondary: Assess deterioration to SAM through readmission
- **Location:** OTP sites in 3 LGAs in Gombe state, Northeast Nigeria
- **Time period:** Oct 2022 to Dec 2023

OTP - Outpatient therapeutic program
LGA - Local government area



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Methods

- **Study design:** Retrospective data analysis of program data
- **Population:**
 - Children aged 6-59 months
 - Diagnosed with MAM (oedema absent; WHZ ≥ -3 and < -2 ; MUAC ≥ 11.5 and < 12.5 cm)
 - Enrolled for ≥ 14 days
- **Treatment:** Tom Brown 1.5 kg/week + 154g Sugar
- **Follow-up:** Weekly until exit from program

WHZ - Weight-for-Height Z-score
MUAC - Mid-upper arm circumference

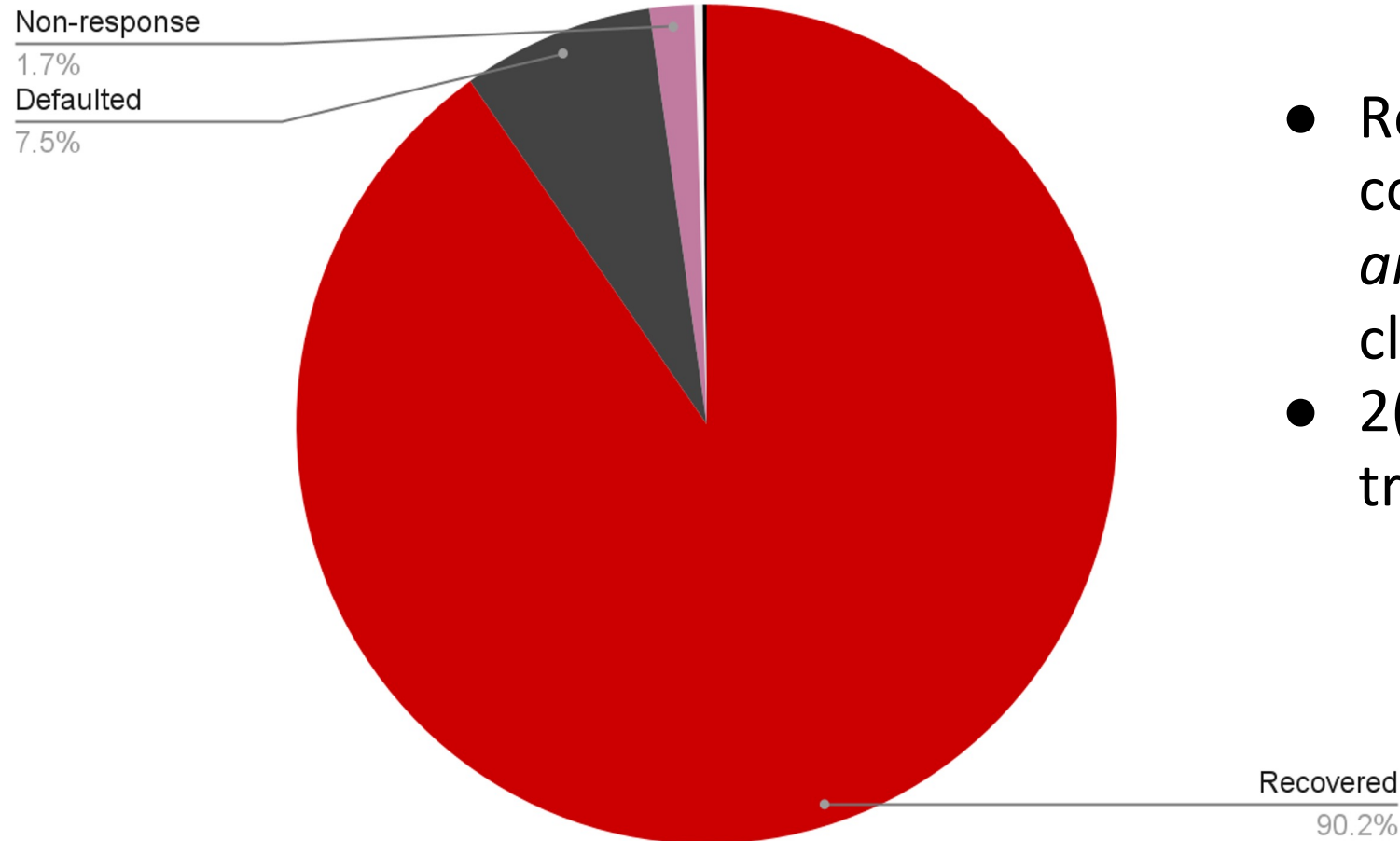


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Results: Treatment Outcomes

Treatment outcomes for children with MAM treated with Tom Brown (n=1207)



- Recovery defined as two consecutive visits with WHZ >-2 and MUAC >12.5 and no severe clinical complications
- 2 (<1%) children died and 4 (<1%) transferred out



