



What Does Nutrition Cost? New Resources in Costing and Cost Effectiveness of Complex Nutrition Interventions Webinar

Webinar Transcript

Kossana Young

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For those of you who just joined, feel free to introduce yourself in the chat box with your name and your location of where you're joining in today. We'll give it about 30 more seconds as people file in.

Great. We'll go ahead and get started. Thank you all so much for joining today's webinar on *New Resources in Costing and Cost Effectiveness of Complex Nutrition Interventions*. My name is Kossana Young. I'm a communications officer with USAID's Advancing Nutrition, and I will kick us off with some Zoom housekeeping and reminders.

To start, if you, at any point during today's webinar, are unable to hear the speakers, please make sure you've connected your audio by selecting the headphones icon that you can find in the bottom panel. You can also find your chat box in the bottom panel. As I already stated, please, feel free to send a message to everyone introducing yourself, and if you have any questions, or have any need for Zoom help, please, feel free to send that also in the chat box, or ask for any support in that way.

Closed captioning is enabled in English. If you need closed captioning, you can also find that by clicking the CC also down in the bottom panel, and then, you'll be able to have your closed captioning on the screen. Finally, please, note that this meeting is being recorded, and live-streamed on LinkedIn. Next slide, please. Thank you.

During today's session, if you have any questions for either of our speakers, please, submit them using the Q&A chat box. Also, in the bottom panel, you'll see the Q&A with the little bubbles down there at the bottom for you to click on, and panelists will either reply back to you via text in the Q&A chat box or will answer your questions live during the Q&A discussion portion of this webinar.

I'll go ahead and go through the agenda. To start, we'll have opening remarks from USAID. Following those opening remarks, we will have Carol Levin going over what are the costs of multi-sectoral approaches to improved maternal and child nutrition, new resources in costing complex nutrition interventions.

Followed by Carol will be Nicole Bellows, who will be going over the business case for investing in nutrition, social, and behavior change. Following those two presentations, we will have our live Q&A discussion where we will answer the questions that you put in the Q&A box. Following that, we will have our closing remarks by USAID. Now, I'm happy to turn it over to Rebekah Pinto, our deputy chief in the Nutrition and Environmental Health Division at USAID for opening remarks. Over to you, Rebekah.

Rebekah Pinto

Thanks so much, Kossana. It's great to see so many of you here today. As Kossana mentioned, I'm the deputy division chief of the Nutrition and Environmental Health Division in the Bureau of Global Health at USAID. I'd like to begin by thanking you and welcoming all of you who are participating and contributing to this event today. I know some of you are joining either very early or very late your time, and it's great to see so many joining literally as I'm speaking.

Understanding the cost of the interventions we're proposing together with the sense of the tangible benefits that they can achieve sometimes seems simple in its design. I also know that the topic of costing multi-sectoral interventions for nutrition might not immediately feel like the most glamorous one or one that directly lends itself to accomplishing the nutrition outcomes much of our day-to-day work is really focused on.

However, shared approaches like the ones we're about to hear about today have the potential to help stakeholders, whether small NGOs, or larger national-level governments, really better understand and how to prioritize approaches given increasingly constrained resources.

More importantly, reliable and accurate data on costs and benefits of program, encourage accountability, support better policymaking, and really are a vital tool for national and sub-national level stakeholders to advocate for greater fiscal space for effective multi-sectoral nutrition interventions.

Today, I'm glad to be able to welcome the two speakers who will be talking about their efforts to conduct much-needed economic evaluations in multi-sectoral nutrition programs and delve more into the business case for social behavior change and social behavior change communications as part of complex multi-sectoral nutrition programming.

First, and I apologize if I've gotten order of this wrong, we're going to hear from Carol Levin from the University of Washington, both about the SEEMS common approach to nutrition to guide economic evaluations, and how this was really used to calculate the true costs of social behavior change communications program delivery across four projects, including one that's very near and dear to me, Suaahara II in Nepal.

Next, we're excited to welcome a presentation by Nicole Bellows from Avenir Health on how they really used cost-effectiveness analysis to evaluate the value of social behavior change activities using data from two case studies, one in Nepal and one in Nigeria. Innovative approaches like the one we're going to hear about today, not only demonstrate the cost-effective nature of SBC interventions, like those focused on breastfeeding or complementary feeding, but also really serve as a critical advocacy tool to encourage those who are deciding how to spend money on nutrition and fund SBC work.

They also demonstrate that needs still exist to share insights, build resources, and most importantly, strengthen available costing data to measure cost effectiveness, cost benefits, and better target our malnutrition programming. It's important for programs to plan these sorts of costing analyses from the very start to ensure that accurate costing data is collected throughout implementation. Having this data is the only way for us to know the cost-effectiveness of our nutrition interventions.

