



Association of double burden malnutrition with physical fitness among small holder farmers in Malawi and Kenya



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Background:

- In Malawi and Kenya, rural farmer households are affected by → **double burden of malnutrition** defined as (1):
- coexistence of undernutrition along with overweight and obesity, or diet-related noncommunicable diseases, within individuals, households and populations, and across the lifecycle;
- affects households predominantly in low- and middle-income countries, resulting in health consequences (2).

Objective:

To investigate whether double burden of malnutrition affects field work capacity of small holder farmers.

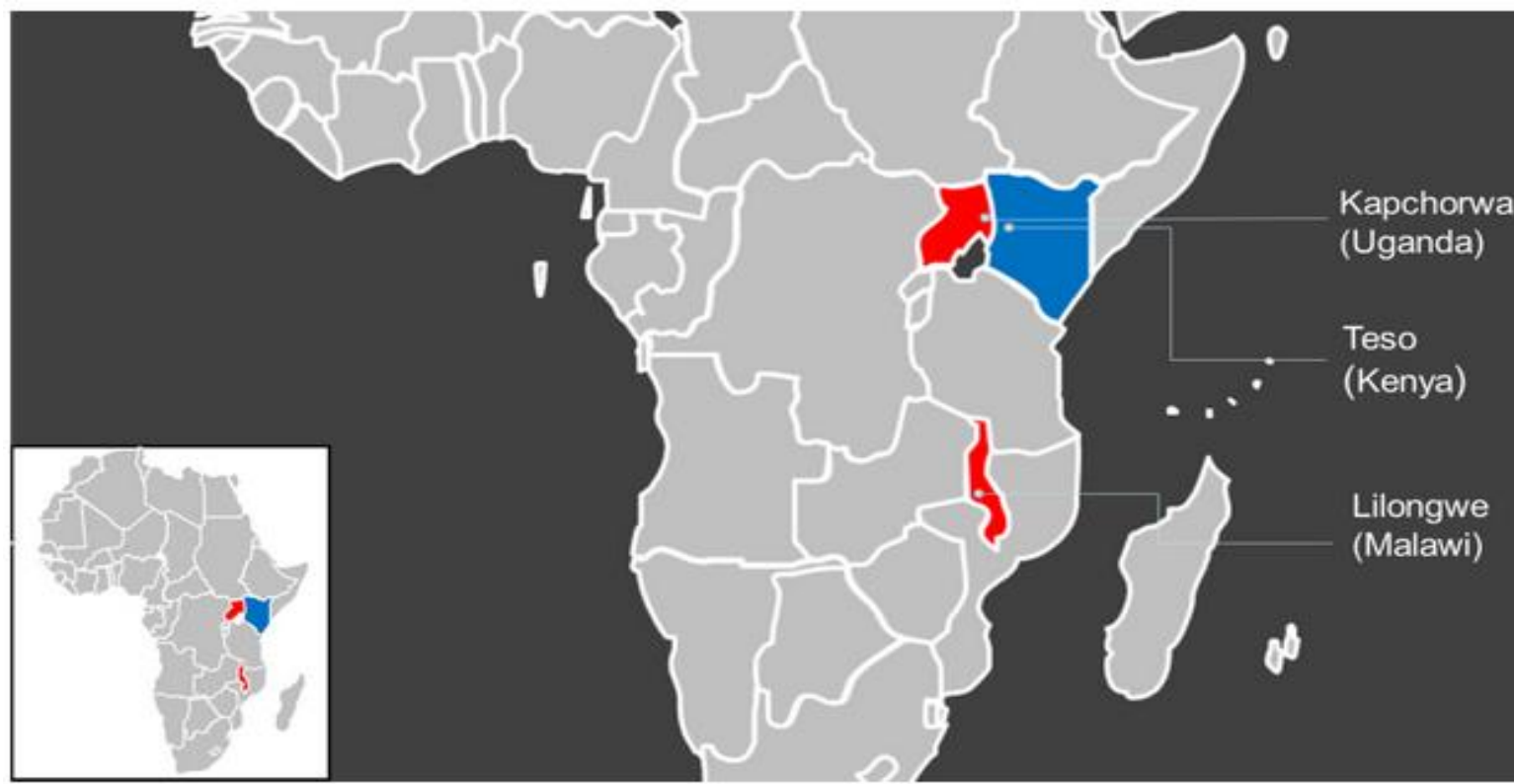


Fig. 1: The research area of the HealthyLAND project



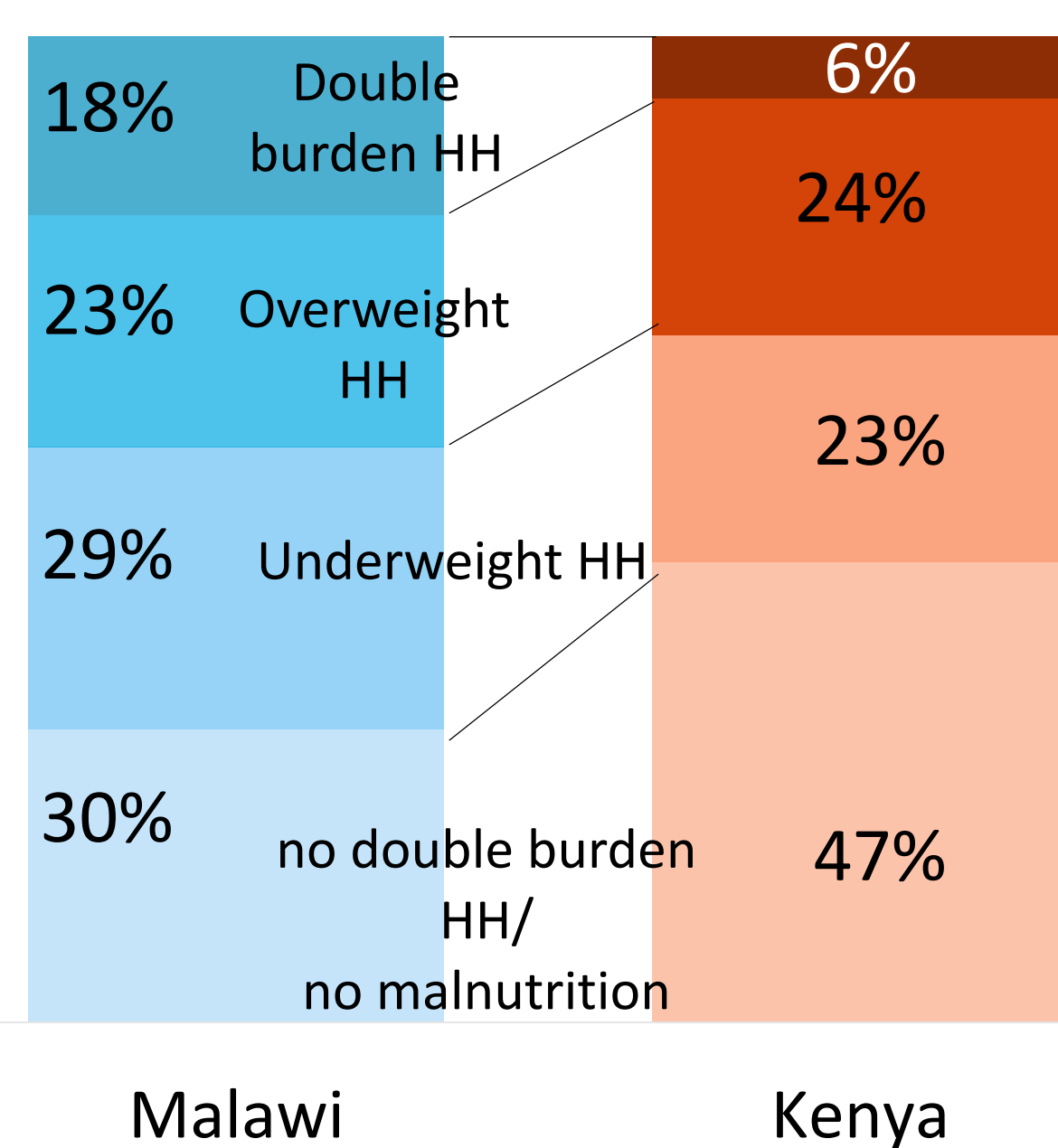
Fig. 2: Hand grip strength measurement

Methods:

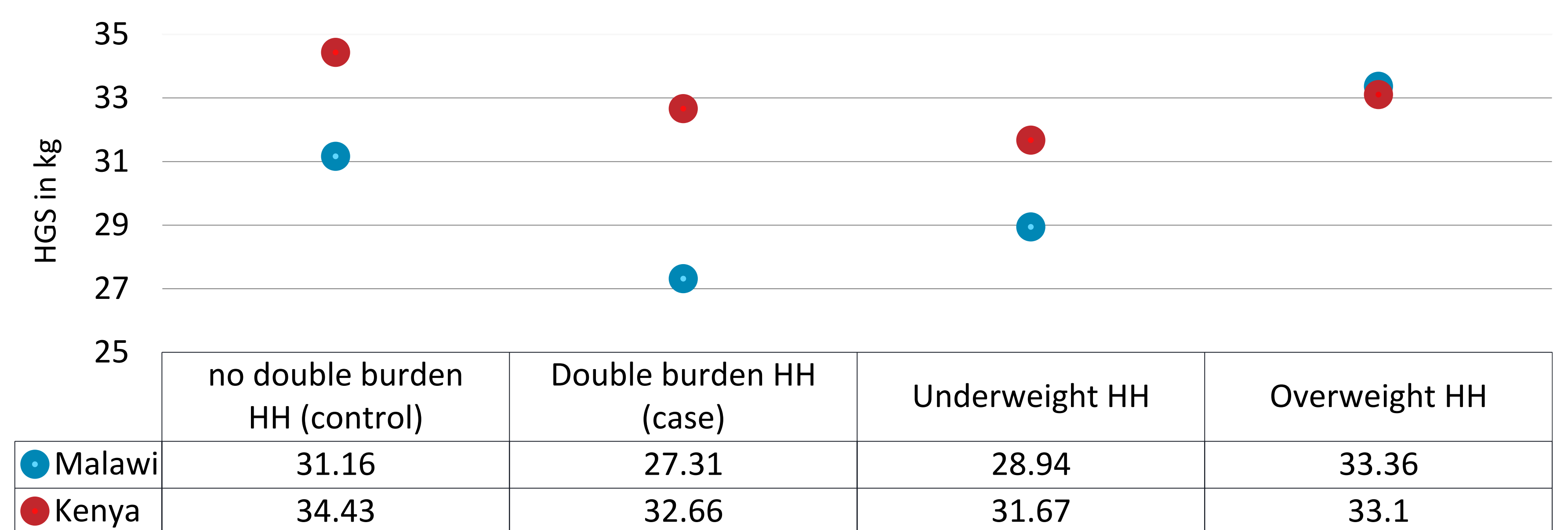
- 2017 Cross-sectional agriculture and nutrition survey
- Teso-South, Kenya (n= 257)**
- Lilongwe District, Malawi (n=293)** (Fig 1)
- Anthropometric measurements from mother-child pairs (Body Mass Index (BMI) and children's growth Z-scores, according to WHO standard)
 - to assess malnutrition and
 - to identify households (HH) affected by double burden of malnutrition
- Hand-grip-strengths (HGS) to assess physical fitness (Fig 2)
- Comparisons of HGS of mothers living in households affected by double burden with HGS of mothers of other households, i.e. no malnutrition and/ or single burden of malnutrition.

Results:

Prevalence of Malnutrition



Hand grip strength (HGS) of women (kg) per household (HH) group



MALAWI

- Body Mass Index BMI and HGS significantly correlated ($p < 0.05$)
- significant **differences** ($p < 0.001$) between the HGS in
 - **Double burden** households and overweight households
 - Underweight households and overweight households

KENYA

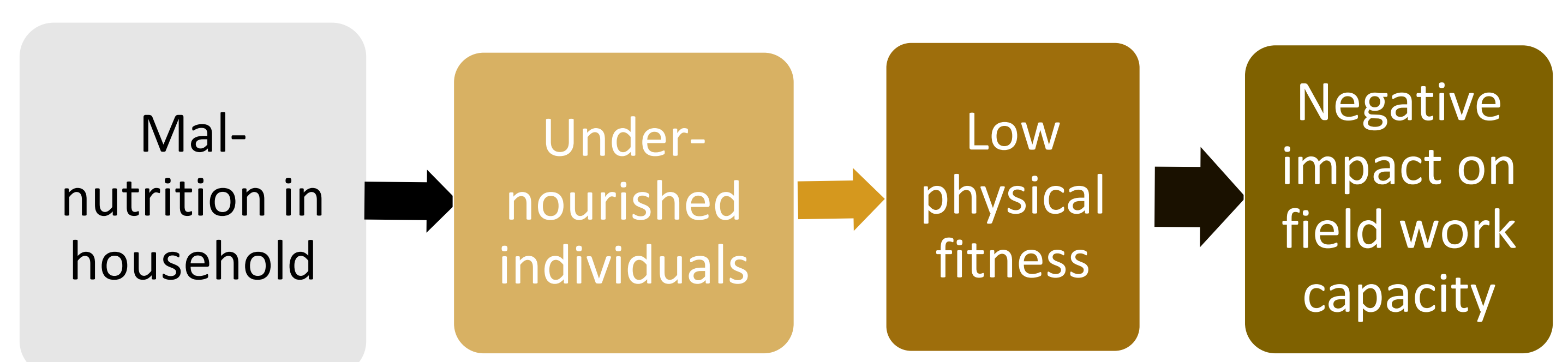
- weak non-linear correlation between HGS and BMI ($p < 0.05$)
- no differences between female handgrips in double burden households and households with no double burden of malnutrition

Individual or household **undernourishment** can be linked with less handgrip strength → less physical strength

Conclusions:

- Double Burden not correlated with handgrip strength, but
- Handgrip strength in underweight households was significantly low (Malawi)
 - Underweight individuals → lower physical strength
 - underweight often associated with anemia
 - e.g. iron anemia limits physical capacity

→ Underweight and double burden households are likely to be affected by lower physical strength which may impact field work capacity.



¹World Health Organization (2019): Double burden of malnutrition. Available online at <http://apps.who.int/nutrition/double-burden-malnutrition/en/index.html>, checked on 7/22/2019

²World Health Organization (2017): Nutrition in the WHO African Region. Brazzaville. Available online at https://www.afro.who.int/sites/default/files/2017-11/Nutrition%20in%20the%20WHO%20African%20Region%202017_0.pdf, checked on 4/28/2020.