



FEED THE FUTURE

The U.S. Government's Global Hunger & Food Security Initiative

Effectiveness of Multisectoral Programming to Improve Nutrition-Sensitive Agriculture, Nutrition, and Health: Experiences from Nepal, Bangladesh, and Uganda

Webinar Transcript

Devyn Andrews

Good morning, afternoon, and evening, thank you all for joining today's webinar to learn more about the effectiveness of multi-sectoral programming to improve nutrition-sensitive agriculture, nutrition, and health. My name is Devyn Andrews, I'm the Communications Specialist for the Feed the Future Innovation Lab for Nutrition, and I'll be your MC for this webinar today. As attendees are joining, I'll begin by going over some housekeeping items.

I would like to direct all attendees to a few functions on this Zoom webinar. At the bottom of your screen, you should see a chat icon and a Q&A icon. Use the chat feature to engage in relevant conversation with other attendees. If you have a question for one of the panelists, please use the Q&A feature.

Panelists will respond to questions in the Q&A box throughout the webinar, and we have allotted the final half hour of this webinar for Q&A. If you are experiencing any technical difficulties, send a message in the chat box to all panelists so that our technical support staff can work with you to resolve them. This webinar is being recorded and will be made available on the nutrition innovation lab website and the USAID Advancing Nutrition website. There you can also register for upcoming webinars and view recordings and slide decks of previous webinars. We will repeat these technical housekeeping items in the chat throughout the webinar as people may join at later times.

I would like to begin by introducing Dr. Patrick Webb, who is the Director of the Innovation Lab for Nutrition, and the Alexander McFarlane Professor of Nutrition at the Friedman School of Nutrition Science and Policy. He will provide a brief description of the Nutrition Innovation Lab before introducing the moderator for today's webinar. Dr. Webb, over to you.

Patrick Webb

Thank you, Devyn. And welcome everyone, welcome to returning participants who've been in these webinars before, but also welcome to new entrants. This is the latest in the Nutrition Innovation Lab's series of webinars, where we try and engage with stakeholders of all kinds, all over the world, not just in the countries in which we've been pursuing operations and frontier kinds of research. We have an amazing line up again today, focusing on the very important issues around the design, implementation, and impact assessment of multi sector programming, specifically from a nutrition perspective. Now this work underpinned a lot of the Innovation Lab's work over the recent years.

Next slide.

It's not the only topic of interest, but it's a very important key topic for many program implementers, donors, and governments as well. And this slide shows you the kinds of research, evidence, data collection, scientific activity that the lab has been pursuing around the world. It's a lot of different countries, mainly focused in South Asia and sub-Saharan Africa, but it goes beyond that. And it's a range of topics from randomized control trials to secondary data analysis to birth cohorts and beyond.

Today you're going to hear evidence from close collaborators working in some of our deep dive countries, as we put it, in Nepal Uganda and Bangladesh, where we have spent a lot of time with local partners of many kinds. Trying to get a handle on how multi sector programs meet the needs of smallholder producers and consumers, and what we can learn from their implementation.

Next slide please.

This obviously is in collaboration with many different government partners in Washington and the country missions, and we're very grateful to those partners for their activities and their support. So, I'm going to briefly introduce our amazing moderator, today Dale Davis, who's been a close collaborator and colleague and friend, from the very beginning. Dale has a master's in public health and she's country director for Helen Keller International, an NGO, in Nepal and has been for many years. She's got huge experience in international health and nutrition in agriculture and is a trusted provider of technical support and capacity building to governments and NGOs alike. And a lot of experience, both in the design and assessment of the impact of multi sector programs for nutrition, often including homestead production but also access to markets, micronutrient initiatives, and more. So, we're very happy, very grateful to have you moderate the session, Dale. And I'll hand it over to you.

Dale Davis

Thank you so much, Patrick. And actually, it's an honor for me to be able to be with you all this evening, this morning, today, to share some of this evidence, which is of such great importance in looking at how we make impactful decisions on multi sectoral programming.

And I'm very pleased to be able to introduce our panel for today. Our first panelist is Nassul Kabunga. So Nassul is an evaluation research economist, who is affiliated with the Friedman School of Nutrition Science and Policy at Tufts University. He holds a PhD in agricultural economics and rural development from the Gottingen University in Germany and has a master's degree from Hanover University in Germany. And a Bachelor of Science from Makerere University in Kampala, Uganda. Over the past year, Nassul has been working as a consultant at the Ugandan National Information Platforms for Nutrition to build capacity of national institutions in compiling and analyzing existing data sets, so as to provide evidence-based policy and program interventions to improve nutrition outcomes.

Our next presenter will be Neena Joshi. So Neena is a development professional working in the field of community development. She serves as Director of Programs at the Heifer Project International in Nepal and provides leadership in program development and management targeted towards alleviation of hunger and poverty and care for the earth. She has been engaged in various research words relating to social capital child nutrition agenda and bringing them into her program designs.

Next, we have Laurie Miller. And many of you will be familiar with Laurie, she is a professor of pediatrics at Tufts University School of Medicine, and the adjunct professor of nutrition at the Friedman School for Nutrition and Science Policy at Tufts University and is the adjunct professor of child development at the Elliot Pearson Department of study and Human Development at Tufts University. With support from USAID, the Nutrition Innovation Lab and the Livestock Systems Innovation Lab, she's worked with Heifer Nepal to assess the health, nutritional status, and development of children in their project areas. Currently she is a consulting pediatrician and child health researcher at St Anne's Hospital and Necker Hôpital Enfants-Malade in Paris France.

And then. Our final presenter this evening will be Katie Appel. Katie is an assistant researcher for the Feed the Future Innovation Lab for Nutrition. She has a Master of Science in food policy and applied

nutrition from the Friedman School of Nutrition Science and Policy, and he has been with the Innovation Lab for Nutrition since 2016. So with that, I would like to hand over to Nassul to begin the presentations as our first panelist today. Thank you, Nassul.

Nassul Kabunga

Thank you, Dale, thank you Patrick, and I'm honored to be here this afternoon, this evening, this morning. Afternoon, morning, everyone who is listening in. My name is Nassul Kabunga, as introduced and I've been working, affiliated with Tufts University since 2012. And my work in Uganda was essentially overlooking, overseeing the evaluation of the USAID Community Connector Program in Uganda. We want to thank USAID for supporting the study, we want to thank other collaborators have been helping us out as stakeholders. And several of them that we have talked to, and we are sure that, you know, the results that we get will be of importance. Please, put the next slide. So, think of a situation where, you know, you meet one of the programmers or policymakers. And they ask you, you know, you're talking about nutrition, multisectoral, sort of like approaches, but you know, and this has happened before. Which kind of things could you quickly attach to be able to the address malnutrition problem in a country like Uganda? And if you don't have evidence to that, then you'll have people have a problem. But apparently, we had a chance to do this study, and the study was aimed at assessing the impact on the Community Connector Program that was implemented by FHI360 in 15 districts of Uganda. Specifically, we wanted to establish if selected interventions had impacted on, well, intermediate pathway outcomes, but, as well as the ultimate maternal and child nutrition outcomes.

