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Association of Body Mass Index with Physical Fitness among Small-holder Famers in Malawi and Kenya

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Abstract

The double burden of malnutrition which is characterised by the co-existence of various forms of under- and overnutrition is a common health problem predominantly affecting households in low- and middle- income countries. The study objective was to investigate whether double burden of malnutrition affects the field work capacity of affected households.

Cross-sectional surveys were conducted in 2017 in Kenya and Malawi targeting households with children below six years of age (n=432 and n=355, respectively). Anthropometric measurements were assessed to determine nutritional status of the mother-child pairs. Hand-grip-strengths (HGS) for the mother was measured and used as a proxy indicator for physical fitness. Anthropometric data was used to identify households with double-burden of malnutrition. Mean HGS of the mothers was determined and comparisons made between mothers living in households with (DB-group) and without double-burden (comparison-group) of malnutrition. The comparison group were differentiated in households with only one and without any form of malnutrition.

The body-mass-index (BMI) and HGS of the women in Malawi were significantly correlated ($p < 0.05$). There were significant differences between women's HGS of case-households with women's HGS living in a household with an overweight/obese family member. In Kenya, a significant but weak non-linear correlation ($p < 0.05$) was identified between women's HGS and BMI. HGS was lower among underweight and obese women compared to normal weight, but no differences were found between DB and non-double burden households.

The results of the countries vary in form and significance. However, programmes are needed in both countries addressing double-burden of malnutrition also in rural areas although a link between HGS and double burden was not proven. However, underweight and overweight women showed lower physical capacity. Thus, there is a link between the

HGS and BMI that may impact on food production systems due to lower physical fitness of the farming women herself.

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Keywords: BMI, children, double burden of malnutrition, handgrip strength, Kenya, Malawi, small-holder farmers, women