At USAID, we understand costing as a critical component to achieving sustainability of our nutrition investments and for strengthening local commitment, capacity, leadership for multi-sectoral nutrition policy and programming. Most importantly, what I'm really looking forward is hearing from all of you today, how are you incorporating these elements of economic evaluation into your nutrition programming. I'm excited to stay tuned and keep looking at the chat throughout our discussion together. With that, I'm going to turn it back to Kossana and the team. Thank you so much.

Kossana Young

Thank you so much, Rebekah, for those wonderful opening remarks. You truly did set the stage. Next, we'll hear from Dr. Carol Levin. Dr. Levin is both an agricultural and health economist, and it is an associate professor in the Department of Global Health at the University of Washington. Her research focuses on the costs and cost-effectiveness of introducing and scaling up public health interventions and new technologies related to infectious diseases, non-communicative global diseases, maternal and child health, and nutrition interventions.

Previously, she was the director for the Global Health Cost Consortium to generate improved estimates of global health costs for use in planning, budgeting, and economic evaluations. She is currently the director of the Strengthening the Economic Evaluation of Multi-Sectoral Nutrition Strategies for Nutrition Initiative or SEEMS Nutrition. Today, she'll speak on what are the costs of multi-sectorial approaches to improve maternal and child nutrition, new resources, and costing complex nutrition interventions. With that, Carol, I'll pass to you. Thank you so much.

Riley Auer

Carol, unmute

Dr. Carol Levin

Zoom basics. Good morning. Thanks, Riley. Good morning. Good afternoon. Good evening, everyone. It's great to see so many of you joining this webinar. Next slide, please.

For this crowd, I probably don't have to convince you too much that-- of the importance of evidence on costs and benefits for multi-sectoral nutrition strategies. They are critical. Multi-Sectoral nutrition activities are critical to achieving the World Health Assembly targets for nutrition for 2025. They drive the most impact by addressing underlying causes of malnutrition and our long-term investments in food system approaches necessary to address the double burden of malnutrition.

Decision-making is ideally supported by information, identifying effective, low-cost interventions that promote food systems in multi-sectoral strategies, but the evidence on cost and benefits is lacking. There's little evidence on effectiveness and cost-effectiveness of multi-sectoral and integrated approaches to improve nutrition.

Of what's available, the critical interventions that we're missing are on marketing and the price of healthy and unhealthy food, demand creation for healthy foods, and the transparency and standardization of existing evidence is weak. The lack of evidence was a reason nutrition-sensitive programs weren't included in the global investment framework for nutrition, which is an important point.

If we look at the bibliometric review of economic evaluation data in global health, what sticks out here is the small number of studies looking at malnutrition compared to other global health interventions. Next slide, please.

Examples where economic evaluation evidence has been used to strengthen decision making is on this slide. You can see it's critical for promoting health technology, assessment, and innovations. It's been important for identifying packages of interventions for universal health coverage.

In the absence of data on cost and cost-effectiveness, some important interventions may not be included. Economic evaluation has been essential, for instance, for the introduction of new vaccines, for investing in underutilized vaccines. It's been critically important for promoting food fortification in the area of food-based strategies for addressing nutrition. In fact, food fortification project that was launched in Haiti was supported by evidence on benefit-cost ratios of wheat flour fortification. Again, this data is critical for these kinds of decisions. Next slide.

Moving on from the background, let me give you an introduction to the SEEMS nutrition common approach to economic evaluation. Strengthening economic evaluation strategies for nutrition, SEEMS nutrition, has been developed to fill that evidence gap, to increase the number of studies that are generating information on cost and cost-effectiveness. The project's main objectives were to define appropriate standardized methods for measuring cost and cost-effectiveness of integrated multi-sectorial nutrition strategies and interventions.

These multi-sectoral approaches can include nutrition-specific, nutrition-sensitive components. The other objective of the project was to estimate cost and benefits as well as cost-effectiveness of these approaches. The best and most useful data from economic evaluation of nutrition programs will be data that is robust, that is collected through transparent, comparable, and standardized methods, and that can directly inform decision-making.

To that end, we've set about developing a common approach to conduct economic evaluations. This common approach builds and aligns to existing guidance for standardized methods. We are not developing new economic evaluation methods. We're relying on existing reference cases and best practices. We have to find a way that allows us to compare across very different types of investments.

In the first stage of our proposed approach, we develop a typology and a conceptual model of multi-sectoral interventions. This typology builds from the nutrition-sensitive value chain, which many of you may be familiar with, as well as the scaling up nutrition compendium actions for nutrition. It helps promote an apples-to-apples comparison amongst studies, evaluating the same types of studies.