So, can you go to the next slide please. So just give you a background the context of the Community Connector program, this is a program that was funded for five years, beginning in 2012. Not exactly at the beginning of 2012 but there about. Mid 2012 and ended closed about 2016 and ends May 2016. It was implemented by FHI360 just like I said. It was in collaboration with the local governments in the selected districts and NGOs and community-based organizations. The goal was to reduce malnutrition, the goal of Community connector program was to reduce malnutrition among the vulnerable populations, specifically women of reproductive age and children below five. And it was focused on areas following the integrated agriculture and nutrition approaches. The point of intervention was not necessarily household level intervention or governance level or policy level, but it was at the Community level. And that was at the Parish. And the parish is like the second tier of local governments, governments in Uganda. So, the intervention was focused at parishes but mostly the pathway was either existing community groups, so I'd say you know women groups, youth groups, farmers groups and so forth. And where they did not exist, they would create new ones. So, let's say a group their social dimension of trying to reach out so many people with less cost and outreach, not as much as you need to do when you focus on or you target households. The choice of interventions was informed by the needs assessment exercise that was conducted by the Community Connector itself prior to the intervention or the implementation. And if they found that a certain community lacked extension, agricultural extension messages, that's what they would give. If we did not have, a community did not have improved seedlings or inputs, agriculture inputs, then that's what do. You think of other aspects, like behavior change communication, financial services, data practices and diverse production, diverse agriculture production and several of those kind of aspects.

Next slide please.

So, specifically the Community Connector wanted to promote the I0 CC, what is called the I0 CC-SEE, so that involved the household having a savings with a purpose plan. You know, promoting WASH facilities, households having been able to use, you know pit latrines or toilet facilities, garbage pits and so on. There, the mere fact that household itself and the homestead compound is clean, these components of growing fruits and vegetables, particularly those which are nutrient dense. And then

the source of animal source food, you know for local consumption but also it could be solved for income to support the household. And then there were also others having to do with another

agriculture income activity [inaudible] or whatever. The use of improved production assets, hoes, pangas, and if, you know, those that they did not have. And the last two much more focused on household itself being able to self-sustain in terms of food, either in the garden or in the store, and that they are saying that you know, there is intra-household decision making among household members.

Next slide.

OK, so the Community Connector focused on 15 districts, just like I said. The seven districts were in northern Uganda and we had about eight districts in the western part of the country. And these were districts which were targeted, that at that point in time in 2012, and I don't think this question has come up anyway, they had high malnutrition rates, as well as the high prevalence rates of poverty. The districts you see in green are the ones that we randomly selected out of the 15. So, these are six to be able to do the impact study.

Next slide.

So, in our random sampling of districts and then some counties, we also randomly selected households, which we would be collecting data from. So, we collected data in 2012, which was the baseline before. The interventions of Community Connector would be rolled out. And then we're also able to follow up these houses in 2014 and 2016. But overall, we had some level of attrition but by the end we had about 3,200 households by 2016 and over 12,000 households for whom we were able to do blood samples to test for malaria and hemoglobin. But were also able to do the body measurements to assess the nutrition situation for those children and women of reproductive age. We were also able to collect a range of other data on social economics, agriculture, nutrition, health and others. So on the right, the map you're seeing wherever you see that those dots, the purple dots, think it's purple, that's where essentially the households were located.

Next slide please.

Next slide. Okay, so the analytical strategy in brief. I think we jumped one can you go back a bit? Yes, the strategy we had in place, the analytical strategy, we had several of them. But the background, everything is embedded within the difference in different approaches, using the two main data sets at the beginning, that is, at the baseline but also at the end in 2016. So, I would compare the households for households at the household level, but also individuals in Community Connector parishes. Those treated parishes that receive the interventions and would be able to compare these ones with the control parishes. So, it's said, the ones which did not receive the Community Connector multisectoral interventions. There were some challenges in identifying these parishes, but we conducted focus group discussions to be able to identify and classify the parishes as we would be required. At the beginning originally from the plan, some parishes actually did not receive the interventions as planned, because of different challenges. You know accessibility or finance, political issues, and so on. So, we had to redo this, and that's why it was a bit more daunting to do this kind of multi stakeholder and multisectoral analysis compared to simple analysis that we do over a small period, of a small period of time. And maybe using a very small sample. So, in areas where the treatment happened, so in the Community Connector parishes, the assumption was that all households would be reached by Community dynamic. So, if one household is treated or has been reached by the message, that assumption is that this message is going over to these communities. And that's what we also did at the end, try to verify if actually, this is what happened.

Next slide.

So, how does the analytical strategy work? So, it's a difference in difference, so, if you look at this diagram on the left vertical axis, you have the outcome. It could be poverty, it could be, you know, stunting levels or whatever it is. And then you have the treatment and comparison groups, the treatment in green and comparison in red. So, if you consider baseline, you think that these groups should more or less be the same, and certainly shouldn't be any differences. But, as you roll out to the program that is targeting a certain aspect to be improved, is that an indicator to be improved, then

you'd expect that the Community that has received the treatment or that has been, you know so let's say they were the Community that has received the integration gets better. And that's, so that's when you see the Green Line sort of like jumping up. Now, at the end of the day in 2016 when you go back to the data and you find these differences, the differences, you see at the end, subtracted from the you know, the differences that you'd expect have happened at the beginning, then that's the measure of impact. So, to say. So, over time, you are able to say that Community A is better than Community B, and this can be attributed to the intervention that was conducted. Apparently, this was like the foundation of analysis, but other econometric methods were applied to control for fixed effects and other things. But of course, that details not included in this webinar. Next slide please.

And, given the goal of the intervention being targeting, with the goal being to reduce the malnutrition levels, especially under nutrition for women and children, looking at these results, you might want to think that it was a bit disappointing. Because of all other indicators, including maternal underweight, child stunting, child underweight and child anemia, you could not find any impact on these. At that point in time when we did an endline survey and blood analysis, so we conclude that the Community Connector itself did not significantly improve a range of child and maternal nutrition outcomes, except for maternal anemia which was reduced by 8%. And this can easily be attributed to the Multi sectoral interventions that we are done by the Community Connector.

Next slide.

