Quality Anthropometric Data Collection in Household Surveys

Webinar Transcript

Yaritza Rodriguez

So we're going to get started. Hello, everyone, and thank you for joining today's webinar to learn more about Quality and anthropometric Data Collection in Household Surveys. I'm Yaritza Rodriguez for USAID Advancing Nutrition and the Knowledge Management Project coordinator for USAID Advancing Nutrition, the agency's flagship multi-sector nutrition project. Before we begin today's presentations, I want to quickly mention that today's webinar is being recorded? Now, I will quickly review a webinar environment and set a few norms for the webinar. As I do so, please feel free to answer the following questions that are showing up on your screen now. This webinar will be moderated by Monica Woldt. After the introductory remarks, we will have a presentation. We will have many presentations followed by a panel during which the speakers will address your questions. All participants will be muted for today's webinar. And as a reminder, please make use of the chat box in the bottom right hand side of your screen to introduce yourself, to ask your questions, or to ask for help with Adobe Connect during the presentation. We will collect and save your questions from the top box for people to address during the discussion period.

If you lose connectivity or cannot hear, close the webinar and re-enter the meeting room using the link provided you via email and then follow the instructions listed on this slide. When you enter the room, if you cannot hear on the audio setup wizard under the meeting to make sure your speakers are unneeded. By selecting my speakers from the drop down menu next to the speaker icon, a green speaker icon indicates that your speakers are connected. Again, use the chat box to ask tech support for assistance.

They will start a private chat with you and try to work through your issue. Finally, please note that your experience today may vary based on your Internet connection and computer equipment. If you're calling in via the phone lines, please make sure to mute yourself as a courtesy to the rest of the participants. Now, I would like to go ahead and introduce our moderator for today, Monica Woldt. Monica is a public health nutritionist with over 20 years of experience designing, managing and evaluating international, maternal and child health, nutrition, HIV and food security programs.

She currently serves as a senior technical adviser on the USAID Advancing Nutrition Project, where she provides technical assistance on food systems, food security and monitoring, evaluation and learning.

Monica, along with the others presenting today, serves as part of the team that supported the WHO and UNICEF efforts in the development of the 2019 document: Recommendations for data collection, analysis and reporting on undiplomatic survey indicators in children under five years old. Monica, over to you. Thank you.

Monica Woldt

Thank you so much, Yaritza. Welcome, everyone, and thank you for joining us. I am very excited about this webinar. As Yaritza mentioned, as you Yaritza mentioned, I had the honor of working with some of

our presenters today in the development of the 2019 UNICEF document on recommendations for data collection, analysis and reporting on anthropometric indicators in children under five.

The need for this document. It was identified in part through a technical meeting of experts that was hosted by USAID with support from the Food and Nutrition Technical Assistance, or FANTA Project 360. That was that was back in 2015. And we'll be hearing more about the 2015 meeting, as well as recommendations that came out of the work in the presentations today. So it's really wonderful to see the final product from this work, from all this work over … over the past few years and have the opportunity to share about it, share experiences, implementing the recommendations and much more in this webinar.

As we know, some of the key indicators of population level nutritional status are based on anthropometric data and accurate anthropometric data are critical to provide reliable information, reliable information for policymakers, program managers, researchers, for advocacy, to assess interventions, to guide planning. So we have an exciting group of speakers today who will share with us recommendations, experiences, and tools to ensure quality in the collection of anthropometric data, including in the in the context of the coronavirus pandemic.

So I'd like now to introduce our speakers. First, I would like to introduce Peter Aka, who works for ICF as a biomarker specialist. One of Peter's main responsibilities is to train field workers and consultants in Africa and Asia, the Caribbean to collect quality bio…biomarker data and anthropometric data. Pete previously worked for the National Institutes of Health as a postdoctoral fellow at the Division of Cancer Epidemiology and Genetics of the National Cancer Institute. I am also very pleased to introduce Eva Leidman, who is a nutrition epidemiologist with the Centers for Disease Control and Emergency Response and Recovery Branch. Eva has over 10 years of experience supporting response and operational research on nutrition in humanitarian settings, and she has for the past 10 months supported CDC's COVID-19 response. I would also like to welcome Nandita Perumal, who is an epidemiologist and a post-doctoral research fellow in the Department of Global Health and Population at the Harvard TH Chan School of Public Health. Nandita's research investigates the role of prenatal nutrition and perinatal outcomes in child and adolescent growth and development in low and middle income countries.

And Nadita has also led several studies evaluating the measurement and the interpretation of child growth metrics for population based research. And last but not least, I'd like to present Julia Krasevec. Julia is a statistics and monitoring specialist working on nutrition at UNICEF in the Division of Analytics, Planning and Monitoring. Julia works on the UNICEF Global Nutrition Databases, working closely with partners at WHO and also at the World Bank. She provides technical support to country officers who are undertaking household surveys, including the Multiple Indicator Survey, and she is involved in the logic of work related to nutrition indicators. So with that, I will pass it over to Julia. Julia, over to you.

Julia Krasevec

[Inaudible] I'll be talking on the UNICEF guidance on data collection …

Monica Woldt

Julia, I'm going to ask you to interrupt one moment. I just wanted to make an announcement if you're joining us via the phone line, please do make sure to mute yourself as a courtesy to the other participants. I think. Go ahead, Julia. Thank you.

