Effectiveness of Integrated Maternal Nutrition Package on Birth Weight in Rwanda
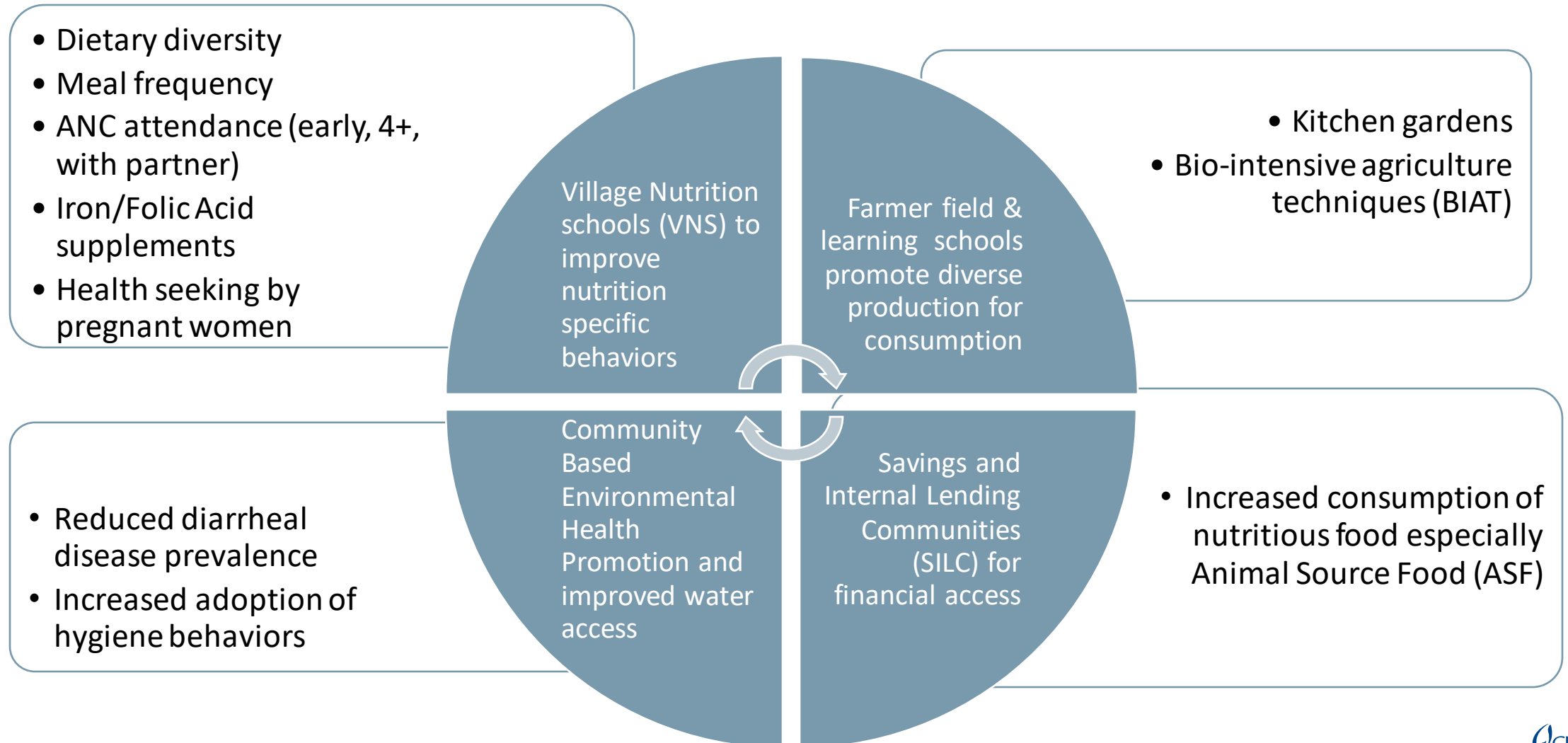
SBCC Summit

Marrakech, December 2022

Background

- Low Birth Weight (LBW) predicts neonatal and infant morbidity and mortality

- In Rwanda, 7% infants born LBW (RDHS 2019-20)

- Maternal malnutrition during pregnancy contributes to LBW

- Nutrition interventions focused on changing norms and behaviors during pregnancy can improve maternal nutrition and newborn birthweight

Gikuriro Project integrated package and targeted outcomes

- Dietary diversity
- Meal frequency
- ANC attendance (early, 4+, with partner)
- Iron/Folic Acid supplements
- Health seeking by pregnant women

