Growth through Nutrition

ASF Webinar Summary Report

Animal sourced foods (ASFs) are nutrient dense foods that when consumed in small amounts provide quality protein, vitamins, minerals, amino acids, and all nutrients critical for growth and early child development. While evidence supports the contribution of ASFs in improving the linear growth of children, a better understanding of the long-term effects of the consumption of different ASFs is needed.

On March 24, 2021, the Feed the Future Ethiopia Growth through Nutrition Activity hosted a webinar on "The role of animal source foods in nutrition security, growth, and early child development," which featured presentations by Dr. Shibani Ghosh from Tufts University and Dr. Getnet Assefa from Land O'Lakes. Using recent study data, Dr. Ghosh examined the role of ASFs in improving the nutritional status of vulnerable populations and presented multi-country analyses assessing both the type and total number of ASFs. She also contextualized the opportunities and challenges in supporting actions promoting ASF consumption. Dr. Getnet followed with a presentation on the role ASFs play in the nutrition security of smallholder farmers in Ethiopia using study findings conducted under the Growth through Nutrition Activity. A Q & A session following the speakers gave participants an opportunity to ask questions and reflect on the discussion and presentation.

Dan Abbott, Chief of Party of Save the Children Ethiopia, opened the event by giving an overview of the Growth through Nutrition project, USAID Ethiopia's flagship, multi-sector and WASH activity focused on improving the nutritional status of women and children. Designed to support the government of Ethiopia achieve its own goals around nutrition with various programs and policies across sectors, Growth through Nutrition uses a strong capacity building approach in agriculture, health, WASH and education to reach vulnerable households with improved nutrition services. He pointed out that the role ASFs can play in improving health outcomes of children under five is very relevant and fits well within the broader Growth through Nutrition activities, which are implemented with a particular emphasis on stunting reduction.

Dr. Ghosh began her presentation by highlighting the significant evidence showing that the provision of small quantities of ASFs can be an important food-based intervention to support both the physical and cognitive growth and development of young children, particularly those at risk of not meeting their micronutrient and macronutrient needs. Regarding ongoing discussions within the global health community around the negative impact of ASFs on planetary health and recommendations[1] to reduce foods from animal sources, she explained that within the context of vulnerable populations in which children may not have access to ASFs, they can be a valuable source of protein to help reduce childhood stunting.

[1] Willett W, Rockström J, et al. Food in the Anthropocene: the EAT-Lancet Commission on healthy diets from sustainable food systems. Lancet. 2019 Feb 2;393(10170):447-492. doi: 10.1016/S0140-6736(18)31788-4.

Using ecological analyses, such as demographic health surveys[2,3] and the Global Dietary Database[4] from the last ten years, as well as food balance sheet data and stunting data from UNICEF[5], Dr. Ghosh pointed out that quality of protein, particularly protein sourced from ASFs, is positively associated with linear growth and negatively associated with stunting.

Citing country analyses from Bangladesh, Nepal and Uganda[6], she explained that there are different sources of ASFs in a child's daily diet depending on which part of the world they are in, for example, higher amounts of fish in Bangladesh versus dairy in Uganda. The studies also looked at other food groups consumed to offer a full picture of children's diets. Here again, children who consumed two or more types of ASFs had significantly higher and positive associations with length-for-age compared to children who had less than two or more types of ASFs. When past consumption was analyzed, it was observed that when there was a lag or sustained effect of ASF consumption, there was also a risk of being stunted. For this reason, Dr. Ghosh stressed that in addition to using cross-sectional, contemporaneous analyses, study findings reveal how critical it is to access longitudinal data to observe past behavior and whether it correlates with the growth of children.

Dr. Ghosh went on to explain the need to go beyond using only height measurement as an indicator and to also assess brain growth, given the fact that brain development in early life is linked to later cognitive and social development. Analysis of longitudinal data[7] revealed that head circumference for HCZ score was positively associated with cumulative consumption of ASFs, starting from six months to 26 months of age. Similarly, results showed very strong, positive correlations for frequency of ASF consumption. In terms of the types of ASFs consumed, milk was consumed most, followed by yogurt, eggs, and chicken.

Regarding interventions to improve agriculture and health, Dr. Ghosh presented three sets of analyses linked to agricultural technologies[8]. Findings show that households of children with a lower risk of stunting adopted improved dairy cattle and engaged in nutrition sensitive agriculture. In Bangladesh, children in households involved in both aquaculture and horticulture had higher dietary diversity and ASF consumption.

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[2] Krasevec J, An X, et al. Diet quality and risk of stunting among infants and young children in low- and middle-income countries. Matern Child Nutr. 2017 Oct;13 Suppl 2(Suppl 2):e12430. doi: 10.1111/mcn.12430. PMID: 29032628; PMCID: PMC6865990.

[3] Headey, D., Hirvonen, K., Hoddinott, J., (2018). Animal sourced foods and child stunting. American Journal of Agricultural Economics, Volume 100, Issue 5, October 2018, Pages 1302–1319. https://doi.org/10.1093/ajae/aay053

[4] Miller V, Singh GM, Onopa J, et al. Global Dietary Database 2017: data availability and gaps on 54 major foods, beverages and nutrients among 5.6 million children and adults from 1220 surveys worldwide BMJ Global Health 2021;6:e003585.

[5] Ghosh, S., Suri, D., & Uauy, R. (2012). Assessment of protein adequacy in developing countries: Quality matters. British Journal of Nutrition, 108(S2), S77-S87. doi:10.1017/S0007114512002577.

[6] Zaharia S., Ghosh S., et al. 2021 available at Research Square [https://doi.org/10.21203/rs.3.rs-74484/v1] Accepted to Nature Food.

[7] Miller LC., Joshi N., Lohana M., Singh R., Bhatta N., Rogers B., Griffiths JK., Ghosh S., Mahato S., Singh P., and Webb P. 2016. Paediatrics and International Child Health (http://dx.doi.org/10.1080/20469047.2015.1133517).

[8] Kabunga NS, Ghosh S, Webb P. Does ownership of improved dairy cow breeds improve child nutrition? A pathway analysis for Uganda. PLoS One. 2017 Nov 10;12(11):e0187816. doi: 10.1371/journal.pone.0187816.

She also addressed household food production of ASFs. Data from Nepal[9] show that if a household produced certain foods, it was positively associated with higher dietary diversity and intake of nutrient dense foods; this was much more significant in the older age groups than the younger. She went on to point out the market element, which shows that households further from markets were more likely to have a stronger relationship between household production and consumption by the older children than if they were nearer to the market.

Dr. Ghosh concluded with several points taken from the Nutrition Innovation Lab's work around ASFs. First, ASF consumption is associated with metrics of growth and development, and the causal nature of the relationships is contextual. Also, past and cumulative consumption of ASFs is critical and the number of ASFs may be a function of total quantity consumed. The type of ASF may be a function of geographic location, cultural, and dietary preferences in the introduction of ASFs over others. Additionally, for those working on nutrition sensitive interventions, she explained that agriculture and multisector interventions can increase output and intake of ASFs among women and children of producing households. Some increased dietary intake is from own production, while much is from market purchases. Finally, access to markets is key to both productivity and dietary gains.

Following Dr. Shibani, Dr. Getnet Assefa introduced his presentation on "The Role of Animal Source Foods (ASFs) in Food and Nutrition Security of Smallholder Farmers in Ethiopia." He began by stressing that despite the ongoing efforts to minimize food security and nutrition challenges in Ethiopia, the country has a long way to go. He emphasized two important indicators that this is the case: the high prevalence of stunting in children (38%) and the challenging conditions of the health of women during childbirth (27% of mothers at a low age and 27% underweight, with 36% of adolescent girls overall underweight) according to the demographic health survey[10].

Smallholder farmers are the 80-82% of Ethiopian farmers whose livelihoods depend on agriculture. As was addressed by Dr. Shibani, Dr. Getnet covered the importance of accessing animal sourced foods for these farmers. Firstly, he noted that ASFs offer protein and numerous micronutrients, which are not found in crop foods (milk in particular offered high nutritional benefits to its consumers with most essential nutrients being available). He also commented that, in addition to providing these primary benefits, ASFs enhance the absorption of crop foods as well as provide a convenient intake of nutrition in children (who consume less at a time) due to their high density of nutrients.

Dr. Getnet went on to describe the various (direct and indirect) ways in which having livestock positively impacts the lives of smallholder farmers. The direct means included the provision of animal source foods (milk, eggs and meat), whereas the indirect means were through their use for crop production (80% of the energy for this purpose comes from livestock), transportation otherwise taken on by women who walk long distances with heavy loads on their back, and the use of manure for fertilization.

He went on to explain that despite Ethiopia being home to a relatively high number of livestock (around 60 million cattle, 30 million sheep, and 20 million goats), their productivity is very low. This is due to environmental factors such as the feed supply, meaning that the local breeds which make up 98% of the

[9] Mulmi P., Masters W.A., Ghosh S., et al. 2017. Household food production is positively associated with dietary diversity and intake of nutrient dense foods for older pre-school children in poorer families: Results from a nationally representative survey in Nepal. PLoS ONE https://doi.org/10.1371/journal.pone.0186765
[10] Ethiopian Public Health Institute (EPHI) [Ethiopia] and ICF. 2019. Ethiopia Mini Demographic and Health Survey 2019: Key Indicators. Rockville, Maryland, USA: EPHI and ICF.

cattle only produce one to two liters of milk per day. This is also the case for chickens, where about 60 million birds (itself a low number for the high human population) each produce only 40-60 eggs per year.

According to Dr. Getnet, the ASFs that smallholder farmers do have relatively easier access to, are dairy and dairy products, chicken meat and eggs. However, they are not often able to access red meat (beef, mutton and goat) due to their unaffordable prices and unavailability of a meat market in their rural settings. Fish, due to its limited availability and price, is not considered a significant source of ASF within Ethiopia.

Using a report on the consumption of ASFs by IFPRI[11], he specified that only 4.6 kilos of red meats are consumed per capita in the country, a significantly low number in comparison to the African context and developed countries (14 kg and 87kg, respectively) particularly in rural areas. This is the same case for milk, with only 16.7 liters per capita in Ethiopia, whereas the African and developed cases consume 30 and 214 liters, respectively.

That said, Dr. Getnet pointed out the negative aspects of ASFs, namely their high perishability in comparison to crop foods, zoonotic diseases, intolerance, and links to obesity and cardiovascular disease.

In the case of Growth through Nutrition, provision of increased access to diverse, safe and quality foods for mothers and children is a major priority in its intervention, which is headed by Land'O'Lakes. Dr. Getnet outlined the way in which the livestock provision element of this immediate result is conducted within the project. He outlined the different platforms and networks used to ensure that farmers have access to foods, namely;

- Most nutritionally vulnerable households
- Farmer training centers (where technologies are demonstrated)
- Schools
- Input suppliers (small retailers and farm chemicals)
- Saving groups
- Model farmers (who assist most vulnerable households)
- Government of Ethiopia service providers (extension workers)

Most vulnerable households are provided with livestock (two sheep or two goats depending on the location agroecology, six Koekkoek chickens, vegetable seeds, beans and fruit seedlings) as well as training, follow up, mentoring, and advice. In a review of the results of this intervention[12], Dr. Getnet presented some of the findings from Growth through Nutrition activity's 2018 and 2020 surveys – which showed a significant improvement in income for most vulnerable households. The gains from selling live animals grew by over 1200 birr on average, almost doubling the figures in 2018 and the sale of animal products (eggs, milk) grew significantly as well. Similarly, heifer ownership more than doubled and as a result, the number of children who accessed milk increased from 18% to 29%. Egg consumption by children also showed remarkable growth, from 14% to 42% in Growth through Nutrition intervention

[11] Kibrom T. and Ibrahim W., 2012. Consumption Patterns of Livestock Products in Ethiopia: Elasticity Estimates Using HICES (2004/05) Data. Development Strategy and Governance Division, International Food Policy Research Institute – Ethiopia Strategy Support Program II, Ethiopia.
[12] Growth through Nutrition MVHH 2020 survey results

households. With the provision of six chickens, the average household had four or five left (due to deaths, as well as predators and theft) in 2019. These went on to produce from 16 to 20 eggs per week, which were then consumed or sold. By incubating and hatching eggs, households were also able to multiply their eggs.

Similarly, these households often breed the sheep or goats they are provided, reaching an average of five within the year, selling or to purchase heifers over time. Sheep and goats are the main means of households transforming their livelihoods through the purchase of heifers and cows, horse-carts and improved housing, depending on the space available for a heifer or cow.

Finally, most of the heifers/cows purchased by Growth through Nutrition beneficiaries provide additional nutrition through milk as well as income for more ASFs. The project works to promote preservation of milk products by disseminating the traditional practice of producing cottage cheese ("metata ayb"). Dr. Getnet concluded his presentation with a summary of his points, stressing the importance of creating markets for the exchange of animal source foods and thanking the attendees for their participation.