Looking at the intermediary outcomes it gets a bit interesting here, because one of the aspects that the Community Connector was promoting was the use of improved inputs, but of all the inputs, namely include seed, fertilizers, organic and inorganic, poultry vaccinations and so on, we only found that the use of inorganic fertilizers was positively affected or influenced. And so, there was some level of increased use of fertilizers by households which were in the Community Connector villages. And this increased by 3%, well, in Uganda, the use of fertilizer is roughly about less than 5% nationally so seeing the 3% increase should be something that can be, you know, can be praised. Next slide please.

The Community Connector wanted to improve food production diversity. And it is based on the on the thinking that when you have food for households which have, you know, less access to markets then they should be able to consume what they produce. Apparently, I think this objective was achieved. And we see that the total number of species that households grew increased about for crops and livestock, as well as if you consider the indices for FAO food groups, all these improved over that short period of time of roughly 4-5 years. And the only group of foods, you know are food groups that are not improved in terms of production, we have legumes, fruits, and cash crops. Next slide please.

So, if they produce it then do they consume it? Yeah, maybe, yes and no. And for maternal dietary diversity, we find that the women in these households improved the consumption of vegetables, which were also improved in terms of production, meats and dairy products were also improved. And fats and oils. Apparently, legumes, there was some counterintuitive, counter-productive sort of like intervention, but that also does not surprise, given the fact that we did not see an improvement. Improvement in the production of legumes in this slide that I showed before. Next slide.

So going over from agriculture to WASH habits, we do not see a lot to do with the household drinking boiled water, and hand washing habits and also toilet facilities. But one aspect that was improved as a result of the Community Connector was that households which were involved in these sort of like interventions were able to have drying racks for utensils. And this increased by about 13% for houses in the Community Connector groups. Next.

The Community Connector had an aspect to do with saving with a purpose, and that involved social groups being able to create, you know, some sort of like revolving fund within themselves. Apparently, this improved the amount of money, the frequency of saving money in the social groups, but also the ability to receive credit from these social groups. We don't see any effect on households receiving credit from commercial banks, so that was like something that worked in the form of intermediary outcomes.

Next slide.

Antenatal care practices and maternal health seeking behaviors, we see only hospital treatment in case somebody was sick, particularly the mother or the child. And the last birth that was delivered at the hospital. We do not see our Community Connector improving the use of insecticide treated nets, but also, we don't see it improving the full ANC recommended visits at that point in time.

Next slide.

Okay, so I could have shown many more results, because we have a lot of results, but I felt that should be enough for now just be able to have a discussion. And to draw you know lessons from this broader multisectoral evaluation that we did. And this, I thought that would go with some of the messages from the preceding presentation that are made the slide that I've made. So, using the case of the USAID-funded Uganda Community connector program that was implemented for about five years, we have shown that multisectoral programs can potentially improve health and nutrition outcomes of vulnerable populations. In particular, there was substantial improvements in food production diversity, and this led to some level of improved dietary quality. And there was some aspects of positive health seeking behaviors, and also improved rural financial services, particularly credit and savings within the groups. So, these results point the positive change in the intermediary outcomes that are necessary to improve, you know, to influence better health and nutrition outcomes. But I think only in the long term. So, unfortunately, we don't have any convincing evidence of improvement maternal and child nutrition outcomes, except for maternal anemia that reduced by 8%. Which in some ways, a big magnitude, given the situation that you know about a third of women are underweight. And almost in some districts in Uganda half of the women of reproductive age actually are suffering from maternal anemia. So perhaps you know understanding five years of implementation were not sufficient, because these are long term changes in the nutrition outcomes. Long term interventions with much more intensified and wider coverage of key aspects may lead to more consistent results.

Next slide.

Next slide please. Okay, so implementing multisectoral programs is difficult in some ways, but it's doable and requires not have an open mind and have a broad range of technical skills. And willingness to adjust for some individual and systems. But measuring impacts, as we have done can be really a big task. Quite complex and very challenging. For the Uganda Community connector in particular, not all interventions were implemented to the original plan. Some parishes received completely different packages than was originally planned. Some parishes only receive partial interventions, and some parishes and some counties actually receive no interventions at all. So I know it's hard to do a lot of things, we tried to flip things around so that we can get our messages that we can use it for. In particular, I think it's important that the intervention package combinations, you know, really thought about and the optimal and measurable indicators are considered. It is also important that we consider a proper control or counterfactual for each of the treatments. And you need to have a wide range of analytical tools both involving statistical methods, sampling, among others. I will stop it for now, and I want to thank you all for listening and I look forward to the discussion, thank you.

[Neena Joshi](#)

Good morning. Good morning, good afternoon and Namaste from Nepal. It's nice to have you all join us this evening.

Next.

At Heifer International we work with the mission to end hunger and poverty and care for the earth.

Next.

Over 75 years of our work, we have been able to reach more than 35 million people. Livestock and agriculture has always been the key to what we do. And we offer tools to communities, livestock assets,

trainings, partnerships, and other wide range of tools so that these people these families can get out of poverty and attain sustainable livelihoods.

Next.

In Nepal, we have been active since last 23 years. And we've been able to reach close to 300,000 families, 227 cooperatives. Our engagement with [inaudible]. The way we structure our work is that we look at that families will increase income and assets, food security. And the work we do does not add additional pressure to the environment. We are very specific about translate agriculture. The other major piece of work we do is we work around people. We help people to discover their own self. So, what we have seen in our work is apart from all the technical work we do, what actually brings impact is the ability of people to make it happen. So, it's the people who make it happen. So, at Heifer we do invest a lot in helping people discover their own potentials, the resources around them, build their own groups, institutions, and build the social capital. And women environment has always been an essential piece of the work we do around people. But we always have questions around which part of our program, which dimension does contribute to the impact that we are looking for. Because these, comprehensive multisectoral programs are complex, expensive, time taking. So, we had various questions around like what works best. And when we approach other donors and collaborate also, they have questions around which aspect, do you think will, will contribute to the impacts that you are looking for.

Next.

And in recent years, we also added our market development, system change, access to finance in the enhancing investment to the to the farmers and community work we do. So, as I said, like we had questions around which aspects of the work is actually contributing to the impacts that we're looking for. Our work with NIL has helped us look at those aspects. We have been engaged for a long time, and then we specifically looked at was interested to learn how the work we do has been having impact on and the child nutrition and child health. So very quickly, we learned that we needed more focus on specific nutrition activities so that element was added. And it also allowed to dig deeper and dissect different aspects of the work we do. And the findings we've got has helped us to do better programming Nepal and across Heifer countries. And also approach and work with the government in Nepal, especially the departments that work around agriculture, to engage in those conversations. How can agriculture have a that should be a program that will have more impact in the nutrition outcomes that we aspire for. Dr. Laurie Miller has been engaged with us from a long time and helping us put together these studies with the help of NIL. And in the following slides Dr. Miller will be looking at the different findings we had and the questions that we had and the answers we got. Over to you, Dr. Miller.