In the second stage, we describe the program impact pathway or the theory of change that describes the hypothesized benefits of a program. We detail the specific activities carried out for the program and identify inputs and costs measured for each activity. This ensures that the relevant benefits and costs are all captured.

In the third stage, we develop, we adapt a generic standardized set of data collection tools to the context and program, and then, we collect the necessary cost data. Ideally, this is done alongside a robust impact evaluation that will provide the necessary evidence of program effectiveness. Then, in the last step, we compare the cost and benefits using various approaches to combine benefits and consider long-term effects. Next slide.

Ultimately, the cost data that we collect and that we're going to share with you today, will be combined with evidence on impact of benefits of multi-sectoral programs. Let's impact the cost and benefits before sharing evidence on results. Next slide.

One of the-- it's not innovation but it certainly is different than many approaches to costing and that we take a comprehensive approach to evaluate the cost data. What does that mean? Right now, what you're seeing on the left side are costs. These include costs from the funders, the direct costs, for instance, the direct costs of Suaahara II at the USAID program in Nepal, as well as the opportunity costs of implementing such a program, the government costs, community costs, municipality nutrition and health planners costs.

We capture the direct costs of the funders, of the partners, and of the beneficiaries themselves, the participants, individuals that have to put in time to get something out of these investments as well. We capture both direct costs as well as what's called opportunity costs or economic costs.

On the effects side, we can capture the monetary value of benefits. This might be increased production of nutrient-rich foods. We also will rely on impact evaluations on impacts of micronutrient deficiencies, growth anthropometry, and other dietary diversity. Next slide, please.

However, as many of you know, the benefits the range of outputs and outcomes from investments in multi-sectoral investments in nutrition are vast. Part of our challenge was how to best capture these. Economic evaluations will focus both on health and monetary benefits that result from a program. As

part of the calculation, we estimate those costs that I share with you in the previous slide, but we also have to match those to the range of outputs and outcomes that the investments yield.

Now, depending on the sectors represented, we can choose our outputs and outcomes of interest from a long list of potential benefits. This graph shows the measurable multi-sectoral benefits that could be considered in estimating the cost of a program.

For example, for a model farm, they are intended to increase the production of nutrient-rich foods and increase intake of micronutrient-rich foods and increase dietary diversity. Ultimately, we are hoping that those investments improve nutritional status, and they may even increase household income.

These are the kinds of costs and benefits that the SEEMS Nutrition is measuring. Today, we're going to be focusing on cost efficiency. We're looking at the cost of programs, achieving program outputs. I want to mention that in the second presentation, you'll be seeing information on cost-effectiveness. This compares cost to changes in either DALYs or health-related outcomes. One can also compare cost and benefits using cost analysis, where all of your costs and benefits are put in the dollar term.

There's no single perfect measure for capturing the full range of benefits from the sectoral nutrition interventions. However, the SEEMS Nutrition Program is exploring new ways of combining benefits and costs so we can unpack these better. Next slide, please.

Today, we've been asked to focus on-- these are the projects. Sorry. This is the range of projects that we've applied our approach to. The common approach was designed for six initial ongoing projects that already had been implemented and that had a planned evaluation. Today, as I mentioned, we're going to focus on costs of four of these. All of them have strong behavior change, communication, components to strengthen the demand for nutritious foods.

The two projects in Kenya by ILRI and GAIN were focusing on improving the supply of nutritious foods. We won't be discussing those today. In a supplemental grant, we're also exploring improved aquaculture production as well as looking at food safety. Today, we'll focus on the cost of the four programs that have strong social behavior change communication activities. Next slide, please. Next slide.

As you can see, the four projects shared here are the USAID Suaahara II project, three projects that were supported by the Bill and Melinda Gates Foundation in Burkina Faso, Malawi, and Bangladesh. Now, some projects here had a mass media behavior change component such as Suaahara, but all projects had a form of interpersonal communication through either individual or household counseling. There could have been also group counseling, peer counseling, typically through women's groups, community events. Then, many of these, as you'll see in a moment, had community health workers that were visiting households. Each of these projects were slightly different.

For instance, Suaahara II was a scaled-up program in 44 of 88 districts in Nepal. In Burkina Faso, this was in three regions. In Malawi, this was a limited study in a demonstration project. Bangladesh, this was also a randomized control study in a limited setting. They weren't at scale. Next slide, please.

How do these very different projects compare? They all have different components. For instance, SELEVER focused on poultry production and strengthening and enabling the environment of the poultry value chain versus the Suaahara II Project, which aim to improve household production of nutrient-rich foods, as well as water sanitation, hygiene, and tropical-- I'm sorry. WASH activities.

