

Characterising food insecurity and dietary diversity among smallholder farmers in Eastern Africa: a case study from Teso sub-region, Uganda

S.R Duff¹, K. Subramanian¹, A.P Nugent^{1,2}, D. Elliott³, E. Ainyo⁴, E. McNulty³ and M. Bozzola¹

¹*Institute for Global Food Security, School of Biological Sciences, Queen's University Belfast, UK,*

²*Institute of Food and Health, University College Dublin, Ireland,*

³*Self Help Africa Northern Ireland, Belfast, UK and*

⁴*Uganda Programme, Self Help Africa, Soroti, Uganda*

Sub-Saharan Africa (SSA) has the highest undernourishment rate of any region in the world, with 24% of the population facing hunger⁽¹⁾, putting them at risk of nutrient deficiencies, diseases, child stunting, wasting and mortality⁽²⁾. Whilst smallholder farmers are the foundation of the food system in SSA making up 78% of farms, they unequally bear the burden of hunger and poverty⁽³⁾. This study aims to characterise the nutritional and food security status of smallholder farmers in Uganda.

Following ethical approval (MHLS 21_40), 200 smallholder households (landholding <2 hectares) across 2 districts of the rural Teso sub-region in Eastern Uganda participated in the DigiTeso pilot study in 2020–2021, investigating the effectiveness of an Information Communication Technology (ICT) intervention on improving livelihoods. The present analysis uses pre-intervention survey data to characterise baseline food consumption status and food coping strategies using the World Food Programme's (WFP) Food Consumption Score (FCS)⁽⁴⁾ and Reduced Coping Strategies Index (RCSI)⁽⁵⁾. Following descriptive analysis, Pearson correlation coefficient was utilised to test the relationship between RCSI and FCS.

125 females and 75 males aged 15 to >60 years provided food intake data. The mean FCS for the cohort was 50.6 ± 16.5 , with 165 (82.5%) of participants categorised as having 'acceptable' food consumption (defined as >35), while 35 (17.5%) were categorised as 'borderline' (21–35). Among the cohort there was a high reliance on 'starchy staples' (mean intake of 6.7 days in the previous week), 'oils' and 'sugar' (mean intakes of 3.7 and 4.2 days). In contrast, the mean number of days that 'vegetables', 'fruit' and 'meat, fish or eggs' were consumed was 1.8, 1.9 and 2.1, respectively. Based on this high reliance on starchy staples, oils and sugar, WFP's adjusted thresholds were used to re-categorise FCS⁽⁴⁾. Considering this, 128 (64%) households were categorised as acceptable (>42), while 65 (32.5%) and 7 (3.5%) were categorised as borderline (28–42) and poor (<28).

The most adopted coping strategies were 'relying on less preferred food' (71% of participants adopted at least once), 'limiting portion sizes' (71%) and 'reducing number of meals' (64%), which are considered low – moderate severity⁽⁵⁾. The most 'severe' strategy of 'borrowing food' was utilised by 62 (31%) households at least once, 15 (7.5%) households did not need to adopt any strategy while 13% relied on at least one strategy daily. A weak negative association ($r = -0.292$, sig. <0.01) was observed between FCS and RCSI in the cohort.

There was a varied reliance on coping strategies in response to food insecurity. While the majority of households had an acceptable FCS, opportunity remains for improving nutrient density. Future studies considering factors influencing food security and consumption among the cohort are needed.

Acknowledgments

We thank the Department of Economy (DfE), Northern Ireland for funding this research through a Co-operative Award in Science and Technology, as well as our partners at Self Help Africa and TruTrade Africa for their contribution to the field work.

References

1. Action Against Hunger (2023) [Available at: <https://www.actionagainsthunger.org/location/africa>].
2. Concern Worldwide (2022) *What are the effects of hunger?* [Available at: <https://www.concern.net/news/effects-of-hunger>].
3. Laborde D, Murphy S, Parent M *et al.* (2020) *Ceres2030: Sustainable Solutions to End Hunger - Summary Report*.
4. World Food Programme (WFP) (2007) *Food Consumption Analysis* [Available at: <http://www.wfp.org/food-security/references>].
5. World Food Programme WFP (2008), *The Coping Strategies Index* [Available at: https://documents.wfp.org/stellent/groups/public/documents/manual_guide_proced/wfp211058.pdf].