[Laurie Miller](#)

Well, thanks Neena, and thanks to the organizers for inviting me. And a big hello to everyone from me to you. I'm happy to be here with you today. As you heard from Neena, there was a basic program at Heifer.

Next slide.

Which involved livelihoods and livestock resource management, social capital development, accountability. And focused heavily on sustainability and self-reliance. Next slide. And, with this in mind, we began our work together and asking the question what happens to child growth and diet in a multi sectoral program that doesn't address these areas? And over time, we came to a second research question, which is our second project that I'll present. And we asked, is it the training or the livestock donation? Is it the Community development? What part of the Heifer program is the most important to the child outcomes?

Next.

We along the way, observe some unintended consequences and some lessons learned that I'd like to share with you. Next. So our first research question is shown again here on this slide. What happens to child growth and diet in a multi sectoral program that doesn't address these areas? And, as a corollary to this, we also asked this Heifer's program improve livelihoods as it's designed to do? Next.

For our first project we enrolled 415 households in three districts in Nepal, two in terai and one in the hills. We used a staggered introduction design, where the intervention group got the Heifer program inputs for the entire 48 months of the project, and the control group got the Heifer program starting after 12 months. Next. I can tell you just briefly the intervention did work. On this slide you can see the improvement in household income and household wealth score over the 48 months of the project.

Next.

Even though this Heifer input program did not have any nutritional components, we found to our surprise that there were some improvements in child nutrition. In other words, child minimal dietary diversity and ASF consumption improved in relation to the duration of exposure to the intervention as you see here. The children's minimal dietary diversity consumption increased by almost four-fold. And ASF consumption by about two and a half fold.

Next.

Again, there was no focus on child growth, but we observed over the 48 months that there was a decrease in the percent of children with underweight, with stunting, and with wasting.

Next.

We realize that these changes take time. And I want to emphasize that, on the next slide. Here you see the impact of the intervention on growth. Along the horizontal axis is the number of months of exposure to the Heifer program- 12 months, 24 months, and 48 months. And on the vertical axis, you see the beta coefficient for height for age and weight for age Z score respectively in blue and orange. You can see that, although the height for age Z score improved significantly at 12 months, it doubled at 24 months. And this improvement was sustained at 48 months. In contrast, the weight for age Z score took a lot of time. It was going up but didn't reach a significant level of improvement until 48 months.

Next slide.

This and other findings made us really start to focus on what was going on between that Heifer inputs and the outputs that we were measuring. In other words, what were the factors at the child level and the family level, at the household level, that influenced the outputs that we were looking at.

Next slide.

One of the things we wanted to address to answer this was the mothers' educational level. Here, you see the household wealth score in relation to the mothers' educational level. In blue, mothers who had no education, in red primary education, and in green secondary education. While there was a trend to go up for all of these groups, you can see that the mothers who had secondary education had households with a greater improvement in their wealth score over time.

Next slide.

This shows the change in diet diversity over time again in relation to the mother's educational level. We were pleased that child diet diversity, improved in all of these groups, but at 48 months there was a much greater improvement in the children of mothers who had secondary education.

Next slide.

As you see here as a footnote, this was the change in diet diversity, if there was no adult in the household with any formal education.

Next slide.

This brought us to the burning question: why and how does the livestock and livelihood intervention affect child growth and diet?

Next.

We developed our second research project focusing on the following questions, is it the training and livestock donation? Is it the Community development? What part of the Heifer program, in other words, provides the secret sauce that's important to child outcomes?

Next.

As Neena mentioned, after the first project it was realized that the nutrition could be improved, and the nutrition training could be improved. So a nutrition curriculum was developed by Heifer, and we incorporated this into our second research project.

Next.

This project enrolled 974 households, all in the Banke District. The households were randomized into three Community clusters.

Next.

The first cluster received what we call the full Heifer package. This included the typical social capital development and livestock training that Heifer has been doing traditionally, and also incorporated the new nutrition training curriculum.

Next.

We also had a partial package group that got the nutrition training and the livestock training. Next. And a control group which did not receive any of these inputs.

Next.

We collected five household surveys over nearly three years. And typical household indicators such as land ownership, animal ownership, wealth, and so on were collected, along with child indicators including anthropometry, health, and diet quality.

Next.

This slide shows the results of the change from baseline to endline in the households related to their group assignment. In green the control group, in blue those who receive the full Heifer package, and in purple those who received the partial Heifer package. You can see that for wealth, soap use, household diet diversity score, and food security, households in the full Heifer package had much greater improvement over the period of this study.

Next.

We next constructed a mixed effect regression model which adjusted for child and household factors. At the child level, age, gender and baseline anthropometry. And at the household factor, animal and land ownership, wealth, and women's education.

Next.

I'll summarize the results on the following few slides. Being in the Heifer full package group predicted better growth outcomes for weight, height, and weight for height Z scores. Next.

Being in the Heifer full package predicted greater improvement in child diet quality, both diet diversity and ASF consumption.

Next.

And being in the heifer full package predicted greater improvement in child health, fewer episodes of diarrhea, respiratory illness, and fever.

Next.

We then went to look at our partial package intervention to see how they compared. They look like the control group for most of the variables assessed, but, next.

There was a surprise because some child outcomes looked worse in the partial package group than in the control.

Next.

I'll show you two examples. Here's the first one, children in the partial package households had worse development at age two years. In this study, we were able to do child developmental testing on a subset of children. And for the group of children tested at age two, you can see the results on this slide, the child development score beta coefficient is shown on the y axis. And the results indicate that the children who were in partial package households had about 14 points lower on their developmental score than the control group. In contrast, children who were in the full Heifer package had 15 points higher.

Next slide.

We also found that households that were assigned to the partial package group had worse home child rearing quality. Here, you can see that household in the control and the full package had about the same home child rearing quality score, but that in the partial package group was much lower. Next.

These findings suggest that perhaps an incomplete or poorly integrated, poorly designed program may be worse than no program at all. And reminds us that we have to first do no harm when we conduct or implement interventions.

Next.

In summary, both better outcomes were seen in families which received the Heifer full package intervention at both the child and the household level. At the household, there were greater increases in wealth, hygiene, diet diversity and food security. And for the child, there was more improvement in growth, diet quality, and health.

Next.