All of these projects have very different components, but when we look at our typology of activities, whether those are strengthening the supply of nutrient-rich foods, strengthening the demand for nutrient-rich foods, or strengthening and enabling environment. We can see that, in fact, many of them have very similar activities around materials development, around home visits, around providing inputs, training, offering community events.

If you look at the demand creation activities, these typically involve material development and training. What varies across these projects is the entry point. Malawi, the entry point was through childcares, early childhood development centers.

In Bangladesh under TRAIN, it was building on a credit program and strengthening gender. In Burkina Faso, again, I mentioned it was poultry production. In Suaahara, there were multiple entry points. All projects had similar coordination activities around integration and coordination across many sectors, agriculture, health, and nutrition. They had monitoring and evaluation activities and awareness-raising activities.

We are able to identify all of these activities and estimate resource use and costs for inputs and these activity categories. What we're going to do today is just jump straight to an estimate of total in unit costs across the four programs. This is for the full project period in each of these. What you can see is that they're at different scale. I mentioned that earlier. Some of the programs were smaller than others like the Early Childhood Development Program in Malawi and TRAIN. Then, the Scale-up Program at larger-scale in Se Lever and Suaahara II was, as I said, actually half of the country was covered in Nepal.

Now, Suaahara II was about \$60-million project over five years. What we did was take a sample of four districts, and so we're providing you with the costs of reaching a typical district. These costs are both financial costs that you're seeing as well as economic costs. This include the opportunity costs of time of volunteers and beneficiaries.

What you can see as that-- one can't really compare total incremental costs because the scale varies so much across the four projects. What we can do is look at the unit cost of the cost per participant. When we do this, what we see is that we have a range-- we have a range of costs from 112 in Bangladesh, the TRAIN project, to around 130 per participant reach, to 210 per participant reached in Burkina Faso.

Now, remember, these costs are not the financial costs. These are not the costs that the donor paid. These are full costs with both opportunity costs as well as financial costs of reaching the target population for the intervention. You might see under the Bangladesh there's a range from 65 to 157. That's because it was a randomized controlled trial with several arms.

You can see that when you add more components to a project, the way the TRAIN project was designed was a pretty basic package for \$65 per person reach to the whole kit and caboodle where you had gender sensitization, credit, behavior change, and engagement of husbands and wives and regular household visits that costs \$157 per participant reached. That's the most-- that was more complex. Next slide, please.

What's really interesting is we mentioned that we have this typology to the nutrition-sensitive value chain. What we gained from this is we can consider how costs are allocated by these activities that either increase demand or increase the supply of nutrient-rich foods and those that which strengthen and enabling environment. We can see that the demand activities in three of the four cases account for nearly 50% of total financial and economic costs.

In Burkina Faso, these are nearly-- the efforts to increase supply are nearly 50% because this was a project that had a large focus on improving home poultry production as well as strengthening the markets and poultry supply chain.

Understanding the allocation of demand and supply can actually help identify where these resources need to come from in a typical government budget or even a donor budget. Which sector, which division, which department should be contributing resources to multi-sectoral programs? Next slide, please.

How do these costs compare with interventions with behavior change communication from the literature, which is fairly limited? You'll see some research, the next presentation will be research from the Breakthrough, researched by Avenir.

For their analysis, they did a systematic review of behavior change communication costs, which ranged in about \$6 to \$7 per person for interpersonal or group personal communication. An enhanced homestead food production program supported by Helen Keller International in Cambodia was as high as \$929 per household, and again, had multiple components. Lastly, a study on the promotion and production of orange flesh sweet potato linked to antenatal health clinics was about \$155 per woman. This is what we find in the literature.

Let's go ahead and see what's the added value from the SEEMS Nutrition approach. Well, one, we think we've been underestimating some costs. In order to reach-- we've been underestimating costs, but we've also narrowed the range from previous studies. From \$6 to \$900, we have a set of studies that are now closer in the range to about \$150 to \$200 per person reached when considering the full financial and economic cost. It's critical to include these opportunity costs of frontline workers and participant economic cost. It helps us to understand the value of their time. It may even help to understand the results that you're achieving on your impact estimates because it captures, "What does it take for this to work?"

The opportunity cost of these programs is high. When we're coming in with investments, we have to be sensitive to what we're asking of community volunteers and the participants themselves. Repeated exposure for behavior change communication is necessary, but it's costly. Household visits are costly, with frequent engagement and reinforcing messages. Without refresher trainings, we may not see sustained behavior change.