Julia Krasevec

Good morning, everyone. Today, I'll be presenting on the WHO /UNICEF guidance on data collection analysis and reporting on antipathetic indicators. I'll start by giving a short background about the development of the guidance, highlights some of the key recommendations, and give a brief overview on the use and dissemination as well as the next area of work. In terms of how the need to decide[inaudible] discrepancies and attrition estimates of some countries prompted discussions on the methods as well as measures of data quality.

USAID convened a meeting in 2015 which noted that there was a lack of clarity and optimal methods and concluded that there was a need to develop guidance on this topic. The WHO/UNICEF technical expert group on nutrition monitoring or team requested to develop the guidance and included this test in their first years workplan establishing a working group of technical experts to support the process. Thank you. The resulting report, published in 2019, aims to support a generation of high quality malnutrition estimates based on weight and height in children under five years from now represent surveys where possible. The recommendations are based on evidence, but we also need to rely on practical experience as well as expert advice. For many of the recommendations. There remain many outstanding questions, some of which I will highlight on the slides. The report also references other evidence as much as possible, so if there was already existing of some of the parameters we're recommending, rather than rewriting it in our guidance rather than referred to. And we went through many documents to provide a streamlined set, for example, we found many documents that provided instructions on the dates of birth using seasonal calendars, but only one was aligned with the purpose of our guidance. And so we only refer to one. The recommendations are organized around three main areas of planning and design procedures and data processing and reporting. I'll highlight some of the key recommendations under these three areas on the following slide. The recommendation of some of the key recommendations related to and sampling include involvement [inaudible].

In terms of questionnaire design, it's recommended that questionnaires be designed to acquire one helpful questionnaire results for each household, as well as for time and date of callbacks to be recorded. It's also recommended that one questionnaire for answer will be used for each eligible child under six years of age as a means to assess age distribution and for selection of key variables, including if the child was mentally close and the measurement position. A number of recommendations were made with regard to training, notably that infants of various ages be available for practice sessions since data quality in younger age groups is often worth and training often doesn't include these very young infants.

And to measure don't get practice for good instruction on this without that practical experience and that standardization testing undertaken. We also gave specifics on methods for these and included to assess performance of the training. The recommendations related to data collection from interviews are aligned with the recommendations pertaining to the questionnaire, some previously, such as implementing at least two callbacks at different times of the day and reporting instances where children could not be addressed. Recommendations related to supervision and quality assurance during field work include taking blindly measurements of both a random sample of children as well as flagged cases. In terms of data quality assessment. It's recommended to appraise the data quality, considering the seven indicators listed here. I'll go into more details on the ones highlighted in blue in the subsequent slides. Reporting on a number of completion and response rates is recommended here, I highlight the majority of them, but there's a few more in the report and formulas are specified to generate these because we noticed that among different surveys or survey programs, different methods were being used which lead to difficulty in interpreting the results, especially with malnutrition rates, vary between surveys in the same areas. The reason for suggesting that these rates are reported on is that errors in data collection

and lack of data completeness in the survey can lead to non-representative or biased results. Outstanding questions include whether the threshold, whether there are thresholds for outstanding questions include what are the thresholds for response rates and missing values if estimates are still to be considered representative. Reporting on digit preference for both internal digits and poll numbers for heights and weights is recommended for terminal digit recommendations indicate that keeping on weight is more concerning than on height and indicates different patterns that may exist as shown here on the right. But an equally distributed pattern would be versus evidence of rounding, which for heights is generally on zero and five from reading off the tapes and as well as other patterns which we couldn't find explanations for. Similar to the incident rounding. And whole no heating is also recommended to report on both for weight and height. We provide examples of different types of patterns that may exist, and keeping on poll numbers is generally concerning for both weight and height. It's recommended to report on budget preference as it may be a sign of inadequate care and attention during data collection and reporting or data fabrication, understanding the degree of keeping, whether it's falling on weight versus height and rounding on 1/2 centimeters versus running to the nearest 10 centimeters, which is seen in some surveys, can provide insight on validity of the resulting estimates. Outstanding questions include establishing thresholds for data seeking for the various measures to understand how they would impact the accuracy of this. With regard to a possible double values, it's recommended that the USAID using the House values. Noting that he's above one percent and possible are concerning, problems outside the plausible range are usually due to poor measurement, an accurate date of birth or recording errors and can indicate an accuracy of malnutrition measurements. Outstanding questions include whether ultimate threshold to the one percent noted in the report can be developed to understand the varying degrees of impact on the accuracy of estimates. But we recommended to report on standard deviation of the Z scores, noting that valid ranges are yet to be established as it remains unclear how much variation can be due to data quality versus heterogeneity of environments in which… of the environment, which can limit optimal growth. But what is agreed upon is that higher standard deviations, the higher the standard deviation, the greater the likelihood that poor data quality is contributing to the wide SDs observed and that high values indicate an accuracy of malnutrition estimate.

Research is needed to determine a threshold to apply to each of the indices. With regard to dissemination and use, the report is available in 6 UN languages and various other programs, such as the trust between presenting (], adopting the recommendations, including development of tools to facilitate implementation. Next up for the UNICEF and WHO team are centered around answering the remaining questions for which a technical working group has now the outstanding issues from the report and have started to develop outlines of research questions under seven key areas.

The working group is looking for resources to support implementation of the research questions, including groups that might be able to address some of the questions, but they're ongoing. The aim is to complete analysis for at least two research questions by the end of this year and eventually as more answers and evidence are available, we hope to update the guidance with more recommendations based on evidence and the practical experience for expert advice. Thank you. For now.