Couple of take-home messages. From our first project, we found that multi sectoral interventions can affect non-targeted sectors. That personal and household qualities relate to the response to interventions, and it takes time to appreciate the impact of complicated multi sectoral interventions.

Next.

From the second project, we can say that multi sectoral interventions, including a social capital component, as administered by heifer, were associated with a more favorable household and child outcomes than just the identical training provided alone. Also, that incomplete programs may have unintended and unfavorable consequences.

Next.

Finally, intensive multi sectoral interventions may be more effective in creating measurable and sustainable improvements in important child and household outcomes.

Next.

And as Neena mentioned, I emphasize that these are more costly, difficult, and time consuming to implement.

Next.

I want to acknowledge the organizations shown on this slide. A big thanks to Sumanta Neupane for the heavy lifting and the statistics. Thanks also to the participating families and USAID for supporting this work, thank you.

Katie Appel

Alright, and so now, I will be presenting on an analysis that is from the Bangladesh aquaculture and horticulture for nutrition research study.

And next slide.

This was a longitudinal panel study conducted in the Feed the Future Zone of Influence, which includes parts of Barisal, Khulna, and Dhaka divisions in Southwest Bangladesh. And the study included just over 3000 households with at least one child under five years of age and were visited a total of three times at six months intervals over the course of the study. There were three main components to each visit- an interview with the household head, an interview with the female caregiver or mother of the child under five, and anthropometry assessments of the child and mother or female caregiver. Among many other topics, household heads were interviewed on their agriculture and aquaculture practices. And mothers were interviewed on diets, food and non-food expenditure, illness, nutrition knowledge, and nutrition related practices. Finally, mothers and children's height, weight, and mid-upper arm circumference were measured at each time point.

Next slide.

One of the objectives of the study was to understand if there is a benefit to engaging in multiple types of agriculture, compared to one single type or none. We focus on aquaculture and horticulture, looking at the association between households' engagement in these types of agriculture, and the diets and mothers and children. More specifically, we wanted to know if mothers and children who lived in households that are engaged in both aquaculture and horticulture had more diverse diets and if they are more likely to consume protein rich and other nutrient dense foods like animal source foods, legumes, fruits and vegetables. Furthermore, we wanted to know if mothers and children with better diets were likely to have better nutrition outcomes, by way of height, weight, Z scores and BMI. And for this analysis, we only included children six months of age or older due to the changing diets at such a young age.

Next slide.

We defined aquaculture engagement as producing fish from a pond, but not from ocean or any open water source. And horticulture engagement was defining just producing fruits and vegetables from an agriculture plot or a homestead plot. The majority of households that produce fruits or vegetables in the study did so from a homestead plot. This pie chart shows engagement pulled from all three rounds. As you can see, about a quarter of the study households engaged in both agriculture and horticulture, only 1% only aquaculture, almost 60% only horticulture, while almost 15% of study households engaged in neither agriculture nor horticulture. For the main variable of interest, we combined the aquaculture only and horticulture only groups to create a three category engagement variable. Neither referring to not producing fish or fruits and/or vegetables, either referring to only producing fish or fruits and/or vegetables, and both referring to producing fish and fruits and/or vegetables.

Next slide.

The dietary diversity variables used in this analysis were created from counts of food groups consumed in the past 24 hours. Similar to the infant and young child feeding minimum dietary diversity indicator and the minimum dietary diversity for women indicator. The data in this study were not collected in a way to actually be able to create these validated indicators. The food groups included in the dietary diversity indicators were grains, legumes, dairy, meat, fish and poultry, eggs, and fruits and vegetables. Fruits and vegetables were combined for children and separated for mothers, and the cut off of four or more food groups was used for both. An increase in dietary diversity was observed over the study period, with a 17 percentage point increase in children consuming four or more food groups, and a 12 percentage point increase in mothers between the first and last round.

Next.

Looking at individual nutrient dense food groups, we see low consumption of animal source foods, except for fish, where about half of children and almost 60% of mothers consumed fish. Though rates are low, more children consume dairy and eggs than mothers, and about 30% of children and mothers consumed legumes. Fruit consumption is also quite low, while almost all children and mothers reported consuming vegetables. Data on dark green leafy vegetable and vitamin A rich fruits and vegetable consumption were not collected in the first round, so the data presented here are pooled from the second and third rounds. Over 40% of children and almost half of mothers consumed dark green leafy vegetables, while only about 10% of children and mothers consumed other vitamin A rich fruits and vegetables.

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And finally, here are some descriptives on nutritional outcomes. We see that the prevalence of stunting decreased over the study period, while wasting and underweight increased slightly. Mother's BMI shows the increasing double burden of malnutrition in Bangladesh, as almost 40% of the non-pregnant mothers in the study had overweight or obesity. About 16% were underweight, and almost half were in the normal weight category.

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Now for the results. We conducted linear and logistic mixed effects models controlling for survey design and sampling weights. Child models were adjusted for child's age, sex, household wealth, and survey round, while mother models were adjusted for household wealth and survey round. A purchase variable was included in all models mirroring the outcome variable. For example, in the models, with the count of food groups consumed as the dependent variable, the purchase variable is the count of food groups purchased by the household. We also included an interaction between household engagement and purchase to account for the varying effect of engagement and purchasing on consumption. In this first table of results, we found significant positive associations between aquaculture and horticulture engagement and the number of food groups consumed. We also found significant associations with consuming four or more food groups for both children and mothers, where living in both engagement households was associated with having a more diverse diet. We found a similar effect of both engagement and purchase on consuming four or more food groups. In households that did not purchase, children were 2.4 times more likely to consume four or more food groups if they lived in households with both engagements. Similarly, in households with no engagement, children were 2.1 times more likely to consume four or more food groups if the household purchased four or more food groups. Combining these effects, children in households with both engagement and who did purchase were 3.2 times more likely to consume four or more food groups. In the same way, mothers in households with both engagement who did not purchase were two times more likely to meet the four-food group threshold, while mothers in both engagement households who did purchase were 2.8 times more likely to consume. Next slide. We found similar results for consuming animal source foods. As you can see in the columns on the left, living in both engagement households was found to be positively associated with consuming more types of animal source foods for children and mothers. When it comes to consuming any ASF, we found a stronger association with both engagement households than purchasing. Compared to children and neither engagement households who did not purchase, children in households with both engagement, sorry, compared to children in neither engagement households who did not purchase, children in households with neither engagement who did purchase were 1.8 times more likely to consume ASFs. Children in households with both engagement who did not purchase were 2.4 times more likely to consume, while children in both engagement households who did purchase were 2.7 times more likely to consume any ASF. Likewise, mothers in households with both engagement who did not purchase were 2.2 times more likely to consume ASFs, and mothers in both engagement household to did purchase were 2.1 times more likely to consume ASFs. This is most likely due to the fact that both engagement households consumed fish that they produced. Next slide.