Those are the insights from our work-to-date. The SEEMS nutrition, we have a-- Next slide, please. The advantages of our approach, we believe, is that we are now generating estimates of unit costs and benefits that are comparable across diverse complex programs. We haven't shared our economic evaluations yet. We have one that is published and the references in the slides, we'll share with you.

We've been able to disaggregate cost by activity and nutrition-sensitive value typology, which allows for a good assessment of cost drivers. We've generated generic tools that lower the bar to integrating costing into evaluations as we heard earlier. It's important to plan your cost studies at the beginning of your evaluations and cost alongside impact evaluations. We think of going from complex to simple. It's possible to support you in this work. We have a-- Next slide, please.

We have a SEEMS Nutrition website, strength and-- we offer training on this website. All of our tools are available and we'd be delighted to help support your interest and engagement in integrating costing alongside robust impact evaluations. Thank you very much.

I'd like to acknowledge a stellar team over the last four years from many organizations that have helped to get us to this point and references will be available. There's three slides of references where you can go and read more about all of these studies. Thank you very much. Over to you Riley.

Riley Auer

Thanks so much, Carol. That was so exciting to hear. We're excited to unpack some of these questions that are already appearing in the Q&A in the section following Nicole's presentation. First, Dr. Nicole Bellows is a senior associate at Avenir Health working in the economics and costing center. Under Breakthrough Research, Nicole has served as the lead for costing and cost-effectiveness portfolio, which has worked on synthesizing evidence and fostering the generation of new evidence on SBC costs and cost-effectiveness.

Prior to joining Avenir Health, Nicole worked as an independent consultant in Kenya and Zambia, supporting many organizations on projects related to reproductive health, malaria, HIV, nutrition, and infectious disease. Today, she'll be talking about the business case for investing in nutrition, social, and behavior change. Thank you so much for joining us today, Nicole. Pass to you.

Dr. Nicole Bellows

Great. Thank you. Hello, everyone. I think we'll just go ahead and get right into it. Next slide. This work is funded under the Breakthrough Research, which is a USAID Global Health Bureau project that's concluding this year. I work as part of the team on Avenir Health, which leads the costing and cost-effectiveness portfolio that this business case is a part of. Next.

Here, you can see our definition of SBC as provided by USAID. A lot of the work we synthesize is around SBCC, but we use SBC as a more inclusive term, but acknowledging that most of these activities are SBCC. They're looking at mass media, community media, different types of interpersonal communication, as well as digital media and provider communication training.

Our primary aim with this activity was to examine the cost-effectiveness of SBC for breastfeeding and complimentary feeding. We conducted prior business cases for SBC, for family planning and malaria, which both found SBC to be cost-effective interventions and we wanted to explore this for nutrition, where we could develop an evidence-based model that could also highlight any gaps in the literature for future research. We focused on three primary outcomes, early initiation of breastfeeding within the first hour, exclusive breastfeeding for the first six months, and complimentary feeding to ensure adequate nutrition for those 6 to 23 months.

In terms of our approach, we had three main steps. First, we wanted to synthesize the literature on the impact of SBC on our key nutrition behaviors and the SBC unit costs, which is the cost to reach a person with an SBC intervention. Next, we wanted to use the literature synthesis to match the median impact to the median costs for SBC interventions, to build a model that can examine the cost-effectiveness of illustrative nutrition investments. Then, we-- Sorry. We can go back. The last step there was to examine the cost-effectiveness results when we applied this model to our illustrative investment scenarios in two specific locations.

Great. Next. When examining the impact literature, we broke down the results into three distinct links. Link one looks at the relationship between the SBC interventions and the intermediate determinants to behavior change like, knowledge, attitudes, and family support. Link two examine the relationship between the improvements in those intermediate determinants to the key changes in behavioral health outcomes. Then, link three captures the literature on that direct link on the impact of SBC interventions to key nutrition behaviors.

After extracting the data from the study, we grouped study results looking at the same general relationship, and calculated the median odds ratios as parameters to use in our impact model.

In terms of our findings, well, we found that there's a lot of literature examining the impact of SBC interventions on breastfeeding and complementary feeding. For that first link, we extracted 73 studies with most of the data linking through intermediate pathways for being found for the IPC interventions, which we were able to break down into subtypes of individual group, IPC combined with other SBC community interventions such as community-engagement activities.

For link two, we extract the data from 84 different studies, finding more intermediate determinant results for breastfeeding than for complementary feeding. We also saw that while early initiation of breastfeeding was one of the primary behavioral outcomes, it also served as an intermediate determinant for our exclusive breastfeeding. Then, link three had the most literature available with data from 133 studies extracted. Next.