Monica Woldt

Thank you so much, Julia. Yeah, thank you. Thank you so much, Julia, for the presentation. Thank you for that great summary of the key recommendations that came out of the report and also the next steps and those research questions that still exist that… that are being addressed. So we'd like to now turn to our next presenter, Peter Aka. And I will pass it over to you, Peter. Thank you very much.

Peter Aka

Hi, everyone, my name is Peter Aka, I'm a laboratory specialist at a demographic and health program for the last DHS program. Today, I'll be presenting the best practices the DHS program has put in place for the collation of anthropometric data. [], on each phase of the survey process, from design through completion, [] designing the sample and content that would be collected in the survey. So they have the design. The next step is they show adequate training of instructor on field workers. Procedures are in place that show that the data being collected is of good quality and several tools are used to supervise data collection. Our discourse, our data collected to benefit stakeholders before discussing each of these points, more detail, let me briefly talk about the program itself. [] host countries in the collection, analysis and dissemination of accurate and sensitive data on population, health, and education. By doing these gestures reinforces the institutional capacities we do have, especially develop new procedures and methodology and improves access to data for the simulation and for the analysis. The [] has been a leading social anthropometric data, specifically height and weight for more than 30 years. Height and weight measurements for children under age five, women aged 15 to 49, and in some countries also for men.

To date, the DHS program has collected height and weight data of over 200 surveys in about 70 countries. In the presentation today, I will give examples of how the DHS program supports [] to collect anthropometric data starting from sample size that measure. Sample size is the single largest driver of the report. In fact, all elements of the survey process. Where possible the DHS program collects anthropometric data in a sub-sample, right, providing representative and precise data. []. Two thirds of people are required to take height and length measurements for children. The DHS recommends having two [] working on a day, [] as part of this data collection team.

Well, budgetary constraints did not allow for an alternative [] Luckily, probability and adequate planning prior to starting this survey [].To adequately budget plans for the future program, it uses program using an anthropometric budget tool, a tool to design, to allocate adequate time for the training on anthropometry, and calculate the costs associated with [] different sizes, which I will discuss further later in the presentation. This support high quality training []. To increase the level, the DHS program conducted a standardization exercise in house to set aside which staff… []. For example, in the picture on the left, you get different staff. [] In the picture on the right ,it is the right response from Nigeria. Who was satisfied during the 2019 [] at the organization for the five most fundamental you're seeing here first on the left.

As part of our evaluation system, we looked at fidelity of the first thing I see in this box.

We found a wide variation between teams in terms of reporting the same height and weight value between the first and second measurement. This points to some things potentially results rather than returning to the household and taking a second measurement. We are currently assessing procedures to address these. Then we looked at the quality of the data up []. We probably think that somewhere in that there were very few things that you would accept.

What you can see this graph is the variability in team performance based on three different quality indicators, impossible height for each for which had the values, impossible heights for eight hundred for height standardization, and the height index, which is a digit differential height.

And finally. There are several uses to support anthropometric condition, some of these are available to the public and are on our website or are available in the future. Some of them [] Thank you.

Monica Woldt

Thank you, Peter, for that presentation. Thank you for the presentation. And thank you for sharing the valuable and rich experiences that DHS has had in collecting quality anthropometric data and also the tools and the resources from DHS that you just that you just mentioned. That's great. We'd like to now move on to the next presentation. Our next presenter is Eva Leidman. And Eva, I will pass it over to you.

Eva Leidman

Thank you, Monica, and thanks for inviting me to present today.

So the COVID-19 pandemic has created new challenges for our work and global health on many fronts, but that includes conducting household surveys that include anthropometric measurement. From early on in the pandemic, a broad community of partners, including technical experts and CDC, as well as the DHS programs have come together to discuss the implications of pandemic on surveys. As we'll discuss today, the challenges of the pandemic and the new risks it presents serves to underscore the importance of improving and monitoring quality of health data collection.

Next. The following presentation will walk through each step of the process of a nutrition survey from design, training and data collection, and each day they'll reemphasize the universal considerations that my colleagues in the prior presentations discussed, as well as how the pandemic has impacted each. I'll focus on what evidence we have, as well as remaining gaps in the evidence and how they've informed our interim guidance.

Next. First, I'll start with the survey design and planning process next.

Surveys can be incredibly resource intensive as a result in any context, a key step to survey implementation is justifying these risks and cost. The importance of this is underscored by the new risk the pandemic presents, given the new risks of infection to survey staff, but also respondents in their helpful number, articulating the benefits of nutrition data could be to be collected as essential. What programmatic action depends on the survey findings with decisions cannot be made without using other data sources.

Next. Given the expertise needed, we're characterizing local epidemiologic risk should be done in consultation with the Ministry of Health, World Health Organization and other experts. Consider the local risk in the region where the survey is being planned, whether national or subnational, that key indicators to review and attempting to characterize risk evaluating trends and incidents is key. However, given limited testing ongoing in many regions where nutrition surveys are common, consider also testing. Where test positivity and high incidence may be underestimated.

Globally, there's a growing body of evidence of infants and children under five and lower than adults. However, we must consider as well the risk to a numerators, an adult respondent and keep in mind that children can transmit the virus.

Next. In addition to evaluating risk and benefits of the survey, assess feasibility of implementation. This includes discussing with local authorities, understand movement restrictions within and between communities that may impact recruitment of survey teams, as well as transportation to training sites and transportation to clusters for data collection. Additionally, consider availability of personal protective equipment and whether these can be procured without draining resources from local hospitals and public health services.

Next. Next, a few comments on the sampling and survey design, next. In all surveys and all settings, anthropometric data quality can be more rigorously insured by keeping both the number of questions

and the number of respondents with necessary minimum. Its core principles still apply and are likely even more relevant in the context of the pandemic.

Next. Keeping sample size to necessary minimum allows animators to reduce the number of question number of contacts they have, and keeping questionnaire short, allows numerators to reduce the duration of each contact they have with respondents. Reducing the number and duration of contact will reduce exposure and therefore overall risk of the survey.

Next. So how do we accomplish that in terms of survey generation, it likely means reviewing the questions and considering which are essential for our public health action. Reducing sample size will mean considering fewer strata. For example, is it necessary to have urban and rural estimates? Estimates for all states? In some cases, lower precision may be acceptable, discussed with a sampling statistician.

However, when considering ways to reduce sample size, it may be necessary to inflate planned sample size, given potential for higher nonresponse rate. Evaluate what expected refusal may be in your population given accept acceptance of the risk of participation. Additionally, as will be discussed later, screening and including individuals of a suspected form of COVID-19 may result in higher nonresponse.

Next. Another consideration during planning is recruitment of enumerators. We suggest considering the risk of a severe COVID-19 outcomes. It is well-established in the literature at this point that risk increases with age and that people with comorbidities are at high risk.

Next, the presented table shows the risk of hospitalization on the left and death on the right by age cohort. As noted previously, while children can develop severe outcome, risk is lower than for age-targeted group of children under five, then four persons 18 to 29 years. By comparison, a person sixty five years and older, the risk of hospitalization and death are notably higher.

Next. Additionally, the presented slide shows a list of conditions for which there's sufficient evidence to conclude that adults of any age with these falling conditions are at increased risk of severe COVID-19.

Next, a few words on testing and monitoring.

Next, the numerator should be supported in monitoring themselves for symptoms and encouraged to report any symptoms or exposures that can confirm COVID-19 cases. Established systems where one enumerator goes through a checklist of symptoms for another enumerator on a daily basis of punitive repercussions like lost wages for reporting symptoms and exposures. Over 99 percent with a wide range of symptoms on the slide is the clinical criteria from CDC that can be used in lots of local symptomless is available.

Ideally, testing of a numerators is available to complement something, monitoring as they will be moving from community to community, we want to ensure enumerators are not a source of infection in the communities they visit during the planning stages. Discuss with local authorities to coordinate testing of enumerators, understand the testing is available in the country. What are the criteria for testing? What specimens can be collected for testing what and where testing is being processed? If a nutrition survey is a priority for the local government, testing assessments for new measures should be supported. At minimum, candidates that are testing of any rate at the end of training before field work begins and if they develop symptoms or are exposed to a confirmed case.

If data collection is protracted, lasting weeks or months, that's an interim point. The data collection may also be considered. There are various forms of tests available, molecular tests such as our PCR are the most accurate for diagnosing active infection.

Next slide contains a summary.

Next, so a bet on training incentivization. As discussed by the prior presenter, high quality surveys require rigorous training on anthropometry that includes not only didactic training, the practice and standardization test. Designation tests in which each enumerator measures at least 10 children twice to demonstrate accurate and precise measurement technique is an essential part of any survey.

Next. With regard to the didactic training, depending on context, it may or may not be possible to consider remote alternative in-person training. If in your context, in person training is necessary, take steps to reduce risk. Consider whether a training can be hosted at the training site for the duration of training to minimize contact with their family or other non-survey contacts. Identify training locations that are ideally outdoors, where at minimum have good ventilation, encourage physical distancing between survey teams, trainers and staff.

In addition, there may be new content necessary to incorporate into the theater training, training teams should be trained on how to clean and disinfect the equipment, as well as how to use, to don on and off personal protective equipment. Procedures for symptom monitoring should also be reviewed.

Next, generally appropriate protective equipment depends on the exposure and the job duty. Survey enumerators will have direct physical contact with children. However, eligible households should not include a suspect or confirmed cases that the full PPE is not needed. At minimum, masks and gloves should be considered.

Next. As noted, a standardizations is an essential part of the survey, it helps ensure any measures to properly take a precise, accurate measurement. However, the standardization test is likely one, if not the greatest exposure risk, given the large number of people in direct contact. At minimum wage of 10 children and their caretakers, 20 people, in addition to a team composed of measures and assistance such that it had to the mass gathering. Therefore, it is essential that should it be organized with caution, we can reduce the number, the risk of infection by limiting the number of contacts each participant has. The slide has several options for reducing risk, let me discuss a few that can be a little less obvious.

It is key to have 10 children measured by each enumerator, but we can reduce the number of contacts per person by having more tests with fewer enumerators in each. Additionally, it may be possible to organize a morning session with five children and an afternoon session with a different set of five children in which the two sets of children do not interact.

Next. More on data collection. In the next section, we'll talk about data collection, review and best practices and pandemic considerations for each step of the process.

Next. Rigorous supervision at field work by someone with expertise in anthropometry is a central tenet of survey …field surveys in regional settings. However, doing so in the context of the pandemic is having to team up with each other at the same time and holding the whole survey. Similarly, contact between teams doing field work could result in common exposures that require simultaneous quarantine of everyone. The absence of direct field supervision underscores the need to strengthen the other procedures to ensure data quality, such as rigorous training, standardization tests and data quality checks.