- Reduced diarrheal disease prevalence
- Increased adoption of hygiene behaviors

Village Nutrition schools (VNS) to improve nutrition specific behaviors

Farmer field & learning schools promote diverse production for consumption

Community Based Environmental Health Promotion and improved water access

Savings and Internal Lending Communities (SILC) for financial access

- Kitchen gardens
- Bio-intensive agriculture techniques (BIAT)

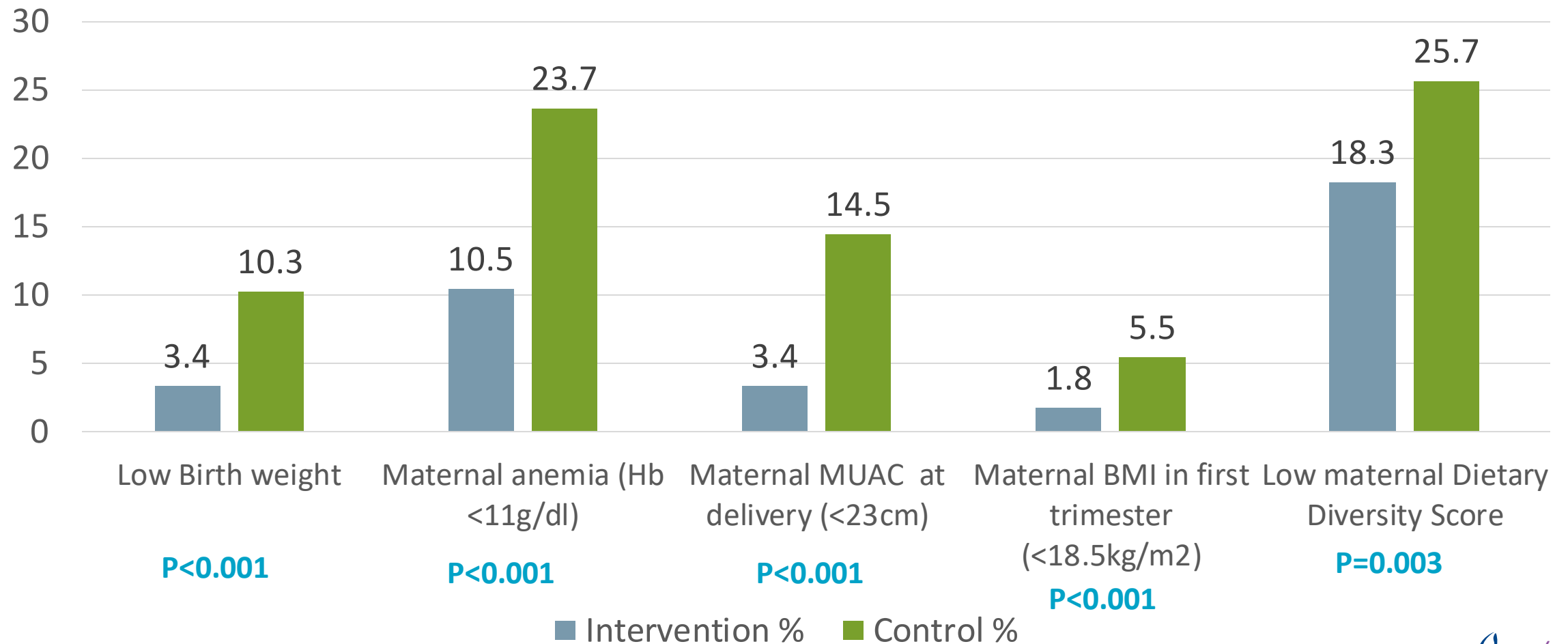- Increased consumption of nutritious food especially Animal Source Food (ASF)

Study : Materials and methods

- Post program **quasi experimental intervention-control** study: November 2020-June 2021

- Adapted structured questionnaire

- Measurements:
  - MUAC
  - BMI
  - Weight gain
  - Hemoglobin
  - Dietary Diversity Score (mothers)
  - Birth weight

- Participant written consent obtained

- IRB approval from the University of Rwanda

- Data analysis performed using SPSS 25 and Chi squared, T test and Multivariate logistic regression

- Publication: Habtu et al. 2022 : 10.1111/mcn.13367

Socio demographic, obstetric and lifestyle characteristics

- Mother-baby pairs:
  - Intervention: 551
  - Control: 545

- Intervention and control groups **comparable on basic socio demographic and obstetric characteristics**:
  - sex of the baby
  - maternal age
  - marital status
  - religion
  - education
  - occupation
  - family size
  - number of pregnancies
  - birth spacing