With our synthesis complete, we then map the pathways from the SBC interventions to the behavioral impact based on the available literature. Here's the pathway map for early initiation of breastfeeding. For IPC, we were able to link through improvements in breastfeeding attitudes, family support, and knowledge, which then linked to the improved outcome.

Note that we were unable to make these links through those determinants for mass media and mid-media or provider communication. I can only map digital media through breastfeeding knowledge. In this pathway map, the width of the arrows here represents the strength of the relationship between the links as represented by those median odds ratios in our impact model.

Then, where we're able to go through intermediate determinants, that dotted line represents the direct relationship between the event interventions and outcomes that are used to capture any residual impact that's not captured by the intermediate determinants. This becomes important later in the report when looking at the results.

Here's the map for exclusive breastfeeding, and you can see that there's more evidence in the literature that allows us to map the pathways from the interventions to behavior change through those intermediate determinants. Also, as I mentioned, you can see the early initiation serves as an intermediate determinant there. Next.

For complementary feeding, you can see that there's less evidence on the intermediate determinants and that we don't have enough evidence on provider communication to include this outcome for that intervention for this outcome. Turning to the costing side, as Carol mentioned, we built on prior work where we synthesize the literature on SBC costing studies. Those are primarily financial costs. We collated nearly 200 studies into an SBC cost repository, which is available online. A subset of these then had comparable unit cost data and methodology that we could build a tool based on data analysis.

That's how we estimated the SBC unit costs for the different types of SBC interventions based on their characteristics in the country that they're based. We used this tool for our unit cost in this business application here. You can also see there's an upper and lower range that we used for our sensitivity analysis. Next.

Using the results from our literature synthesis, we then took the median cost and the median impact to try to build a model that can examine the cost-effectiveness of hypothetical SBC interventions for breastfeeding and complimentary feeding. In order to assess cost-effectiveness, we need to calculate on Incremental Cost-Effectiveness Ratio or ICER, which is essentially the measure of the cost numerator and a measure of the impact as the denominator.

In this model, our ICER is the cost per disability-adjusted life year averted or DALY averted, or that cost per DALY averted is essentially the cost to prevent the loss of a healthy year of life. To determine cost-effectiveness, we work with country partners to determine what would be a reasonable budget for SBC focused on breastfeeding and complimentary feeding. Then, we take that budget, and map it to our unit cost to estimate how many people could be reached each year.

For those reached, we then applied the median odds ratios to calculate the estimated improvements in health outcomes, and then, modeled those improvements in the live safe tool. This allowed us to calculate our ICER or our cost per-- which the cost per DALY averted.

Then, we compared the ICER to the GDP per capita based on the thresholds for cost-effectiveness that were established a while ago by the WHO, where if the ICER is less than the GDP per capita, one can consider it highly cost-effective, and if it's less than three times the GDP per capita, it's considered cost-effective for health interventions.

Our first application was in Kebbi State, Nigeria. To be clear, we're not specifically evaluating what has happened or what will happen in Kebbi State, Nigeria with these results because our model is using the median costs and the median impacts from the literature to look at the state of the field itself.

By applying this model to a specific location, we can see what we would expect in terms of cost-effectiveness of SBC investments, if the interventions approximated those median costs and median impacts. Our data sources are here for Kebbi State. We use the most recent DHS studies for our baseline outcome variables. We used survey data from another Breakthrough Research activity for our baseline intermediate determinants. Then, to determine the illustrative budget and SBC activities, we used national and state-level planning documents where we came to an investment amount around a million dollars over the course of a five-year timeframe.

Jumping right ahead, you can see here are the overall impact results with the projected increases in the behavioral outcomes in Kebbi State by the end of the five-year investment timeframe. Note that these are population level increases, that when we then model them in the live save tool, they amount to approximately 270 deaths averted, which come to approximately 8,000 DALYs averted.

Our resulting ICER is \$124 per DALY averted. When you compare this to the specific GDP per capita, which we used 568 for Kebbi State, we can see that our illustrative investments are expected to be highly cost-effective. There's also this sensitivity range using our higher and lower unit cost estimates and that entire range is well below our threshold to be determined highly cost-effective.

We did the same for Nepal, again, relying on the most recently available DHS for outcome variables. Then, we were grateful to have the assistance of the Suaahara II project, which provided some survey data for our starting intermediate determinate values as well as some planning documents to guide our illustrative investment, which we had at approximately 7 million over a five-year period. Again, that's important to emphasize we're not evaluating the Suaahara II project here, but rather, using this guidance to make sure that our illustrative investment is grounded in reality.

Here, you can see our impact results where the percentage point increases in our behavioral health outcomes were modeled and list and found to generate approximately 409 deaths averted and 12,000 DALYs averted. Our ICER for this particular application was 594 per DALY averted and is also below the GDP per capita, thus, indicating it also would be deemed highly cost-effective if the median impact and the median costs played out in this particular investment scenario. Again, that entire range is below our GDP per capita threshold.