Results: Length of Stay & Weight Gain

	Recovered from MAM	Deteriorated to SAM, later recovered (treated with Tom Brown, then switched to RUTF)	SAM at admission (Treated with RUTF)
Average length of stay Days (\pm SD)	36.3 (\pm 15.8)	54.8 (\pm 18.6)	51.2 (\pm 18.9)
Average weight gain g/kg/day (\pm SD)	4.21 (\pm 3.03)	5.79 (\pm 4.47)	7.60 (\pm 4.86)

RUTF - Ready-to-use therapeutic food

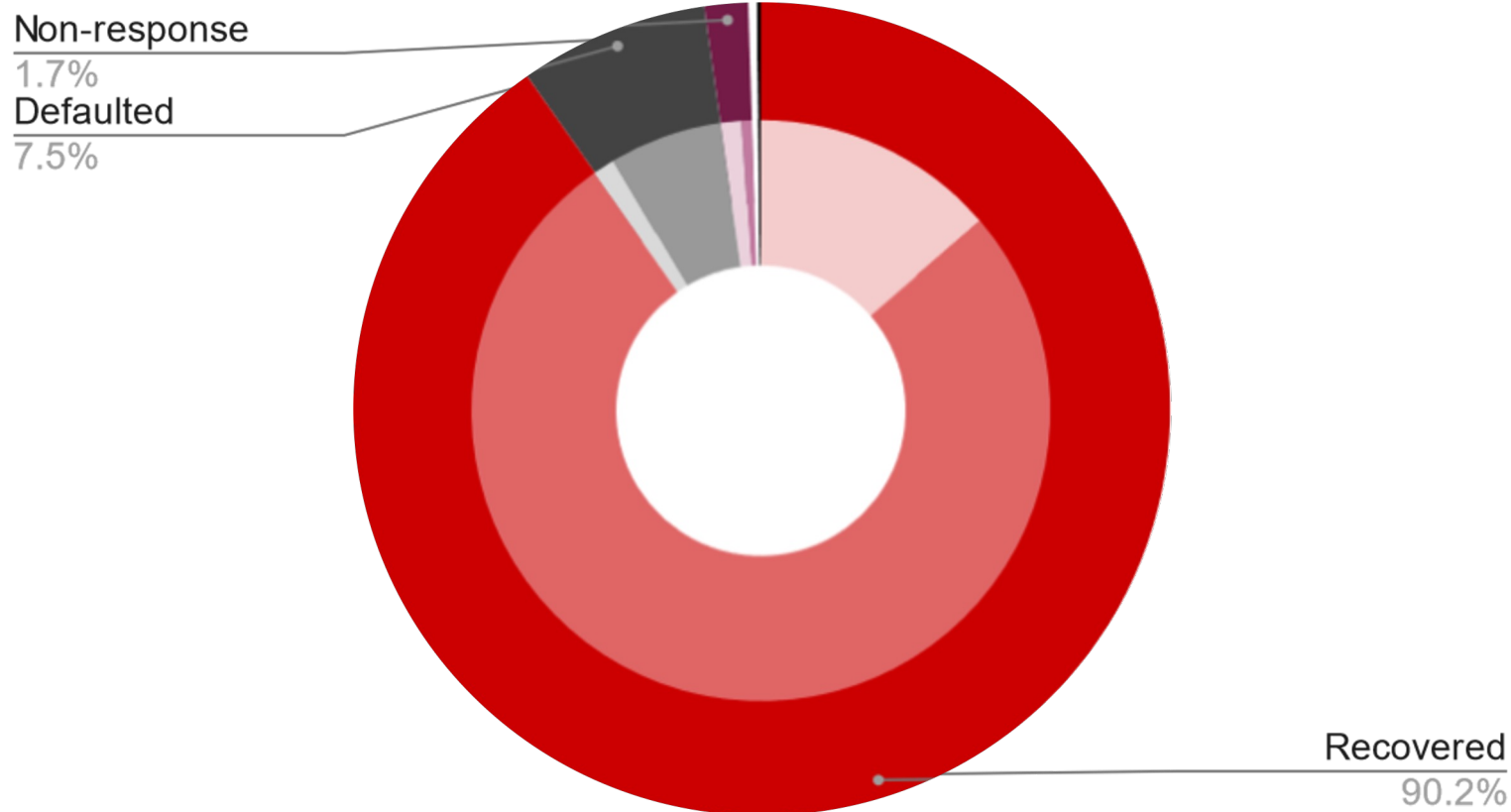


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Results: Deterioration to SAM

Deterioration to SAM by outcome group (n=1207)