Next, the figures on the slide illustrate the idea of co-working teams. In the top row, we have a scenario in which all teams are interacting with each other through field work. In the bottom row, the recommended approach seems to isolate them from one another as distinct COVID. If one of the animators does become infected, red dot, in the first scenario, all teams would need to be quarantined, whereas in the second scenario, transmission risk would be limited to one team.

Next, in many ways, in many ways, household identification, selection, consent, enrollment will be unaffected by the pandemic, as is always the case, households should be mapped and included in the sampling frame and to avoid selection bias, selection of households should be relevant to the list.

However, before beginning the survey, consider screening household numbers to identify households in which a member is a suspect or confirmed case.

In the slide, we list the symptoms and include from the WHO case definition. However, keep in mind that positive predictive value of the WHO definition will depend on prevalence in the area. In other words, in a very limited transmission of COVID-19 in the area locate a fever, for example, maybe other conditions like malaria, it may make sense to use a more specific definition of screening …for screening.

Consult local epidemiologists during survey planning, next. In addition to screening, we recommend discussing that used during enrollment, have supplies, provide helpful members with masks, but they don't have their own and encourage use throughout the household visit.

Next. The presented slide has considerations for memorizing this during the interview. One of the main ways to reduce risk of transmission is to conduct the interview outdoors if doing so can be done safely without risk while protecting the privacy of the respondent. Enumerators wearing recommended personal protective equipment, maintaining physical distance, practicing hand hygiene and discouraging other household and community members from congregating around the interview during the survey will help reduce risk.

Next, the figure on the slide illustrates proper hand hygiene while in the field, use of alcohol, with at least 60 percent alcohol is recommended. Measurement of the anthropometry is key to obtaining useful estimates of malnutrition. This includes rigorous measurement of weight and height and in some settings, []. Rigorous estimated age is also key, especially given the attention required to measure age properly in our settings for most children don't have documented document verifying age. One key question we received is whether anthropometric measurement should be performed in the context of the pandemic next.

Here's what we know, so the virus that causes COVID-19 is susceptible to standard disinfecting methods using alcohol or chlorine solution, the virus is quickly undetectable. As such, measuring all anthropometric measurements can be performed safely. Next. The presenting slide provides evidence supporting the feasibility of disinfecting surfaces as can be seen using nearly all methods, the virus is undetectable, due at the first time point five minutes, using all disinfectant methods other than hand soap. Next. Let me conclude by talking about data quality review, data quality review is always an essential step of conducting a survey. But as noted, given limitations on field supervision, data quality review is even more important. The list on the slide of the key parameters the data quality recommended in the 1995 WHO report on anthropometric data quality and reaffirmed in the recent report, next.

Data quality review throughout data collection allows us to provide feedback during the course of studies to improve their performance and therefore quality of the data in the survey. In a data quality review, at the end, the data collection allows us to assess whether there are errors that may have impacted interpretation. As was discussed in the prior present presentation, where we have the measurements, we see that increased distribution that resulted in inflated or artificially high estimate of prevalence in malnutrition. The evaluation of sex ratio on age depends primarily on the survey with subject selection bias. The other indicators include measurement bias. Of the test performed to evaluate measurement bias, flags and standard deviation are key. Large areas of measurement such as those results when we record eighty six rather than sixty eight, typically point flags. Or techniques such as

measuring height while the child has their toes pointed or knees that typically result in small errors that result in the wider standard deviation.

Next. As nicely illustrated in our presentation by our quality colleague, rigorous training at field work can improve data quality. These improvements are clearly visible, high performing standard data quality checks. To illustrate on the slide of data from the DHS survey in Kenya. On the left, data from 2008 on the right and data from 2014 during which there was work by the nutrition community in Kenya to support training, additional standardization test and field supervision of anthropology. As you can see for each indicator, each row, all investments in data quality. We see improvements in standard deviation with the observed distribution, the black bars much closer to the standard normal distribution, red line and many fewer outliers.

Next. We reviewed a lot of consideration for ensuring survivors are safe in the context of pandemic, no mitigation measures are perfect, but if they're layered to the other, they can collectively reduce risk. Thank you.

Monica Woldt

Thank you so very much Eva. Thank you for that presentation and thank you for those critical considerations for collecting anthropometric data in the context of the current coronavirus pandemic just so, so important during …during this time. So thank you. Thank you again. We are now going to have our last presentation by Nandita Perumal, and Nandita. I will pass it over to you. Thank you.

Nandita Perumal

Thank you, Monica. Good morning. Good afternoon and good evening, everyone. Today, I will be describing the development of composite indices of anthropometric data quality for use in multi survey analysis of child growth. This work was completed in collaboration with colleagues at the DHS and the Center for Global Child Health at the Hospital for the Children in Toronto. I think the population based demographic surveys are crucial for tracking progress towards global goals and are used to actually compare the nutritional status of young children within and between countries, to monitor trends, secular trends, and to measure responses to public health intervention.

However, the validity and reliability of survey based metrics of child nutrition status depends on the quality of the anthropometric data. Peter and others have mentioned their various components of the survey design, implementation, and data processing decisions which may influence surveys. In previous studies, several indicators have been used to check anthropometric quality, many of which have been summarized in the DHS report presented by Julia, although examining several individual indicators, is implemented in various dimensions of a quality within a single survey. For multi survey analysis, a single aggregate index of relative anthropometric data quality is important. Such an index, which combines several dimensions of the anthropometric measurement, would better enable practitioners and decision makers to account for heterogeneity in the quality of the anthropometric data collected across country and over time. And we used that one hundred and forty five latest surveys that were publicly released between January 2000 to 2009 and composite indices of the anthropometric data quality for high school age subgroups for HAZ and weight for height Z scores were used in multi survey analysis of child nutrition. Identify the recommendations of the WHO anthropometric working group on anthropometric quality, as well as previous research we identified both in the data quality indicators. It included indicators of completeness. They give preference to the []

For the first domain, we use two indicators, completeness of data, first defined as the percentage of children aged 0 to 59 months of age with at least complete month and year of birth. The WHO actual package allows imputation for missing date if the month and here are complete and therefore missing data was not considered a sign of inconsistence. Completeness of the anthropometric measurement was defined as the percentage of children less than 0-59 months of age, with height and weight that reported. Participants at the field were not present or were not measured for another reason, were considered incomplete.

In this domain, we used the index of the dissimilarity to [] as Julia mentioned, is that the tendency for certain digits to appear more often. And, in fact, if I can, branding or other forms of unevenness in the distribution of the last measure for height would suggest a []

The index of dissimilarity is calculated as of this equation, as the sum of the actual distribution of height or age percentage minus the expected distribution divided by two []

That is because children born earlier in the year are likely to be randomly assigned to a later four month and therefore appear smaller than they were at age and vice versa for children born later in the year who may be randomly assigned earlier per month, a period larger than the reported age. []

Finally, for indicators of the dispersion between values we which were described earlier, we used the WHO Child Growth convention to quantify the percentage of impossible values for weight for age Z score with dispersion used for calculating []

This table summarizes the individual indicators of anthropometry data quality across one hundred forty five patient survey overall completeness. [], although the active individual preference for age as well. We also found that. We found that there was little heterogeneity across surveys, likely because the pattern of six months of age keeping is not necessarily consistent across all of the surveys and therefore there may be other patterns of achieving that are important.

The correlations were relatively weak between all indicators, suggesting that each indicator reflects a different aspect of the anthropometric measurement quality, with the exception of the correlation between standard deviation of height, [], which the correlation coefficient with zero point seven nine. []

The scatterplot on the right shows the relationship between the Data Quality Index for HAZ on the Y axis as a function of the survey here on the Axis. But each circle indicating a survey, the slightly upward trending project and improving the quality of over time. However, there remain substantial heterogeneity in quality of the most recent survey.

In summary, we used the parsimonious set of individual indicators of African-American equality to generate competent indices that can evaluate volatile quality and one hundred forty five pages survey. The findings from the study suggests that a competent and equality index can effectively discriminate. Is excellent quality from those at full equality in the context of multi survey analysis. Also, the quality of the metric data has improved over time. There continues to be substantial heterogeneity between survey all the indices that will provide a useful tool to empirically half of variability.

Monica Woldt

Thank you very much. And thank you, Nandita, thank you so much for that presentation and for sharing this very useful and very novel composite index of anthropometric data quality. We really appreciate that very, very much. We are now going to use the rest of our time…. we have about 20 minutes or so for questions and discussion. Before we do that, though, I just wanted to emphasize that the slides and the audio recording, these will be available. They'll be available both the slides and the audio recording

on the USAID Advancing Nutrition website. And anyone who registered for the webinar will receive an email message with a link to the slides and the audio recordings. So rest assured that that will … that that will take place. So now we would like to turn to the Q&A, the questions and answers. Please continue to type your questions for our presenters into the chat box and we'll try to get to as many as possible as we move forward. So I wanted to start with the first question that we received. This is a question that I'd like to address to you, Julia. And the question is from [Chelsea Kollberg]. We have we have many tools for children under five and women. What about what about adolescents? What about men? What about older adults? Will we see updated recommendations for these groups? Where … where are we with that? Julia?

Julia Krasevec

We don't have the bandwidth to cover that topic with specific guidance. We were focused mainly on the activities at least to be able to have our guidance or reporting on the activities which indicate our focus is on the under five year old. But a lot of the information in the guide for under five can be applied to other age groups around the measurement, and you know, the training. And I think a lot of what is in the guide for under five is useful for older children and adults. But we were just trying to create a very specific guidance on this under five group requirements.

Monica Woldt

Great, thank you, thank you for that. Thank you for that response. The next question I wanted to direct to Peter, this is a question from [Muataz Saleh], and, you know, it's a question, can we do standardization tests only for children or can we do standardization tests for others as well in terms of anthropology? Peter, if you could respond to that question that would be great.

Peter Aka

We looked at tests for children … that can also be used for adults. Sometimes when they don't have enough children to practice on. We also focus on others, make that the final product goes into our …what goes into the final report on children becomes more difficult to measure children and adults. So the two that we use is both adults and children.

Monica Woldt

Yeah, thank you. Thank you very much. And I have another question for you here, Peter.

It's about what is the TEM and I think we have a follow up question, and that is how is the TEM determined? I'll hand that question over to you, Peter, about the TEM and then if anyone else wants to respond about that as well, you can. But I'll hand that over first to you, Peter.

Peter Aka

Yeah, I always start answering the question that maybe you can say, []

Monica Woldt

Julie, do you have anything you wanted to add?

Julie

I think that was fair, but just to say that we have a comparison between, like an equity expert and the trainee. So how much do the 10 measurements vary on average is a simple way of explaining that, both for the measurement with the precision. How much does each individual training vary between their first and second measurement of each child? And then for the accuracy, how much do they vary from the expert whose measurement is considered to be the gold standard, noting that we recommend in the guidance if the trainee or the expert themselves at the training have their own precision measurement, that isn't good enough. We would not assess accuracy. We would not recommend assessing the accuracy of the…

Monica Woldt

OK, great, super. Yeah, thank you and I have another question here for the DHS for … for… for Peter. Are the data sets …where quality is suspected to be poor…Is that documented online for the DHS surveys? So where data sets or quality is suspected to be poor? Is that documented somewhere online? Thank you. Over to you, Peter, with that question.

Peter Aka

Thank you for this very, very important issue. In the DHS final report, we have recently started presenting a set of anthropometry tables of quality to help the USAID interpret results. In a few cases, when you ask contextual information that maybe you could use for some time [] For instance,. So this information was reported also just make it publicly available so you can run your own analysis of data quality, you should use these datasets.

Monica Woldt

Thank you, Peter. We have another awful lot of questions for you, Peter. There are no I'll get I'll get to some other questions, too, for for some of the other speakers. But it was a great presentation and a lot of good questions here. One of the questions is about and I'll just ask you, Peter, but others can also feel free to respond. When should re-measurement take place? How soon after the original measurement? And I think that this is interesting because we also had a comment from Naguib Ali that about re-measurement in the field and how this can be a risky practice.

So I think that there are some different views on re-measurement. And I know that, Julia, you had mentioned in your presentation some recommendations about re-measurement or identifying outliers in the field. And I know, Peter, you also had some comments in your presentation about this re-measurement that is conducted. You know, the DHS is doing so. I'll first address this question to you, Peter, and then others can feel free to add. And so the question again was when re-measurement should take place? How soon after the original measurement? And then the kind of the additional question is,

you know, if you could talk a bit about maybe some of the controversies that exist around re-measurement.

Peter Aka

Yeah, that's a good question. In DHS surveys, the teams normally walk across that. So in every cross study team, it is expected to spend two to three days in the cluster, so re-measurement, this is, after all, the data that has entered into the digital system because the digital system is a computer system that alerts student for random measurements are also flagged, it's impossible to determine where all the data is in order to come into the system. []

Monica Woldt

Great. Thank you. Thank you. Peter and Julia, did you have anything you wanted to add about that? Julia, I'm not sure if you're a mute. We can't we can't hear you just in case you did want to add something.

Julia

Sorry, I was muted, I thought I needed, but I didn't. I was speaking and nobody was listening. I guess there's two different issues around re-measurement that we recommend blinded re-measurement in the guidance, specifically during data collection to assess if the initial measurements were done properly. So there's two reasons or ways that re-measurement can be flagged. It's either random, in which case we're just seeing if that was from the first one. And the second reason is if it was a flat case where for some reason some definition of an outlier, the person has to go back to the household to see if that is truly an outlier. And so that that is meant to be done blinded where the person doesn't know the reason for having to go back to the household and doesn't know the initial measurement, which is why we recommend that it's done on a subsequent day or ultimately the next day. But I think one of the questions, the question that might have been raised might have to do with, you know, doing immediate measurements because some service will take two or three measurements at the household sequentially, and in some surveys on average, those two or three weeks. And I can take that as a measurement for, for that child. We don't have a recommendation on that. But it is one of our research questions. There's questions of other children more specifically than the ones that you have to measure them 6 times in a row. And then will that increase in accuracy with the sequential measurements? So that's one of our research questions about taking more than one measurement immediately in the household. But we don't recommend for the sort of blind that re-measurements done to assess data quality done in a manner which is not blinded or got flagged already for the measure, knowing or you took a measurement and it's flagged you have to do it again.

Monica Woldt

OK, great, thank you, thank you, Julia. We're going to move on to another question, a few more questions here. Well, one of them, I'll address this to actually you, Peter. But I think, Julia, that you also have some information about this. This is a question from Monica, Monica Katari, that she's curious about advances in identifying measuring tools, you know, for example, something other than bulky whiteboards, you know, that are easy to use in the field and have less measurement bias. Can you share

any information with us about advances or progress in terms of measurement of height and length of children, for example? Peter, I'll address this first to you and then, Julia, if you have anything to add.

Peter Aka

Yeah, for now []. And I understand that there is a search for more precise and less bulky equipment, which we are assessing, they are not in use now. []

Monica Woldt

OK, thank you. Thank you. Peter and Julia, did you have something that you wanted to add about that?

Julia

Oh, I did have a call for innovation to our supply division, that unit to operate measuring devices of any type. And we did get responses from various suppliers. So the type of devices that are more like photo base, that would not require a board at all and could be done using a tablet or, you know, and proper only, none of them are the old lady or, you know, kind of at that level, whether you ready for our supply division to move forward with it.

We do. But there are some suppliers of the keeping in touch with where such applications are under development. So if they become at that stage where they're ready to pursue them. But the type of device that had been…we were hoping to pilot this year, but that last year, but then with COVID, we were unable as the white board that has the digital output that, you know, meets all the other specifications of the scoreboard …for that we're hoping would be able to replace existing word that requires reading off the page that needs to sort of battling it and other errors.