While the business case document itself has a lot more detail on the methods and results, the bottom line finding of this activity is that when we put together an evidence-based model, we find that the illustrative investments for SBC for breastfeeding and complimentary feeding were highly cost-effective at 124 per DALY averted in Kebbi State and 594 in Nepal. This difference in the cost per DALY averted between these two locations is primarily driven by the higher infant and child mortality rates in Kebbi State, Nigeria, or the higher the mortality rates, the more potential the lives there are to save, and thus, DALYs to avert.

While we don't have time to get into all the pathway analysis in this presentation, another key finding from the report is that we really need more research to understand the pathways to impact from SBC interventions to the three behavioral outcomes.

Of course, it's important to acknowledge the limitations. As I mentioned previously, we're using the median's ratios and the median unit costs, so we're not speaking to any one particular intervention, but rather, the field at large. Of course, SBC interventions can certainly be found to be not cost-effective if they don't result in behavior change.

The investment scenarios used here are approximated based on our document review. We put a lot of effort in to make sure that they seemed realistic, but they don't claim to reflect all activities that are occurring or will be occurring in country. Next.

In terms of the implications of the findings, we feel that this document can be used to help advocate for increased or continued investments as they appear to be highly cost-effective interventions. We know

from our literature view that overall, SBC interventions work generally to improve breastfeeding and complimentary feeding behaviors. However, we would like to see more evidence to fully understand the pathways to impact.

Finally, as I've mentioned, the cost-effectiveness model that we used here is based on findings across all low and middle-income countries. It doesn't represent any particular program, but this type of model could be leveraged to examine specific programs if someone wanted to adapt it to their own unit costs or their own impact odds ratios.

This is a very high-level overview of the nutrition business case. There's a lot of details. It's hard to get into in a short presentation, but you can scan the QR code here to refer to the full report, which is on the Breakthrough Research website. There are also more details on the SBC business cases for family planning and malaria as well. That is all. Thank you very much.

Riley Auer

Great. Thank you so much, Nicole. That was so exciting to hear. It looks like we have a good number of questions being populated in the Q&A. Just a reminder, o all of our audience members, you are welcome to submit questions to both of our speakers using the Q&A feature of the Zoom.

Just to kick us off, a question for you, Carol, from Justine Caley(ph). "Demand creation really varies depending on materials or engagement with communities and approach. If it is scaled or not, depending on the scope of the intervention, including counseling, or radio ads, et cetera, can you, please, provide some insight into these nuances within your data?"

Dr. Carol Levin

Great. Thank you. As I mentioned in all of the four projects that we shared the information on, these were projects that had materials creation for infant, young child feeding, breastfeeding promotion, and they were delivered through several mechanisms. What mattered most was that there was frequent engagement with households.

For instance, there were monthly home visits or monthly participation in women's groups. All of the projects had these repeated and frequent engagement with households, which is why you see the higher level of costs that you observe. The Nepal project also had a mass media component.

In Nepal, there was mass media, but there was also interpersonal communication. In the three other settings, there was predominantly interpersonal communication. What really drives the costs and probably the effectiveness or the impact results is that continued frequent engagement either through household visits or community events. I hope that's helpful.

Riley Auer

Thanks so much, Carol. That's actually a really useful segue. Both Dick Tinsley(ph) and Rick Shukla(ph) were asking a bit about those different types of costs that beneficiaries would be experiencing. Could you speak or maybe even reiterate a little bit about how you calculated the direct and opportunity costs of the beneficiaries?

Dr. Carol Levin

Sure. What's really fascinating, which we found, we didn't expect this as part of SEEMS Nutrition, but what we observed is that, and as many of you may know, many of the projects that we shared with you today are driven by development assistance in health or donor-driven to some degree, the USAID program in Nepal, as well as the three programs that were supported and funded by the Bill and Melinda Gates Foundation.

When that happens, we actually have access to financial expenditures, so the direct costs we actually use what was actually spent. We spent a lot of time teasing out any kinds of unrelated financial expenditures, research-related expenditures, those typical participation in international meetings, which don't necessarily contribute to delivery of the intervention.

On the financial side, we ended up using financial expenditure data and carefully coding every line to inputs and activities that required that we actually interview program staff in all of the settings to find out how they spend their time and how they allocate it between either research and implementation. Then, within implementation, delivery of that project across all of those activity categories; planning, awareness raising, monitoring and evaluation, and at the lower levels, at the community levels, home visits, community events.