When individual animal source foods were analyzed separately, we found that children and mothers in both engagement households were significantly more likely to consume each animal source foods than those in neither engagement households. The engagement and purchasing interaction was significant for children and mothers, with regard to consuming fish, meat or poultry, and dairy, and only for mothers with regard to eggs. Children in both engagement households that did not purchase were 2.1 times more likely to consume fish, and those in both engagement households that did purchase were slightly more likely at 2.3 times to consume fish. For meat or poultry, children in both engagement households who did purchase were 4.3 times more likely to consume compared to 1.4 times more likely for children in both engagement households that did not purchase. Most notably, children in both engagement households who did purchase were 18 times more likely to consume dairy, compared to 2.4 times more likely for children in both engagement households that did not purchase. These results highlight the reliance on purchasing for many animal source foods, especially meat and dairy, as few households and livestock.

Next slide.

Finally, we examined consumption of fruits, vegetables and legumes. Starting with legumes, we found a significant association between consumption and living in both engagement households for children and mothers. Where they were 1.4 times more likely to consume legumes compared to those living in neither engagement households. Significant associations were also found with fruit, where mothers and children in both engagement households were almost two times more likely to consume fruit compared to those and neither engagement households. The interaction of purchase and engagement was significant for children. Showing that children in households with both engagement and who did purchase were four times more likely to consume fruit than those in neither engagement households who did not purchase. We did not find any significant relationships with vegetable consumption, and this could be due to the fact that the vast majority of study participants reported consuming vegetables.

Next slide.

Now, did we find that better diets were associated with better nutritional outcomes? For this analysis, we use the binary dietary diversity indicator of consuming four or more food groups. We found that child height was positively associated with meeting four food group threshold. Where children who consumed four or more food groups were on average point one centimeters taller than children who consume less than four food groups. But this coefficient is quite small. This result shows that consuming a diverse diet is one of many contributors to child growth. Unfortunately, we did not find significant relationships between dietary diversity and other nutritional outcomes for children or mothers.

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In conclusion, we observed that increasing prevalence of consuming dietary, diverse diets, over the study period contrasted with low consumption of many nutrient dense foods. A decrease in stunting was also observed, as well as a positive association between more diverse diets and an increase in child's height. For many food groups, there was a significant interaction between engagement and purchasing, showing the important role that both production and purchasing have on consuming different foods. As well as the increased purchasing power that households have when engaged in multiple types of agriculture. Finally, we did find a benefit to engaging in both agriculture and horticulture for children and mothers. This was positively associated with more diverse diets, as well as consuming individual food groups of fish, meat, poultry, dairy, eggs, legumes and fruit. Only one food group dairy was associated with engaging and either aquaculture or horticulture, showing that there is an advantage to engaging in multiple types of agriculture. Thank you very much.

Dale Davis

So, thank you so much for the presentations. That's wonderful to hear from our panel, and we have lots of questions that have been put forward by our participants. So, I would like to start by maybe with Nassul's presentation, there are a couple of areas that there is interest in. Particularly regarding the

fertilizer. So, there were questions on why the inorganic fertilizer was the only one that showed increase. And was that because it was cheaper, or was it because it was provided by the group? By the project. And there's another question which is similar, which is whether there was any subsidy provided for the purchase of the fertilizer. So perhaps you could clarify some of these questions Nassul.

Nassul Kabunga

Yeah, thank you so much. So, I think there was a similar question under WASH. And that was to do with why don't we see changes in WASH habits and use. Now what I really realized with the Community Connector implementation was that those new things that people had not had a chance to hear about most, like use of fertilizer and demonstration that fertilizer can improve yields, the use of you know drying racks which was never heard of before, those really caught the attention of the communities. So, there was no subsidy, there was no free fertilizer that was given from us, it was just extension messages and behavior change messages, thank you.

Dale Davis

Okay, thank you. And there's another question, actually a couple of questions, that were associated with the with the finding that you your project found a reduction in anemia. So, the questions are whether this prevalence was due to the project specifically, or whether you think it was influenced by iron supplementation or other, for other reasons. And also, that did you find that there was any association with the change in anemia levels and the consumption of animal source foods, and particularly on the question is an increase in meat consumption.

Nassul Kabunga

Yeah. Thank you again for that question. I think what you really see in the intervention is that households improve, first and foremost, medical access. And you know people get to know that base, they need access medical facilities for, you know, for anemia, for iron supplementation, but also the food production diversity that again influenced the consumption of these women of, you know, meat, dairy products, but also fruits and vegetables. And that, in a way, should have reduced, you know, impacted the reduction of maternal anemia. In terms of whether there are some other you know effects from outside, I think that can be explained, but in our analysis, we tried to control for several other factors. And, at the beginning, when you look at the anemia rates in the control groups, as well as in the intervention groups, they actually don't differ. So, they could have been some effect as a result of an external intervention beyond the Community Connector, but in our analysis we tried to control for quite a number of things. Distance to facilities and all these things, and how much messaging you get, and that in itself should be able to tell us that we have some fairly good estimation, that this reduction was more to do with the Community Connector than anything else. Well, it's 8%. So even if you did take in some of the effects from other interventions, it could still come to about three or 4%. And that's still not something small in terms of the number of people that are being reached. Thank you.

Dale Davis

Thank you very much, thanks Nassul. Neena, there are questions that have been posed to you regarding the project, so I think there's a just a question about the length of time that these projects take to really show change. And you know, when you talk about four years of the intervention, is it sufficient?

And there was a question about do you think it's the time factor, or do you think it's the way we're designing our projects that require more time to fulfill. And I, you know, I think that's linked to when we look at the impact evaluations, we saw that there was quite a big change in the in Laurie's presentation, quite a big change in year four. So why do you think it takes time to find these changes.

Neena Joshi

Thank you. Try to answer that questions, one thing, as I mentioned, was what we have learned is the people piece of the whole work, which we call this the social capital building, that is key for a lot of

other results. To see that, that was very evident from the study we did. And that change, that engagement of people takes a very long time. Heifer does have a model which is called values-based holistic Community development. It starts with helping individuals reflect on their own self. Like coming into groups, and then coming together and doing participatory reviews and making plans, so that piece of work, that prepares.

In our program design, what it seen is that prepares these people, these communities, these families to absorb other technical aspects of the things that we put forward to them. So, this change at individual level, and they're coming into a group and working as a group, this is a pretty slow process. And it has to follow up whole cycle in order to see these people being excited about what they do. And then taking initiatives to reach out to other resources. Long process. So that piece of social capital building, which we do through our values-based approach, is quite a time taking process. But we've seen that taking that time and investing resources in that piece of the work we do, has been very rewarding.

Dale Davis

Yes, thank you. So, the environment and the enabling environment is critical to substantial change. And that leads on to another question which is how you engaged with the different line ministries, and how were those different government stakeholders involved in implementation. And in ownership and then the sustainability, the move to sustainability. You do have a process that engaged the government?

Neena Joshi

Yes, so our work begins with the [inaudible]. So, in the context of Nepal, it's much easier now that we have a local government that has much more authority. But even before that was key, like the way we approached them was this is what we can do, and what can you contribute? So that has always been our strategy, so we engage heavily and also invited them to invest. In terms of their resources, and that was a key for engagement of local governments. We always went with this is what we can do and what do you have? And they do have their local budgets allocated for nutrition, for women, for agriculture development, so it's a matter of like sitting together and getting through those long tedious rounds of planning processes.

But it's very rewarding. So, what eventually what we have seen is when we do those planning process at the local government in a right way, we've seen them being very enthusiastic about putting the resources. Once they put the resources in the project. And that's where they start to get interest. And we do have the, we have designed the management structure in such a way that the representative local government is a part of that management, which we call in our language. May. PMIC. And the key factor is we engage them in planning, we invite them to put their resources, and we engage them in monitoring and then providing feedback. That's how they will get ownership, and then when they see results happening coming, they definitely take ownership and want to expand to other locations in their local government. So that's at the local government, in national level, we have very, very close contact and coordination with the Ministry of Agriculture. And from there, we branch out to other related stakeholders. So, they sit on our technical coordination committees, we frequently invite them to visit our communities and provide feedback, and we have this very intensive discussion on when we design programs, and what are the government priorities, and where we can add value. So that piece of engagement of government at all levels, specifically at the local level, has been key on the sustainability and also their ownership and their creating this enabling environment. The other aspect of engaging the government is the other policy aspects. Like in several places we've seen that the policy that cross cuts, cuts across many sectors, they conflict with each other. So, bringing this into conversation has helped in elevating that bottlenecks from the policy advocacy side also. And on the local government side, we have seen them investing, allocating resources to the programs which they think are giving them results.

Dale Davis

Great. Thank you. Thank you, and so I don't know if either you or Laurie would like to answer a couple of questions here. One is on when, with the increase of beta carotene rich foods, papaya, pumpkin, etc. were efforts made to measure child's consumption. That's one question.

Laurie Miller

I can answer that quickly.

Dale Davis

Yes, thanks Laurie, yeah.

Laurie Miller

We certainly measured the individual food groups, but we did not measure quantities.

Dale Davis

Right, okay. So, you measured food groups and child's consumption of the food groups.

Laurie Miller

That's right, and we also collected information about whether certain items, individual food groups were available in the household to other family members. So, we've been able to look at the difference between food allocation in these households as well.

Dale Davis

Right. So then specifically on this nutrition training, because I, you mentioned that you found that there was this change in consumption. What specific nutrition training was provided in the package? In the Heifer package. And who were the target groups for that.

Laurie Miller

You know it's a great question and I kind of glossed over that just in the interest of time, but the nutrition curriculum is 10 modules focused on child and family nutrition. And just basic food messages and recipes and demonstrations, and a lot of practical work. And this nutrition curriculum is administered, if you will, by facilitators who attend the women's self-help groups. So as Neena explained all of these complicated interventions, most of them are based in women's self-help groups that meet pretty much on a bi-weekly basis during the time of the intervention. And so, the facilitators would bring the nutrition curriculum into that setting. And so, it was basically mothers, although people always say are men allowed to come to these women's self-help groups? And the answer is yes, they are, but they're not really there very much. So, basically, the targets are the mothers. Who are, in this context, mostly in charge of feeding the children and selecting the food items to give to the children.

Dale Davis

Okay, thank you. There was also a question on if you were to redesign the impact evaluation, what are the specific things you would change? Are there anything you would change, based on what you know now?

Laurie Miller

Well, that's a provocative question, I think we could always look back and wish we had done things differently. But to me, one of the important findings was what was going on in this partial package group. And I think we could have looked at them in a lot more detail, and maybe collected some separate kind of information about their attitudes, or their feelings, as the project went forward, and they were getting this limited training.

Dale Davis

Right, so in the package, one of our participants has asked about the full package, and what that had. And we could maybe combine that with, are there any child-rearing quality or child development aspects that you feel were critical for the social capital package?

Laurie Miller

Well, Neena, you can chime in here anytime, but the full package really still does not talk about child development in a particular way. So that was an interesting kind of fallout of the project, that the child development in that group of two-year-olds look better in the families that had received the full package intervention. So that that remains, something that is worthy of further exploration, I think.

The nutrition curriculum was definitely focused on children and ASF consumption, dietary diversity, and all the infant young child feeding practices that are recommended. So that was the core messaging that was provided in the nutrition curriculum.

Dale Davis

Okay. All right, um and there's another question on whether you think there was influence in you know when you look at your evaluation, influence from other projects in the area. For example, Suhaara, or the multi sector nutrition plan rollout by the government that may have also influenced the outcomes?

Laurie Miller

Yeah, was a tough time to be doing research in Nepal, right because there were a lot of programs. And I think everyone has been dealing with that. We were in a part of the Banke district, that was not part of Suhaara, so that doesn't mean that people didn't have friends who were receiving those inputs and interventions, that doesn't mean people didn't hear the radio messaging, and so on. So, we really didn't have a good way to control for that potential impact. But we felt that that was probably equalized among our three groups. And I should say that those three groups for geographically separated from each other, so there we were trying to minimize crosstalk between the groups. But certainly, in the context of Nepal at the time, there was a lot going on.

Dale Davis

Right. And is there anything that you would say was a real winner in the package from your perspective?

Laurie Miller

Well, I think it's something we need to understand better, because as you've heard from Neena, she explained it so beautifully, what a complicated program Heifer offers at so many levels. And it's really, as she said, it's changing the mentality of individuals and giving tools to move forward with what's available. And that's a fascinating process, and I think we could all learn more about how that really works. The fallout from those personal changes and that development of a sense of agency and ability to make change is really important, and how that happens, that's what I'm calling the secret sauce. Because I think it's kind of a magical change that happens in individuals and families. And we all need to know more about how that really works.

Dale Davis

Great. Thank you. To Katie, I've got a couple of questions, we've got a couple of questions here, looking at the aquaculture work that was done. And what are some of the challenges in introducing and implementing aquaculture for small holder farmers? And how can you go about establishing this effectively for smallholder families, and even in combination with poultry care.

Katie Appel

That is a great question. Our study was an observational study, and so it wasn't an intervention, so we didn't actually introduce aquaculture into these communities. And there are many USAID programs active in the communities that promote aquaculture and horticulture engagement and are active in increasing the number of households that participate in these types of agriculture. And we unfortunately

didn't have data on whether or not the households in our study participate in those programs but are kind of using these results as evidence that USAID should continue promoting both aquaculture and horticulture.

Dale Davis

Okay, that they're a worthwhile combination.

Katie Appel

Exactly.

Dale Davis

And, and then I have a question here on whether you looked at women's time use, and whether there were these demands that put on women's time added to their overall daily demand. And just thinking about the adverse results of ASQ at age two of the children in the partial package. So how did you find women's time?

Katie Appel

Is that for me, or for Laurie?

Dale Davis

Sorry, this says Bangladesh, sorry.

Laurie Miller

Yeah okay, I, we did not look specifically at women's time use. And that is certainly an important piece because we were interested in how that would affect child development, and the partial package people had a time commitment as well, because they were involved with the training. It was not as extensive a time commitment as the full package group, but they had a time commitment, so the question comes up. Why was there a difference? And was it perhaps because the women in the full package group not only had more time involved with their activities, but they felt empowered and maybe that led to better parenting quality in some way. Or, alternatively, one could hypothesize that the family members of the women who were in the full package group were enthusiastic about the project. Because although it's directed towards women, it's really the full family that gets involved. So maybe they pick up the slack and they said, well you know she's at her Heifer group and I'm going to take care of the baby this afternoon because she's busy with something else. So, it's some sort of a balance in that manner.

Dale Davis

Okay, yes, thank you. I see Katie you're typing an answer on why aquaculture, specifically but I think it might be useful to really look at where aquaculture is an appropriate intervention, because it does so rely on access to water, and you know in some settings in some countries, water is really an issue. And how you manage that particularly in smallholder families.

Katie Appel

Yeah, exactly. Bangladesh is very low lying, at sea level. The part of Bangladesh that we were active in was in the southwest portion, so bordering the ocean. So, there's a lot of flooding and just there's a lot of water there. So, it's a really suitable area for aquaculture and is really important in the livelihoods of many people that live there.

Dale Davis

Yes, yeah exactly. So, you know, conducive environments are so important and so critical. When you're working with smallholder families. You know, the whole project can be at risk if there's not enough, there's not enough to sustain it. So I think we have actually come to the end of our Q&A time.

And thank you, if I've missed any questions, please make sure that you note those again in the question box, and we can respond to you and the panel members can respond to you at a later time.

So, before we close out for the session, first of all, I'd like to really thank our participants. Thank you so much for your engagement and the time you spent listening to the presentations which actually don't almost adequately reflect the enormous amount of work that went into doing the research, conducting the programs, doing the research, and the analysis and preparing everything. So, a big thank you to our panelists and for the programs that you worked with and the teams that were involved. And before we go, I'd also like to give you a kind of, each of our presenters, a sort of 30 second closing thought that our participants can you take away with them. And to start that off, I would like to go to Katie first.

Katie, do you have your takeaway highlight for the participants.

[Katie Appel](#)

Yeah again, thank you all for joining today, it's been a very interesting and insightful session. And just wanted to highlight our main findings, but the combination of aquaculture and horticulture is very important to improving the diversity and overall diets of women and children. And though we didn't see a, you know, significant result with many of the nutritional outcomes, it just highlights how complex nutritional outcomes are and how many factors there are that are needed to be addressed to achieve sustained improvements.

[Dale Davis](#)

Thank you, Katie. Laurie, what's your main thought.

[Laurie Miller](#)

Okay, well, for the donors who might be listening, I just want to emphasize it takes time to see change. And it's important to allow adequate time to do appropriate follow up. And it's complicated to work with these multi sectoral projects. From a research point of view, I want to echo what Nassul said, which is control group is really important. And we have to have an appropriate control for the kind of work that this is. And from a research standpoint also, I think it'd be really helpful and fascinating to try to make a more granular assessment of what some of these components of social capital development really are and how they really impact the outcomes, particularly for children. And thanks to everybody for your great questions and for being here with us today.

[Dale Davis](#)

Thanks Laurie, over to you Neena. Hi, Neena, are you there to give us your closing thoughts?

[Neena Joshi](#)

Can you hear me?

[Dale Davis](#)

Yes, now we can.

[Neena Joshi](#)

Okay, so. Connection has been unstable here. So, thank you, this has been a very engaging conversation, great questions I really enjoyed it. I'm going to emphasize what Laurie just said. It's complex, it's time taking, so we should have patience and then willingness to allocate enough resources and time in order to see the intended outcome. And our work has shown that engagement of people is key, so the social capital piece of work we've done, I think that's the secret sauce. So, until we get people excited and engaged and set a process where they can embody the learnings or the knowledge that we want to impart, that is key to whatever technical knowledge interventions that we make. So engaging people, understanding them and their coming on board is very important, so creating that social capital piece. Is, we think, very important and that should not be ignored. You need it in any program. Thank you.

[Dale Davis](#)

Great. Thank you, and now Nassul, your closing thought.

Nassul Kabunga

First and foremost, thank you for the excellent moderation of the session. I think I have learned a lot, also from my colleagues. I think my views are not any different from what Laurie and Neena said. But, for me, it has been an exciting time working on this project as somebody who's inquisitive, but also you know you're working at the intersection of action research, but also needing to have the real answers to several other people, that would not have them. What I've learned over time is that you really don't get people to change in a very short time. So, you need to keep bombarding them with this kind of information. And the forum, like the one we have today, is important. So, you imagine that you know we have results from Uganda, we have results from Nepal, Bangladesh, and so on. And they tend to all be focusing to the same, sort of like they're pointing the same sort of like results and conclusions. If we had ways of reaching out to so many people, especially in the policy making and programming, then I think it would make, you know, a much bigger impact than just talking about it in the way we are talking about it and sharing knowledge and so on. So we really need to reach out, that's like my key point. So, thank you so much again, thank you so much Tufts for managing this project, and several others, and thank you for organizing this webinar.

Dale Davis

Thank you so much. Thank you to our panel, thank you to organizers, Tufts University, to Devyn and Grace and the team. And thank you so much to the participants, and have a good rest of the day, or evening.



USAID ADVANCING NUTRITION

Implemented by:
JSI Research & Training Institute, Inc.
2733 Crystal Drive
4th Floor
Arlington, VA 22202

Phone: 703-528-7474
Email: info@advancingnutrition.org
Web: advancingnutrition.org

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