Monica Woldt

OK, great. Thank you. Thank you, Julia. I want to turn now to a few questions that we have for you, either about your presentation and collection of data and, you know, during the pandemic. So one of the questions is, what about households with aym… asym… asymptomatic… I'm not going to be able to say asymptomatic cases. If you could if you could talk about that. Actually, two questions there.

They're somewhat related. So what about households with asymptomatic cases and will you exclude households with a history of COVID-19 cases? So if you could address that, that would be a super thank you over to you Eva.

Eva Leidman

Thank you, Monica. And before I do, a quick comment on the prior question about your height board to just say that there is a lot of research ongoing right now and testing some of these 3D technologies that use photos or videos as an alternative to height board. There's some great work by researchers at Emory, as well as the CDC that's ongoing to validate the accuracy and precision of those devices and continuously update those algorithms to this until we're at a point where the precision achieved through manual measurement and the accuracy achieved is high enough to justify if that works. I'm going to stay tuned. In terms of the questions, in terms of asymptomatic patient… persons and doing surveys within the pandemic context, the reason that we talk about so many different options for minimizing risk is so

that we can layer layer the various interventions. None of the interventions that I proposed in and of themselves will reduce risk to nothing. Each of them together will aim to reduce risk and taken together collectively, we'll hopefully reduce risk to a minimal level. So it's the combination of being outdoors or in a well ventilated space, wearing masks and other recommended protective equipment, maintaining physical distancing. All of these together will help ensure that ideally our new enumerators are not interacting with someone with active infection. But these mitigation measures will help ensure that even if they are such as the case where they're interacting with a household member with or without symptoms, we don't know that they're actively infectious would help reduce the chance of transmission. Hopefully that answers the question. And then directly to the question about someone with an suspect or confirmed case. The goal of the screening that we discussed is to ensure that our team are not taking the risk of directly doing it measurement on a child or in a household where there's someone with an active infection. So, yes, that's the aim of the screening, is to before someone enters the household, identify whether there is someone with active infection and if so, to exclude that household, exactly, the procedure for doing that was discussing, it's probably context specific, depending on the prevalence and the risk in the specific location.

Monica Woldt

OK, yeah, thank you. Thank you very much. I wanted to turn now to a question for Nandita and they're wondering if …what you think about the generalizability of the methods used to develop the composite indices of anthropometric data quality for other research fields outside of nutrition. And just curious about how you're hoping to build on this work. So maybe if you can talk a bit more about future plans for the composite index, how you're planning on building upon this work, and then the generalizability of the of the methods that you use to develop the composite index for anthropometric data quality for four other research fields. Let me know if that if that's clear. Nandita, over… over to you.

Nandita Perumal

Thank you, Monica, and thank you for that question and I will start perhaps by addressing that generalizability at the analysis method. And so it is actually derived from the psychology literature. So it is a method that is very generalizable to many different topics. And fields aside in nutrition, where one is interested in recent constructs that can be explained by a number of indicator items that are registered, but that truly can contract, which is something that is main mean that nebulas is not totally measured directly at easily. And so PCR is very much applicable in other settings for the use of the quality index for further moving forward. There are really two main aspects of it. The advantage of the quality indices that we have proposed and developed using these expert guidelines and indicators which are among a set of indicators, fairly allows us to move forward in the application phase of the data quality. So what that means is, one, it would be in the application of actually using that data point to improve quality and training and collection of data over time and find a couple of, of presentation. And then the second aspect is really to apply these that apply indices in the research context to be able to conduct sensitivity analysis or empirically lab survey. That's one quality so that the inferences around studies of child growth over time and across different populations are given to any of the issues and measurements. So and moving forward, it's really focused on the application of the flat in the next stage.

Monica Woldt

Great. Thank you so much. Thank you Nandita, and I think that we have time for maybe one or two more questions. And I'm looking through the list of questions again. Thank you, everyone, for adding all these questions. It's wonderful. I want to direct this question to Peter. Peter, are there any adjustments that are made, you know, when measuring a child related to the adjustments to the hair during the during the height measurement? And this is something that I have been thinking about as well when I was looking at your presentation, if you know, especially for, you know, taking the height or length of children who may have, you know, intricately braided hair, I can imagine that… that or other, you know, other issues with the hair. Is this a common problem? And how do you how do you deal with this? Are there some adjustments that you make overdue? Peter?

Peter Aka

The problem of children having braided hair us very common on …it's very challenging sometimes, so taking the height of children has been both challenging and a common problem is that they are different types of benefits, so much easier to deal with than other.

Monica Woldt

OK, great, thank you. Thank you, Peter. Thank you so much. I've simply reached the end of our Q&A time and my apologies that we could not respond to all the questions. Thank you again for all the questions. Thank you again for everyone for your participation. Before we wrap up it, also like to thank our presenters and for sharing your time and your expertise today. And thank you once again to all the participants for attending and for making this a really rich discussion. We could have gone on for quite some more time. So with that, I will hand it over to you, Yaritza for the final wrap up. Thank you.

Yaritza Rodriguez

Thank you so much, Monica, and thank you once again to all our panelists for the great discussion and for some great thought provoking presentations. In a few days, all registrants should receive an email with a link to today's webinar recording. Please know that our webinar recording, as well as the presentation slides, will be made available via the USAID Advancing Nutrition website. So please keep an eye on that as well. And thanks again, everyone. Please have a wonderful rest of your day.