Now, in terms of capturing participant time, we used a limited sample and we would interview participants to find out how frequently they engaged with the project in a typical month, how much time they spent in different activities. We calculated average-monthly value of their participation and we used those estimates to calculate an annual amount of time.

Typically, we would find out that maybe they spent 5% of their time participating in these, and then, we value them at a local wage rate. In agricultural communities, that may be the daily agricultural wage rate. For participants captured time, did they have any out-of-pocket expenses for travel? Add those all together, value the time, and that's how we capture the opportunity cost of time.

Similarly, we did that with community health workers that were essential for delivery of the intervention, but maybe weren't reimbursed. Even in cases where community health workers received a stipend, we calculated the value of time to visit their households each month. If we observe that their time or transport exceeded what was covered, we included those. Thank you.

Riley Auer

Thank you so much, Carol. That's a really helpful response. Just being mindful of the time that we have left, I'd really like to pose a question to Nicole. Johannes Besa(ph) had asked, "We do multiple interventions at a time in a single project like early initiation of breastfeeding, exclusive breastfeeding, and complimentary feeding, sanitation, hygiene, et cetera. How can we calculate the cost for direct and indirect beneficiary costs?"

Dr. Nicole Bellows

Yes. This is a great question and it's something we've been thinking a lot about in terms of understanding the cost and understanding the cost effectiveness of integrated SBC. It's important to try to map all those different impacts into a common denominator. While we often do try to use the cost per DALY averted, that can be limited sometimes with our modeling capabilities of mapping all those improvements into one common denominator.

Additionally, I think that the literature, at least, is really new in this area. We are still trying to better understand, well, how do the costs for integrated compare to those standalone? How do the impacts compare? I know we've done some work, we've got some cost-effectiveness analysis of a couple of different integrated programs coming out in the next month or so. I think it's a really important issue and one that's really right for future research. I'd be curious to get Carol's thoughts as well.

Dr. Carol Levin

Yes. In fact, in the project that we didn't share with you today, because we're doing the analysis now, it was designed, it's a World Fish, one of the CG Centers, World Fish Project on improving the production and consumption of aquaculture through local service providers, through a mix of public-private sector players. It was designed to actually have both direct and indirect beneficiaries.

The bottom line is really-- this gets to one of the questions on-- similar to mass media, how do you calculate your beneficiary numbers? Of course, this is something that was stated at the beginning of this webinar is that it is so important to design the costing at the beginning of your project, make sure that you have a monitoring and evaluation system there that can capture both direct and indirect beneficiaries.

For instance, in World Fish, the direct beneficiaries are these trained, licensed-service providers who may be community member, a seed or feed dealers, but they may have fisheries that are involved who have hundreds and hundreds of clients. Do you get to count one fishery serves 500 clients? Well, if they had this behavior change, communication material available, if they were exposed, one might be liberal and your best guess is that those are your indirect beneficiaries versus your direct.

Clearly, distinguishing from the beginning who's direct and indirect is critically important. Then, treating the data like these are conservative estimates. We know we reach this to many people, and these are, hopefully, our best guess. You could also think about your intervention and the cost per capita. Does that make sense?

With respect to this mass media question, it's fairly similar. We do a lot of mass media. How do you calculate the beneficiary numbers? Well, one, ideally, you are, at some point, if you're doing an evaluation, you are looking at reach, and so, using those numbers would be the best-case scenario.

In the absence of reach, you may be able to use proxies from your media channel, do they have an estimate of their reach? That would be try to be conservative and take some percentage of that. In the absence of an actual evaluation, there are ways to do this, but they are ranges, and it's best to go conservative, in my opinion. Thanks.

Riley Auer

Thank you both so much. There are still so many more questions coming in and that have already been received. Unfortunately, we're running out of time for the day, but we will be able to share additional responses after the webinar closes. Thank you both again for those very insightful responses, and I'll go ahead and pass back to Rebekah for closing remarks.

Rebekah Pinto

Thanks so much, everybody. I want to begin by thanking Carol and Nicole, and really thanking all of you. I've enjoyed watching the Q&A and hearing the responses as much as the webinar itself. I think it's added just credible richness to the discussion.

I also have appreciated the incredibly user-friendly approach to talking about economic analysis. I think the breakdown enables us to have a richer, more fulsome conversation around how we can incorporate this into our work in a very real way.

Clearly, there is a compelling business case for SBC and I've appreciated the nuanced discussion around this, but what I'm left with is really the unfinished agenda and how many opportunities really still exist, not just to enrich the data itself, but to look at new pathways, new contexts, and variations on multi-sectoral programming, and so, I want to thank everybody here today. It's been a great discussion and I appreciate it being part of it.



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