16.3% (197/1207) of MAM cases deteriorated to SAM and were switched to RUTF

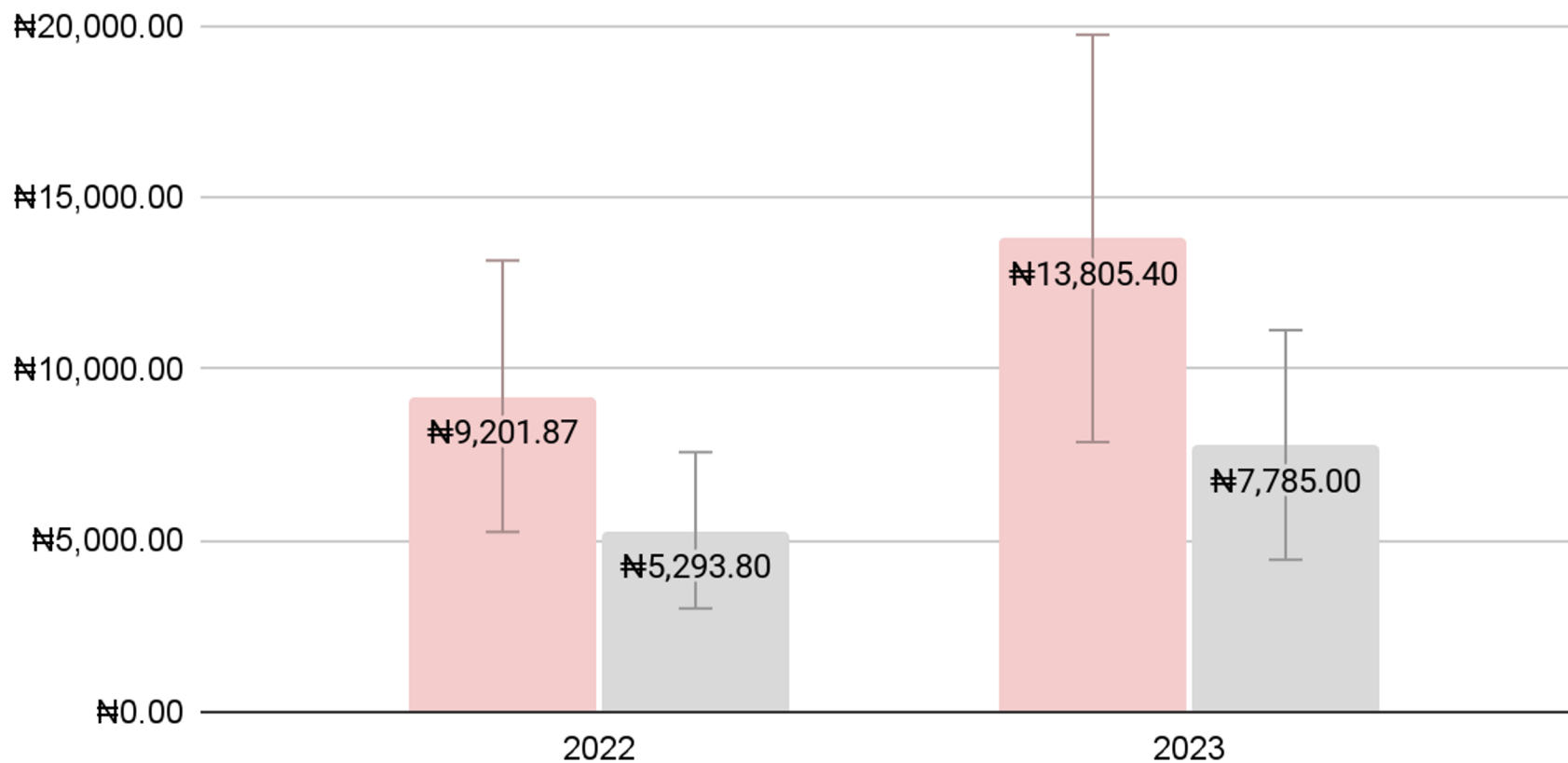
Deteriorated → Recovered	165
Deteriorated → Defaulted	15
Deteriorated → Nonresponse	14
Deteriorated → Died	2
Deteriorated → Transferred out	1



Results: Costs

Cost of low dose RUTF vs. Tom Brown in Gombe, Nigeria

■ 7 sachets RUTF weekly for 5.19(±2.23) weeks ■ 1.5 KG Tom Brown weekly for 5.19(±2.23) weeks



*Average LOS of among recovered MAM cases who did not deteriorate to SAM: 36.3(±15.8) days = 5.19(±2.23) weeks

LOS - Length of stay



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Discussion

- **Limitations**
 - Relapse not assessed
 - No comparison group
 - Data do not span a full year (paused in Apr-May 2023) + variation over time not assessed
- **Conclusions**
 - Acceptable recovery rate, low death rate, timely linkage to SAM Rx
 - Cheaper local ingredients → potential to reach more children at same \$
- **Future research:** Tom Brown vs. other product vs. combination with cash-based programming; explain and mitigate deterioration to SAM



Acknowledgement & Approvals

Acknowledgements: Many thanks to our facility staff and program officers for their work to implement the CMAM program and to our government partners for operational support, including clinic space.

Ethical statement: Exempt from IRB/ERB review as a retrospective analysis of routinely collected clinical data from an established program.

Treatment protocols and site operations were approved by:

- 2022: Gombe State Hospitals Services Management Board (GS/HSMB/OFF/32/V.1)
- 2023: Gombe State Primary Health Care Development Agency (MoU, 19/04/2023)

NB: OTP sites were co-located with HSMB facilities in 2022 and PHCDA facilities in 2023



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