- **Significantly higher lifestyle risk characteristics** in the control group :
  - smoking during pregnancy (4.2% vs 1.1%; p=0.001)
  - passive smoking exposure during pregnancy (15.8% vs 7.6%; p<0.001)

# Results: Maternal Nutritional and Birth Weight Status by Study Group

Bar chart comparing Intervention % and Control % values:

| Indicator	Intervention %	Control %	P value
Low Birth weight	3.4	10.3	P<0.001
Maternal anemia (Hb <11g/dl)	10.5	23.7	P<0.001
Maternal MUAC at delivery (<23cm)	3.4	14.5	P<0.001
Maternal BMI in first trimester (<18.5kg/m2)	1.8	5.5	P<0.001
Low maternal Dietary Diversity Score	18.3	25.7	P=0.003

■ Intervention %   ■ Control %

Key outcomes

- **Significantly lower risk of low birth weight in newborns** in the intervention group (AOR = 0.23; 95%CI = 0.12– 0.43; p < 0.001).

- **Low birth weight prevalence 66.99%** lower in the intervention group

- Mean **birth weight 219g higher** in the intervention group

- **Improved maternal nutritional status** correlated with reduced low birth weight

Gikuriro endline evaluation results

Dietary diversity among women
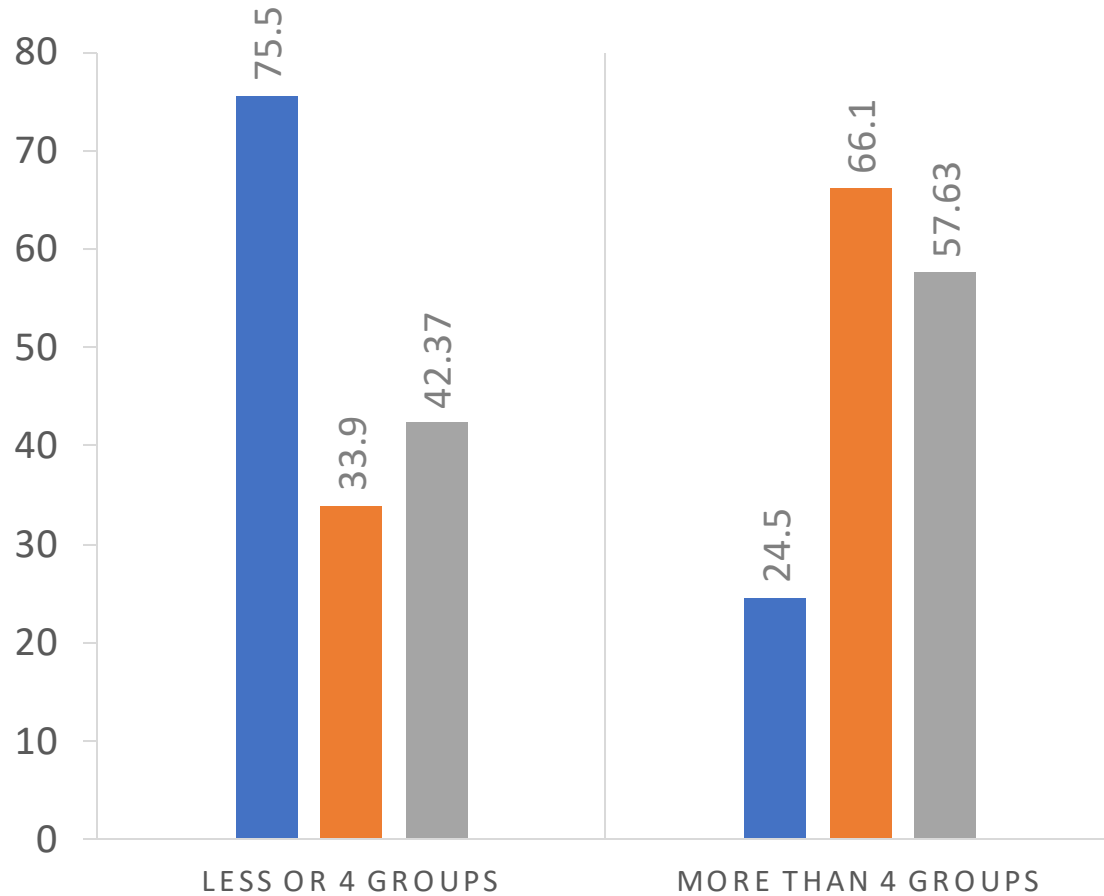
HH Food consumption score
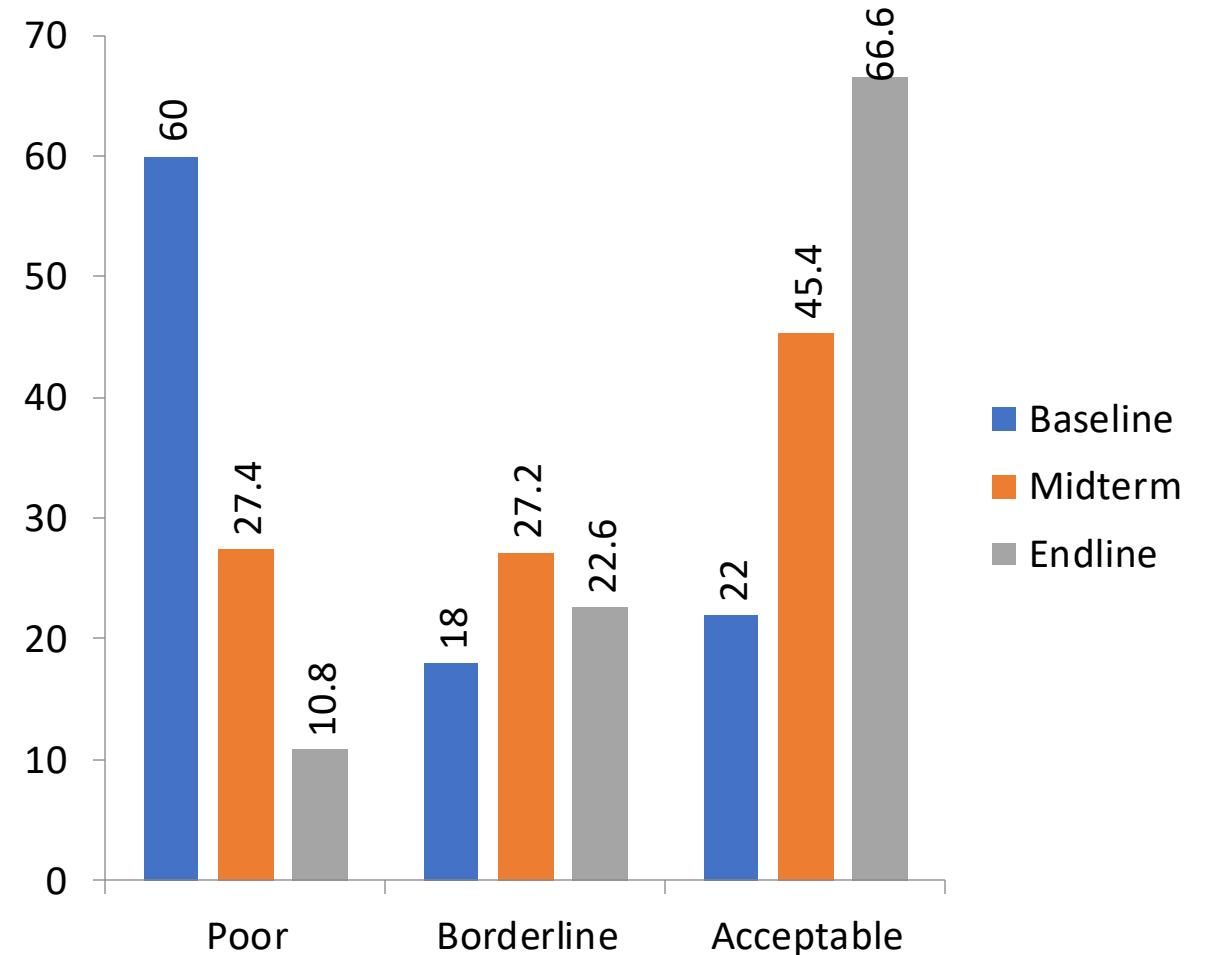
Factors contributing to success

- Integration : Health (ANC, PNC, supplement), nutrition specific and sensitive interventions reaching same program participants
- Evidence based interventions

Factors contributing to success

- Targeting behavior change and adoption of practices in all technical areas
- Multiple community volunteer cadres as agents of change
- Male involvement

Challenges

- It takes massive effort and time to move from knowledge to adoption of practices.

Murakoze ◊ Thank you Merci

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Access the full publication here: