Anthropometry Procedures Manual

Micro-Poll Project

The Pollination of Micronutrient-rich Crops and Effect on Nutritional Status in a Changing Climate in Jumla, a Remote Mountain District of Nepal

HERD International

BELMONT FORUM

University of BRISTOL

AT THE END OF THIS MANUAL, YOU WILL BE ABLE TO:

- DEFINE MALNUTRITION AND ITS VARIOUS FORMS
- IDENTIFY MEASUREMENTS USED TO DETERMINE TYPES OF MALNUTRITION
- CALIBRATE A DIGITAL WEIGHING SCALE
- MEASURE A CHILD, ADOLESCENT AND ADULT WEIGHT USING A DIGITAL SCALE
- CALIBRATE HEIGHT BOARDS
- MEASURE A LENGTH OR HEIGHT OF CHILD, ADOLESCENT AND ADULT
- CALIBRATE A MUAC TAPE
- USE A MUAC TAPE TO MEASURE THE MID UPPER ARM CIRCUMFERENCE
- INTERPRET MUAC SCORES
- DISTINGUISH DIFFERENT NUTRITION STATUS INDICATORS BASED ON ANTHROPOMETRIC MEASUREMENTS
- RECOGNIZE THE RESPONSIBILITIES OF TEAM MEMBERS
- KNOW SAFETY MEASURES

MESSAGE FOR PROJECT TEAM

- THIS MANUAL IS INTENDED FOR ALL MICROPOLL STAFFS
- TRANSLATE THIS MANUAL INTO THE LANGUAGE(S) OF FIELD TEAM MEMBERS
- ENSURE THAT THIS MANUAL IS PROVIDED TO ALL FIELD TEAM MEMBERS DURING ANTHROPOMETRY TRAINING – NUTRITION DATA ASSISTANT, POLLINATOR DATA ASSISTANTS AND DISTRICT COORDINATOR
- EXTENSIVE TRAINING SHOULD BE PROVIDED TO BOTH NUTRITION DATA ASSISTANT AND POLLINATOR DATA ASSISTANTS ON USING ANTHROPOMETRIC EQUIPMENT
- THE OUTLINED STANDARD OPERATING PROCEDURES AND GUIDES SHOULD BE FOLLOWED BY ALL THE STAFFS DURING TRAINING AND ANTHROPOMETRIC MEASUREMENTS
- NUTRITION DATA ASSISTANT SHOULD CARRY THIS MANUAL WITH THEM AT ALL TIMES IN THE FIELD
- IT IS IMPORTANT THAT ONLY THE EQUIPMENT RECOMMENDED AND PROVIDED BY PROJECT TEAM/ HERD INTERNATIONAL WILL BE USED DURING DATA COLLECTION
- ALL THE INSTRUCTIONS ARE DESIGNED FOR TABLET-BASED SURVEYS AND WILL REQUIRE MINOR CUSTOMIZATION IF THE SURVEY IS CONDUCTED USING PAPERS

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Introduction of the Manual

This Manual is intended for all Micro Poll field staff and outlines the required steps that need to be taken during MicroPoll anthropometric data collection in order to accurately measure and weigh children. It is easy to make errors in measurements when not being careful. Nutrition survey assistants in particular should carry these instructions with them in the field and review them regularly to make sure they are always following the correct procedures. Supervisors should also frequently refer to this Manual in the field when observing the work of measurers.

Module 1: Malnutrition

1.1 Introduction

Malnutrition is a condition that results from eating a diet which does not supply a healthy amount of one or more nutrients. This includes diets that have too little nutrients or so many that the diet causes health problems. The nutrients involved can include calories, protein, carbohydrates, fat, vitamins or minerals. A lack of nutrients is called undernutrition or undernourishment while a surplus of nutrients cases overnutrition. Malnutrition is most often used to refer to undernutrition - when an individual is not getting enough calories, protein, or micronutrients.

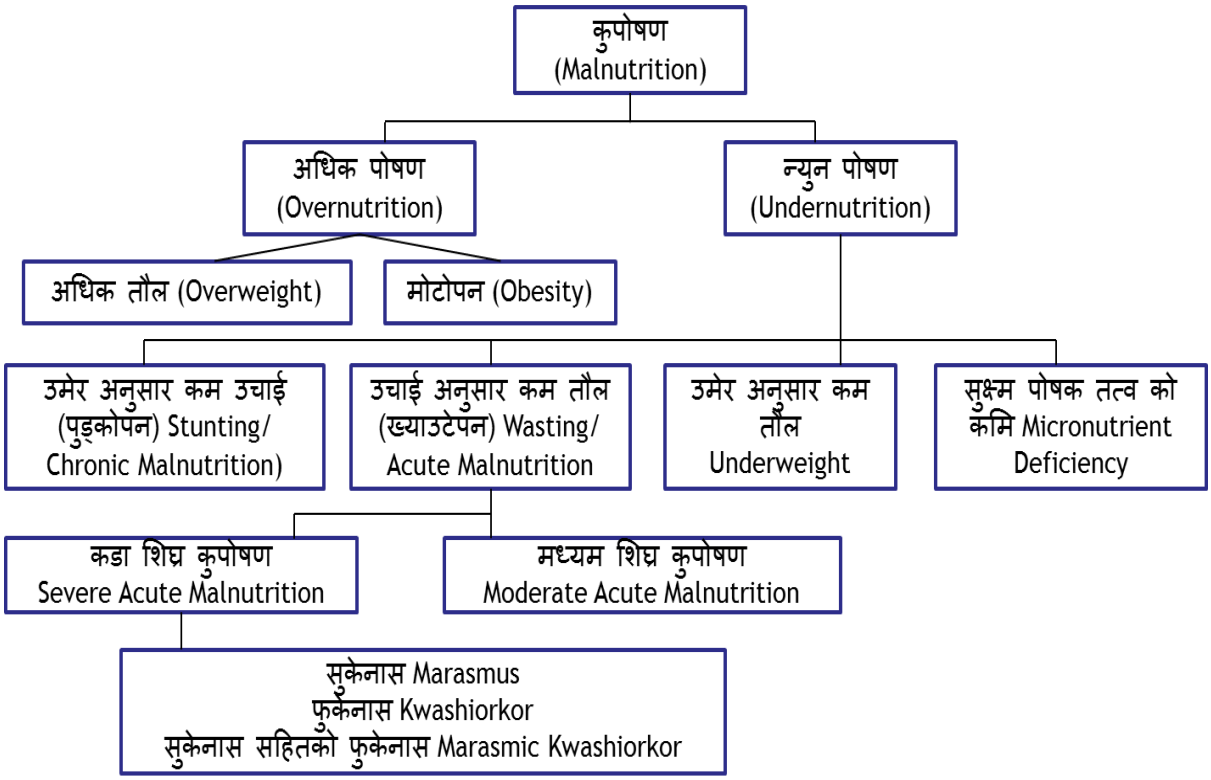

Figure 1: Types of malnutrition

If undernutrition occurs during pregnancy, or before two years of age, it may result in permanent problems with physical and mental development. Extreme undernourishment, known as starvation or chronic hunger, may have symptoms that include: a short height, thin body, very poor energy levels, and swollen legs and abdomen.

1.2 Causes of malnutrition

Undernourishment is most often caused due to a lack of quality food which is available to eat. This is often related to food insecurity, unhealthy behavior, and poor environmental conditions. A lack of breastfeeding may contribute to undernourishment in children. Infectious diseases such as

gastroenteritis, pneumonia, malaria, and measles, which increase nutrient requirements, can also cause malnutrition. To summarize, following are the ultimate causes of malnutrition (under-nutrition):

- Consuming inadequate amounts of energy.
- Consuming inadequate amounts of vitamins or minerals
- Inefficient absorption of food consumed
- Excessive diarrhea and diseases

Malnutrition (over-nutrition) can also occur if a child is overweight as a result of the intake of too much energy.

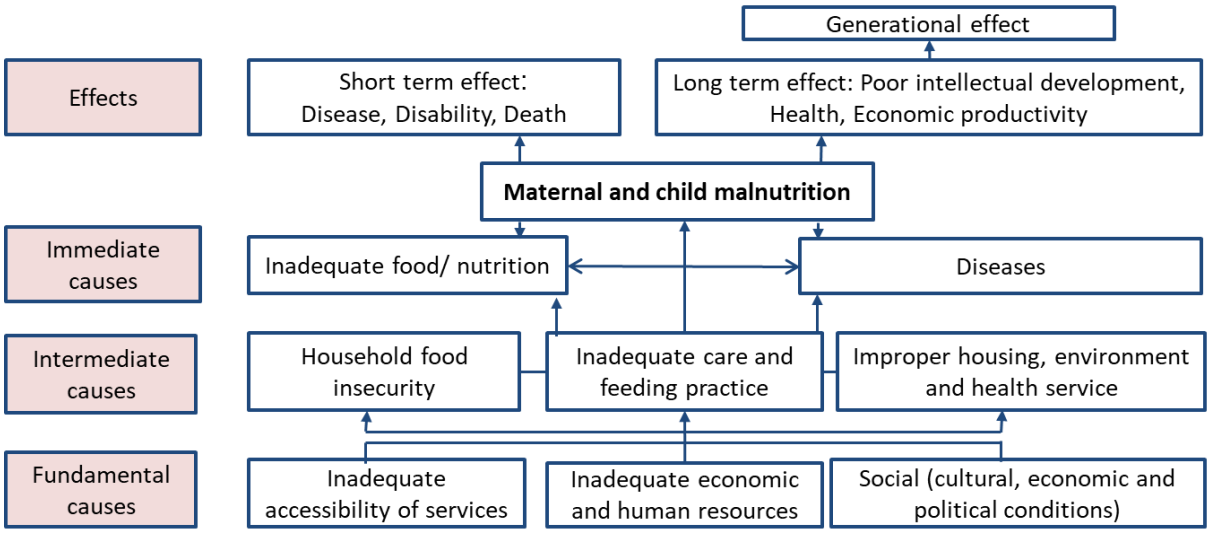

Figure 2: Causal framework of malnutrition

1.3 Nutrition assessments

Nutritional assessment is the interpretation of data to determine whether or not people's nutritional needs are effectively being met. The nutrition assessments provide the indication of the severity of the food security and nutrition situation in the whole population, vulnerability to disease and food shortage, and help to determine which population sub-group face a higher risk of mortality in cases of crises. It provides timely, high-quality and evidence-based information for setting targets, planning, monitoring and evaluating programs aiming at eradicating hunger and reducing the burden of malnutrition.

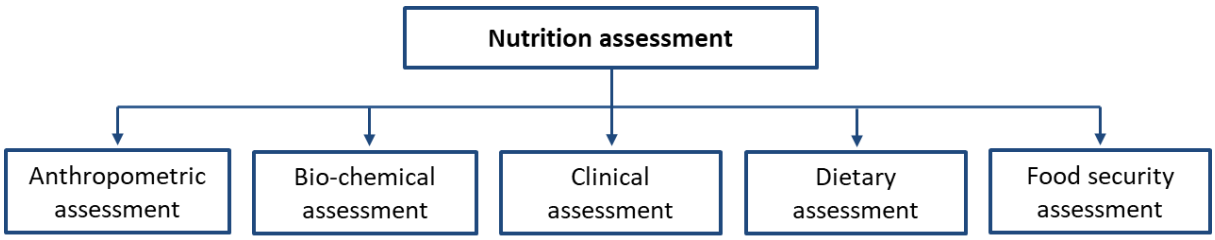

Figure 3: Classification of nutrition assessment

In MicroPoll project, for the nutritional survey part, we will only assess 3 components, i.e. **anthropometric, dietary and food security** situations of the Patarasi rural municipality of Jumla District. Whereas in this manual we will discuss only about anthropometric assessment.

Module 2: Anthropometric measurements

Anthropometry is the measurement of physical dimensions such as height or weight, as well as the fat mass composition of the human body to provide information about a person's nutrition and health status. Anthropometric assessment is the inexpensive, non-invasive method that provides detailed information on different components of body structure, nutrition and overall health status of the individual. For the anthropometric measurements in our study, following 6 variables will be measured in our study:

- Age
- Sex
- Weight
- Height
- Mid Upper Arm Circumference (MUAC)

2.1 Estimating age

Age is one of the important variable that needs to be recorded during the anthropometric assessment (especially for children below 5 years of age). Exact date of birth/ age is important to assess because:

- For the inclusion criteria of the study sub-group (E.g., 6-48-month child at enrollment in our study)
- To decide if the child is measured lying down or standing up (height/length measurement)
- To calculate and interpret important nutritional status indicators for children (like underweight and stunting)

Therefore, to estimate the age correctly, always refer to the valid written documents like birth registration certificate, immunization card etc. To make the study uniform and consistent through-out the study area and period, always record the date of birth (not age in days, month and/ or year). In case of children, If the birth date written in the document differs from the mother's answer, always record the date written in the document (always believe and record valid written documents).

If no documents were found with birth date of child:

- Ask mother/ caretaker whether they know the exact date of birth, if not
- Ask whether or not the child was born before or after a neighboring child whose age is documented, if no other child present
- Verify the age with a local events calendar, if not confirmed
- Use child's height to determine their eligibility. Only include the child 65-110 cm tall. Child of age 6-59 month should be between 65-110cm tall

2.1.1 Estimating Age from Event Calendar

Event calendar is used when no other reliable document that confirms the date of the birth of the child is available. Calendar includes the information of the past 60 months. Sample of the local event calendar is presented in Appendix – I. Following sections should be included in the event calendar:

- Seasons: e.g., beginning of rainy season, dry season etc.
- Religious holidays: e.g., Dashain, Tihar, Maghesangrati, Chaite dashain, Teej etc.
- Other events: e.g., elections, national holidays etc.
- Local holidays: e.g., market days, construction etc.

2.2 Recording sex

Men and women both require a nutritious diet for long-term health, but gender plays a role in the amount of nutrients they need. Consuming the right proportions of nutrients helps to manage the weight and supports the body's functions. In most cases, men and women require similar proportions of nutrients, but there are a few notable exceptions. Therefore, sex is one of the important variable that should be correctly recorded.

2.3 Weight measurement

2.3.1 Measuring tool

During Micro Poll anthropometric data collection, all the study participants should only be weighed using the Seca 874 U Scale. If for any reason the scale is not working during field work, then the nutrition survey assistant should immediately inform the project coordinator who will contact the project manager to request a new scale. There will always be a back-up scale in the district office, so that fieldwork is not interrupted due to problems with scale.

Figure 4: The Seca 874 U Electronic Scale

2.3.2 Setting up the scale for use

To turn on the scale, carefully turn it over so that the base is accessible. Open the battery compartment and insert the supplied batteries. To activate the power supply, push the switch located in the battery compartment in position “ON” (shown in figure 5).

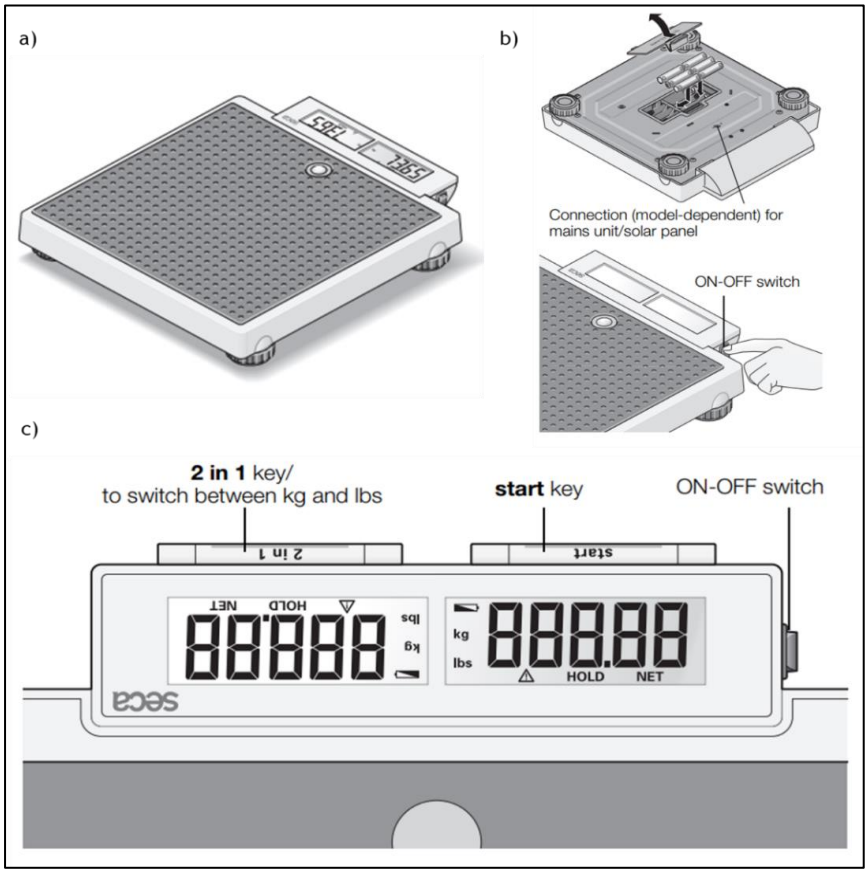

Figure 5: SECA set-up

Scales should always be placed on a hard, level surface (E.g., concrete, solid ground, wooden board, but **NOT on the height board**). Soft or uneven surfaces may cause errors in weighing. The scale will not function correctly if it becomes too warm or too cold. If the scale becomes hot and does not work correctly, place it in a cooler area and wait 15 minutes before using it again. Make sure to check the surface if the scale for any reason has been left in direct sunlight, as the black surface can become extremely hot and easily burn bare feet. If it becomes too cold, place it in a warmer area. Handle the scale with care and protect it from excess humidity. Ensure that the batteries are working before going to the field and carry a spare set.

If everything works well, calibrate each scale with a standard 2-5 kg weight, by measuring the standard weight and reading the measurement (shown in figure 6). If the measurement of the scale is exactly same, then the scale is working well. Calibration should be done every day in the morning before the start of data collection. The scale should be immediately replaced if readings are off.

Figure 6: Calibration of SECA scale

2.3.3 General recommendations: Measuring weight

- **Always calibrated scale EVERY DAY in the morning**
- Always measure weight before height
- If there is more than 1 eligible child in a household, always weigh the 'less fussy' one first. Always start with adults then adolescent and then child
- Try and obtain scales that are sturdy but light enough to be carried easily by the team
- For children (6-59 months) measure weight without clothes. All other participants should be measured with very light clothes on, without shoes, heavy ornaments, caps etc.
- Always explain the standard procedure of weight measurement to mother/caregiver and other study participants before starting the process

2.3.4 Importance of weighing (children 6-59 months) without clothes

Explain to mother/caretakers that the child needs to remove outer clothing in order to obtain an accurate weight. A wet diaper or shoes and jeans, can weigh more than 0.5 kg. Heavy clothes or even very light clothes can wrongly classify the child's nutrition status. Therefore, do your best to get the mother to take the child's clothes off. However, in some societies and cold climates, it is not appropriate or acceptable to remove clothing. In these cases, 4 things need to happen:

- Weight one set of child's light inner clothing commonly found and wore in the study community separately
- Standardize the cloth by all the enumerators by using/accepting only the similar clothes during the child's measurement
- Indicate on the questionnaire that child was measured with clothes (Y for Yes and N for No)
- Deduct the standard weight of the child's cloth before data analysis, if the child was measured with cloth

2.3.5 Measuring weight

All the adolescent and adult participants will be measured directly standing on the scale. But in case of children there are two methods of measurement of weight in an electronic scale:

1. Indirect: Measuring the child in the arms of a caretaker (aka "double weighing").
    - Babies/young children (<2years of age) who are unable to stand on their own
    - Children who are too weak to stand on their own
    - Children who are disabled
    - Children who are restless and can't stand still
2. Direct: Measure the child (>=2years of age), adolescent and adult by themselves.
    - Person who are able to stand up can be weighed by standing on the scale.

<u>Indirect/ double weighing (children <2years of age)</u>

The 2 in 1 function enables the body weight of infants and young children to be determined. The child is held in the arms of the mother/caretaker (or another adult if necessary).

1. Explain the procedure to the child's mother or caretaker
2. Take off child's shoes, heavy ornaments etc. Take off all clothes or standardize the child cloth
3. Place the scale on a flat surface. Turn on the scale
4. Ensure the scale do not show error message, wait until the zero (0.0/ 0.00) appears
5. If there is more than 1 eligible child in a household, always weigh the 'less fussy' one first
6. Ask the caretaker (mother) or the assistant to stand on the scale.
7. Ensures that the caretaker's (mother) feet are entirely on the scale and that they are looking straight ahead (not down) without moving
8. **After their weight appears, the caretaker stays on the scale**.
9. Measurer presses the hold/tare button (to "zero" scale). Wait until zero (0.0/ 0.00) appears.
10. Hand the child to the caretaker, the person whose weight was used to zero the scale must hold the child to be weighed, without moving out of the weighing scale
11. Ensure that the child is held tight and facing the caregiver, and keep still
12. Read the new measurement after child held by caretaker, weight displayed is child's weight
13. Measurer reads the weight out loud. Assistant repeats the weight out loud to confirm, and writes the weight on the rough paper sheet.
14. After the measurement is confirmed, ask mother/caretaker to move out of the scale
15. Measurer record the measurement on the ODK/CommCare app and the start height/length measurement of the same child

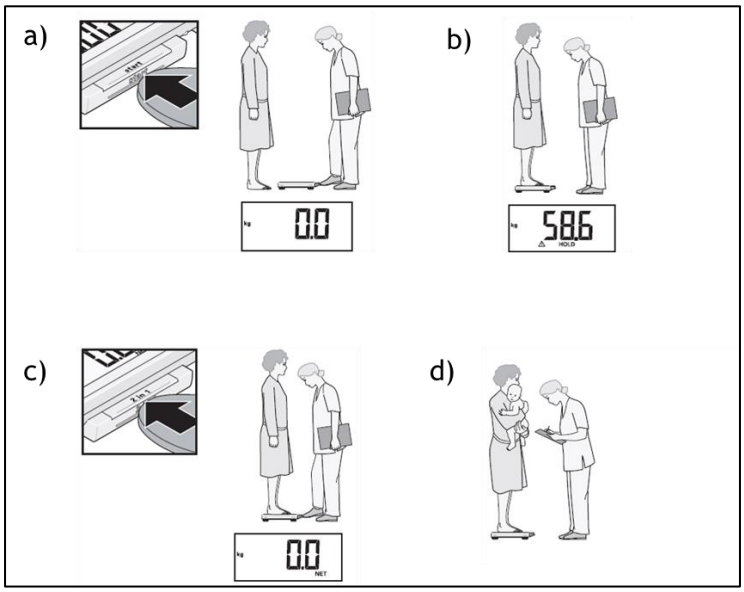

Figure 7: Showing indirect (double) weighing of child

Direct weighing (2-5 years Child)

1. Explain the procedure to the child's mother or caretaker
2. Place the scale on a flat surface and turn on the scale
3. Ensure the scale do not show error message
4. Wait until the zero (0.0/ 0.00) appears
5. If there is more than 1 eligible child in a household, always weigh the 'less fussy' one first
6. Take off the child's clothes or standardize the child's cloth
7. Take off child's shoes, heavy ornaments etc.
8. Ask mother to face the scale and to bend down so they will be eye level with their child
9. Ask the child to step on the scale and to look straight ahead at their mother
10. Ensures that the child's feet are entirely on the scale and that they are looking straight ahead (not down)
11. After the weight appears (stops flashing) record weight
12. The weight displayed will be the child's weight
13. Measurer reads the weight out loud. Assistant repeats the weight out loud to confirm, and writes the weight on the rough paper
14. After the measurement is confirmed, ask child to move out of the scale
15. Measurer record the measurement on the ODK/CommCare app and the start height/length measurement of the same child

Direct weighing (adolescent and adult)

1. Explain the procedure to the candidate
2. Place the scale on a flat surface and turn on the scale
3. Ensure the scale do not show error message
4. Wait until the zero (0.0/ 0.00) appears
5. Standardize the candidate's cloth, remove heavy clothes, take off shoes, heavy ornaments etc.
6. Ask the candidate to step on the scale and to look straight 90 degrees ahead
7. Ensures that the candidate's feet are entirely on the scale and that they are looking straight ahead (not down)
8. After the weight appears (stops flashing) record weight
9. The weight displayed will be the candidate's weight
10. Measurer reads the weight out loud. Assistant repeats the weight out loud to confirm, and writes the weight on the rough paper
11. After the measurement is confirmed, ask candidate to move out of the scale
12. Measurer record the measurement on the ODK/CommCare app and the start height/length measurement of the same candidate

2.3.6 Common Mistakes

- Teams do not follow the instructions on what clothes children are allowed/ not allowed to wear while being weighed
- Enumerator forget to record whether child was measured with/without cloth
- The scale does not read '0.00' (the scale is not flat) before a candidate steps on the scale. This can also occur during double weighing when a mother steps on a scale and the scale has not been set back to '0.00' before she is handed a child
- The candidate does not stay still while they are being weighed
- The mother/caretaker steps off the scale after being measured before they are handed the child

2.3.7 Handling of weighing scale

- The scale switches off automatically after 3 minutes in normal mode or after 2 minutes, if the mother-and-baby function is switched on
- Always handle the scale carefully
- Do not drop or bump the scale
- Do not weigh loads totaling more than 150 kilograms
- Protect the scale from excess moisture or humidity
- Do not use the scale at temperatures below 10º C or above 40º C. Test the scale if transported or used under such circumstances
- To clean the scale, wipe surfaces with a damp cloth
- Never put the scale into water
- Do not store the scale in direct sunlight or other hot places

2.4 Height measurement

2.4.1 Measuring tool

Height measuring boards are used to measure the standing height of children of two years and older and adults, or the recumbent length of infants less than two years of age. The boards are graduated in millimeters. In our project we will use Shorr Board which can measure infants, young child, adolescent and adults that have the maximum measuring unit up to 203 cm.

Figure 8: Shorr Board for child, adolescent and adult

2.4.2 Setting up the scale for use

Height board should be calibrated at the beginning of every survey with the standard length rod/ stick. The measuring tape attached to the height board should be easily visible, and should be in good condition (not rusted, teared and/ or broken). There should be no gap where the measuring tapes are joined. Ensure the cursor moves easily and smoothly (too loose or too tight cursor can cause injury to the participant during measurement).

2.4.3 General recommendations: Measuring height/ length

- **Always calibrate height boards EVERY DAY in the morning, check its conditions (cursor, measuring tape etc.)**
- Always measure weight before height
- If there is more than 1 eligible participant in a household, always measure the 'less fussy' one first (especially with children)
- Try and obtain scales that are sturdy but light enough to be carried easily by the team
- For children (6-59 months) and girls with hair tied at the top of their head, always ask the participants/ caregiver to untie the hair before measurement
- Ask the participants to remove heavy clothes, caps, shoes and other accessories that can hinders the measuring process
- Always explain the standard procedure of height/ length measurement to mother/caregiver and other study participants before starting the process
- It is strictly prohibited to engage the untrained personnel like mother/ caregiver/ interviewee/ and others to assist the height/ length measurement. Mothers/ caregivers can remain close to children and can only assist children to make them easy and comfortable
- The measuring board must be cleaned before being used, as the feet and head are placed on the same spot of the wooden board depending on the age of the child
- Record measurements to the nearest 0.1 cm

2.4.4 Measuring Height/ Length

All the children under 2 years of age will be measured lying down (length measurement). All the other participants above 2 years will be measured standing (height measurement). If the age of the child is not documented, and cannot be estimated, always do the following;

- Only include the child 65-110 cm tall in the study. Child of age 6-59 month should be between 65-110cm tall
- If the interviewer is not confident in the precision of the child's age (over age 2), please take measurement, if the child's height is measured to less than 87 cm, you must instead measure the child's length
- If the child's length is measured to 87 cm or more, you must instead measure the child's height

Measuring length

To measure the child's length, minimum of 2 trained personnel are needed. In our study, nutrition data assistant will always be a measurer and pollinator survey assistant will be their assistant. Standard procedures should be exactly followed during the length measurement of the child (figure 9):

1. **Measurer:** Place the measuring board on a hard flat surface, such as the ground, floor or a steady table
2. **Assistant:** Place the rough paper and pen on the ground, floor or table (Arrow 1). Kneel with both knees behind the base of the board, if it is on the ground or floor (Arrow 2).
3. **Measurer:** Kneel on the child's right side so that you can hold the foot piece with your right hand (Arrow 3).
4. **Measurer and assistant:** With the mother's/caretaker's help, lay the child on the board by doing the following:
   Assistant: Support the back of the child's head with your hands and gradually lower the child onto the board.
   Measurer: Support the child at the trunk of the body.
5. **Measurer or assistant:** Ask the mother/caretaker to kneel on the opposite side of the board facing the measurer to help keep the child calm.
6. **Assistant:** Cup your hands over the child's ears (Arrow 4). With your arms comfortably straight (Arrow 5), place the child's head against the base of the board so that the child is looking

straight up. The child's line of sight should be perpendicular to the ground (Arrow 6). Your head should be straight over the child's head. Look directly into the child's eyes

7. **Measurer:** Make sure the child is lying flat and in the center of the board (Arrow 7). Place your left hand on the child's shins (above the ankles) or on the knees (Arrow 8). Press them firmly against the board. With your right hand, place the foot piece firmly against the child's heels (Arrow 9)
8. **Measurer and assistant:** Check the child's position (Arrows 4-9). Repeat any steps as necessary
9. **Measurer:** When the child's position is correct, read and call out the measurement to the nearest 0.1 centimeter. Remove the foot piece, release your left hand from the child's shins or knees and support the child during the recording
10. **Measurer:** Call out the measurement and have the assistant confirm by repeating back
11. **Assistant:** Immediately release the child's head, record the measurement in rough paper
12. **Measurer:** Check the recorded measurement for accuracy and legibility. Instruct the assistant to cancel and correct any errors
13. **Measurer:** Record the measurement on ODK/ CommCare app, if length was measured against the rule, also record whether the child was measured lying down or standing up

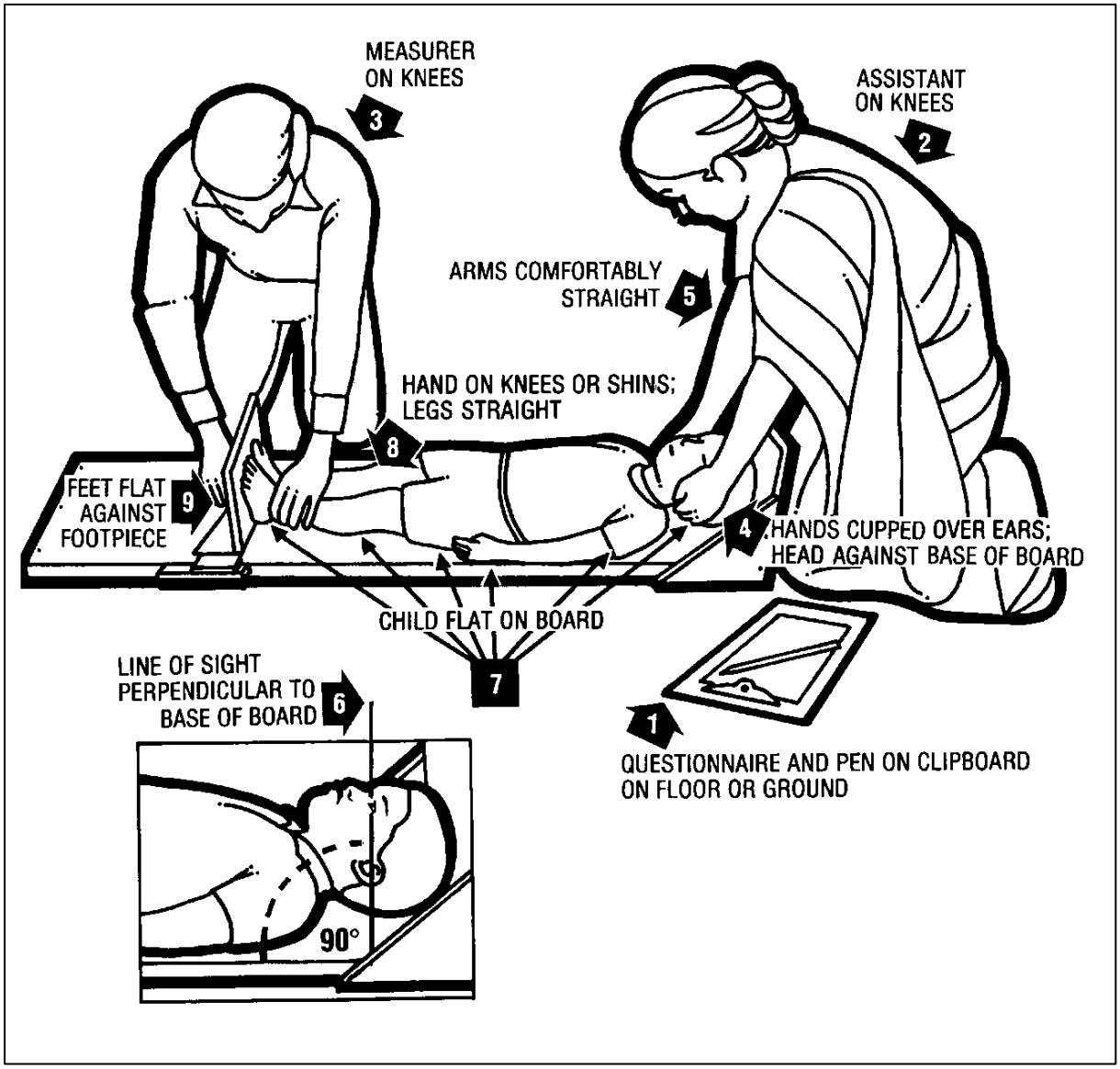

Figure 9: Measuring child's length

Measuring height of child (>=2-year age)

To measure the height, like in length measurement, minimum of 2 trained personnel are needed. In our survey, nutrition data assistant will always be a measurer and pollinator survey assistant will be their assistant. Standard procedures should be exactly followed during the height measurement of the study participants (figure 10):

1. **Measurer:** Place the measuring board on a hard flat surface against a wall, table, tree, staircase, etc. Make sure the board is stable. If the only level surface available to place the board does not have a steady structure against where to lean it, and there are no sturdy pieces of furniture that can be moved behind it, have an adult stand behind the board and provide the support for it not to tip over.
2. **Measurer or assistant:** Ask the mother/caretaker/participant to remove the child's cap, shoes and socks. Also ask, if necessary, the mother to unbraid any hair that would interfere with the height measurement that adds to the child's height. Then ask her/him to walk the child to the board and to kneel in front of the child.
3. **Assistant:** Place the rough paper and pen on the nearby safe place (Arrow 1). Kneel with both knees on the child's right side (Arrow 2).
4. **Measurer:** Kneel on your right knee only, for maximum mobility, on the child's left side (Arrow 3).
5. **Assistant:** Place the child's feet flat and together in the centre of and against the back and base of the board. Place your right hand just above the child's ankles on the shins (Arrow 4), your left hand on the child's knees (Arrow 5), and push against the board. Make sure the child's legs are straight and the heels and calves are against the board (Arrows 6 and 7). Tell the measurer when you have completed positioning the feet and legs.
6. **Measurer:** Tell the child to look straight ahead at the mother if she is in front of the child. Make sure the child's line of sight is level with the ground (Arrow 8). Place your open left hand on the child's chin. Gradually close your hand (Arrow 9). Do not pinch the jaw. Do not cover the child's mouth or ears. Make sure the shoulders are level (Arrow 10), the hands are at the child's side (Arrow 11), and the head, shoulder blades, and buttocks are against the board (Arrows 12, 13 and 14). With your right hand, lower the headpiece on top of the child's head. Make sure you push through the child's hair (Arrow 15).
7. **Measurer and assistant:** Check the child's position (Arrows 6-14). Repeat any steps as necessary.
8. **Measurer:** When the child's position is correct, read and call out the measurement to the nearest 0.1 centimetre. Remove the headpiece from the child's head, your left hand from the child's chin and support the child during the recording.
9. **Assistant:** Call out the measurement and have the measurer confirm by repeating back. Immediately record the measurement in rough copy and show it to the measurer
10. **Measurer:** Record the measurement on ODK form/ CommCare app. If the child's height is measured against the rule, record whether the child was measured lying down or standing up.
11. **Measurer:** Check the recorded measurement on the rough paper, and check it again in the tablet for accuracy and legibility. Instruct the assistant to cancel and correct any errors.

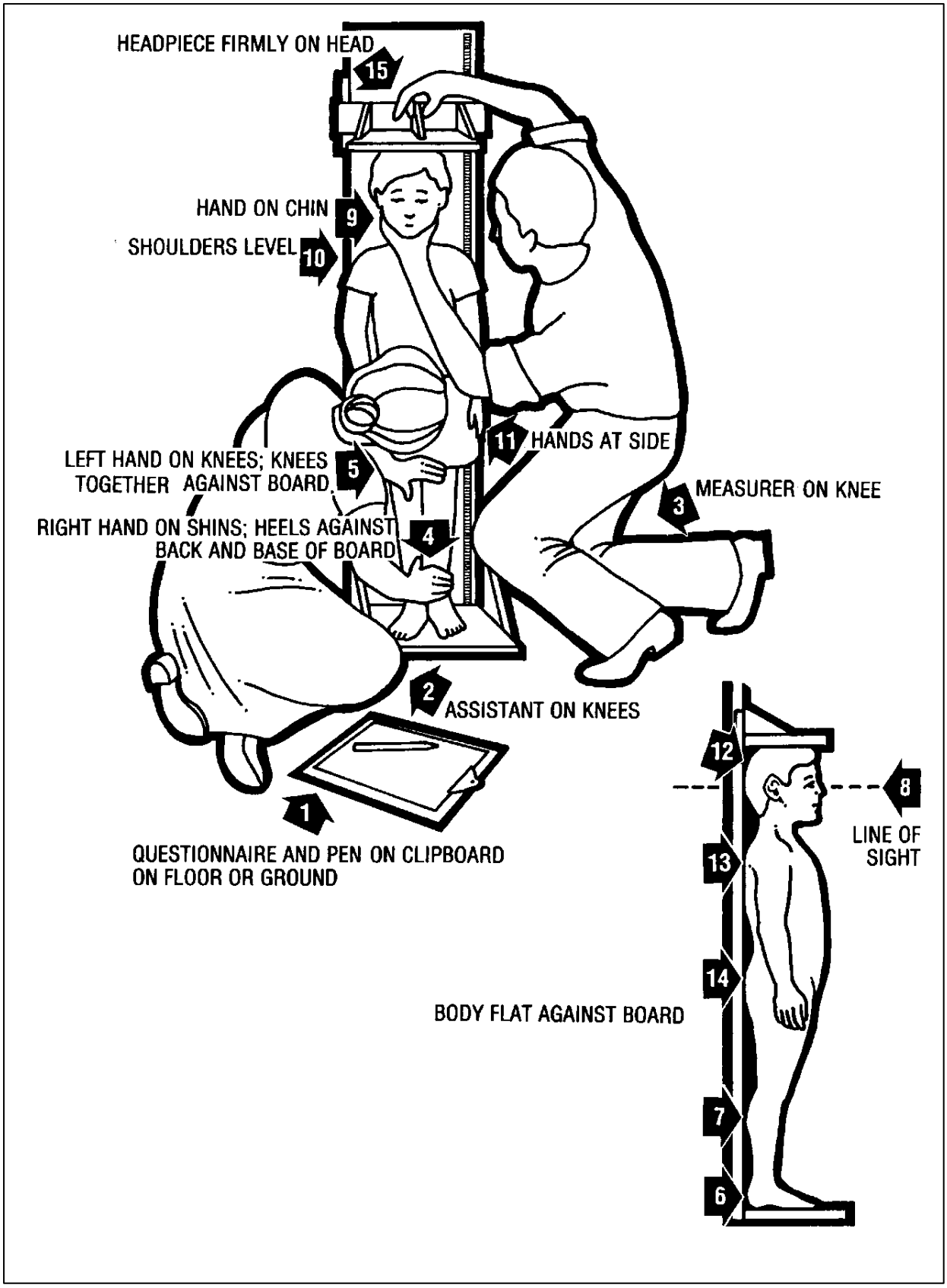

Figure 10: Measuring child's height

Measuring height of adolescent and adult

Standard procedures should be exactly followed during the height measurement of the study participants:

1. **Measurer:** Place the measuring board on a hard flat surface against a wall, table, tree, staircase, etc. Make sure the board is stable. If the only level surface available to place the board does not have a steady structure against where to lean it, and there are no sturdy pieces of furniture that can be moved behind it, have an adult stand behind the board and provide the support for it not to tip over.
2. **Measurer or assistant:** Ask the participant to remove the child's cap, shoes and socks. Also ask, if necessary, to unbraid any hair that would interfere with the height measurement that adds to the height. Then ask her/him to walk to the board
3. **Assistant:** Place the rough paper and pen on the nearby safe place
4. **Measurer:** Stand on the right side, for maximum mobility, on the participant's left side, near the measuring tape of height board
5. **Assistant:** Ask participant to place the feet flat and together in the center of and against the back and base of the board. Ask participant to touch all 5 body parts (heel, lower leg back muscle, hip, back and back of the head) and remain straight in the height board. Make sure the participant's legs are straight and the heels and calves are against the board. Tell the measurer when you have completed positioning the feet and legs
6. **Measurer:** Tell the participant to look straight ahead at 90 degrees. Make sure the participant's line of sight is level with the ground (Arrow 8). Make sure the shoulders are level (Arrow 10), the hands are at the child's side (Arrow 11), and the head, shoulder blades, and buttocks are against the board (Arrows 12, 13 and 14). With your right hand, lower the headpiece on top of the participant's head. Make sure you push through the participant's hair (Arrow 15).
7. **Measurer and assistant:** Check the position (Arrows 6-14). Repeat any steps as necessary.
8. **Measurer:** When the participant's position is correct, read and call out the measurement to the nearest 0.1 centimeter. Remove the headpiece from the participant's head
9. **Assistant:** Call out the measurement and have the measurer confirm by repeating back. Immediately record the measurement in rough copy and show it to the measurer
10. **Measurer:** Check the recorded measurement on the rough paper, Record the measurement on ODK form/ CommCare app and check it again for accuracy and legibility. Instruct the assistant to cancel and correct any errors.

2.4.5 Common Mistakes

Measuring children standing up is much easier. Length is much more difficult to measure than height.

Common mistakes in measuring length

- Length of the child is measured instead of height to a child above 2 years of age
- All the five points that should touch the board are not well placed (For e.g., toes pointed, knees bent, waist/back leaned, head lifted off the board etc.)
- Measurer did not measure to nearest 0.1cm
- Not looking at the cursor exactly 90-degree straight

Common mistakes measuring height

- Height of the child is measured instead of length to a child below 2 years of age
- All the five points that should touch the board are not well placed (For e.g., Child leaning to one side, heels not touching the board, hands not at side etc.)
- Measurer did not measure to nearest 0.1cm
- Not looking at the cursor exactly 90-degree straight

<u>If measure Length instead of Height</u>

If an older child is sick or weak or have difficulty in standing, they will have to be measured lying down (which is against the protocol). When a child is measured lying down instead of standing up, always indicate ("L") on the ODK form/ CommCare app. The indication "L" helps for the data analyst to automatically calculate a correction factor for these children. Likewise, in certain cultures it is not custom to have a child lie down for measurement. Therefore, needs to do a similar process but in this instance, indicate ("H") for the children below 2 years measured standing.

2.4.6 Handling of Shorr Board

- Always handle the shorr board carefully
- Do not drop or bump
- Protect the scale from excess moisture or humidity
- Regularly clean the scale, wipe surfaces with a damp cloth
- Regularly check the cursor, check whether it is jammed or too loose
- If jammed, put few drops of cooking oil in the cursor
- Never put the board into water

2.5 MUAC measurement

Mid-Upper Arm Circumference (MUAC) is the circumference of the left upper arm, measured at the mid-point between the tip of the shoulder and the tip of the elbow. MUAC is a good indicator of nutrition status and mortality risk of the vulnerable population. The MUAC measurement requires a MUAC measurement tape and is easy to perform even on the most debilitated individuals. MUAC is recommended for use with children between six and fifty-nine months of age and for assessing acute energy deficiency in adults during famine.

2.5.1 Measuring tool

There are different types of MUAC tapes available in the market. However, the procedure of measurement is almost similar. In our study we will use SECA head circumference tape for the MUAC measurement of all the participants.

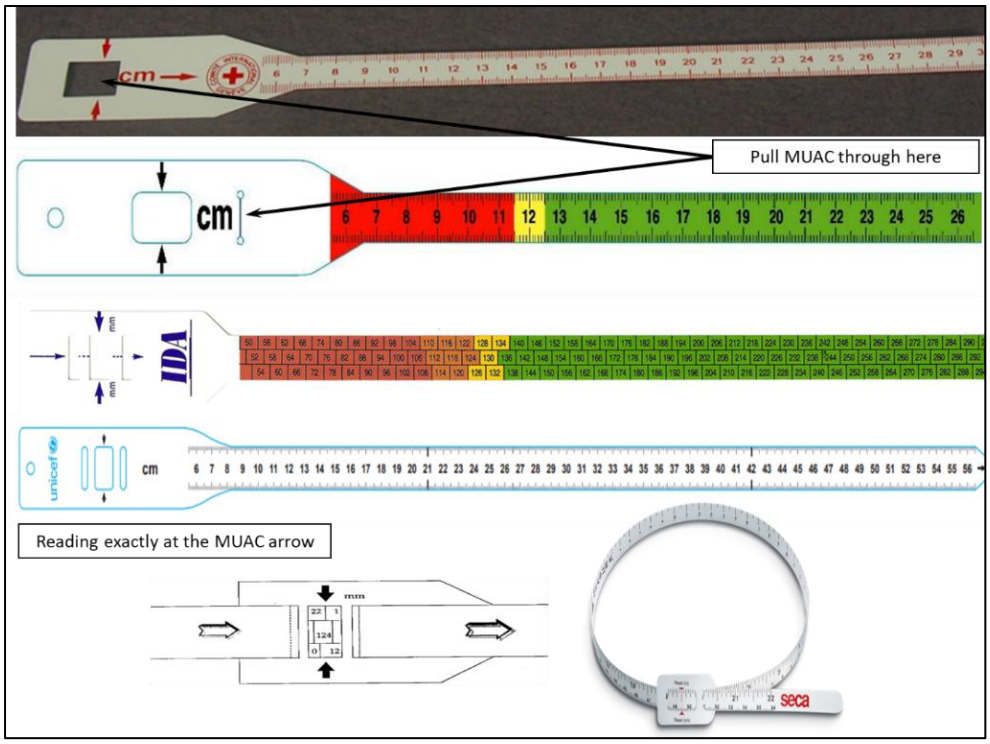

Figure 11: Different types of MUAC tape

2.5.2 Setting up the scale for use

Standard MUAC tapes are made up of non-stretchable material, therefore it should not be calibrated every day. But at the beginning of the study, it should be calibrated once to confirm and validate their measurements. MUAC tape are calibrated with pipe that has a known circumference. Always look for bends or kinks in the MUAC tape every day. Discard all the MUAC tape that are torn, bent, folded or measurements are faded.

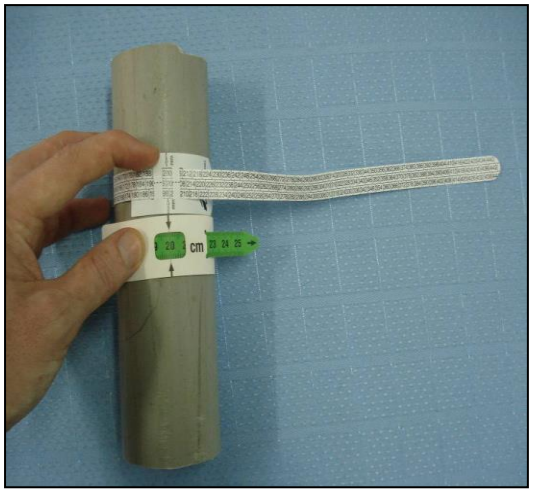

Figure 12: Calibration of MUAC tape

2.5.3 General recommendations: Measuring MUAC

- Always measure MUAC on the left hand of all the participants (to maintain consistency, and right hand are usually more active than left)
- Measurements taken to the closest mm
- Always measure at the marked mid-point of the upper arm

2.5.4 Measuring MUAC

<u>Measuring mid-point</u>

1. Explain the procedure to the caretaker/ participants
2. Ensure that the participant is not wearing any clothing on their left arm
3. If possible, the participant should stand straight and sideways to the measurer
4. Bend the participant's **left arm at 90 degrees** to the body
5. Place the MUAC tape window (0 cm) at the AC joint on the upper arm and **find the mid-point of the upper arm**. The mid-point is between the tip of the shoulder and the elbow
6. Mark with a pen the mid-upper arm point using the measurer's free hand

<u>Measuring MUAC</u>

7. Ask participant to relax arm so it is hanging by their side
8. Using both hands place the MUAC tape window (0 cm) on the mid-point
9. While keeping the left hand planted, wrap the MUAC tape around the outside of the arm with the right hand
10. Plant the right hand and feed the MUAC tape through the hole in the tape while keeping the right hand planted on the arm
11. Pull the tape until it fits securely around the arm while keeping the right hand planted
12. Read and record the measurement at the window of the MUAC tape to the nearest **0.1 cm**
11. Record the measurement in cm (E.g., 12.5 cm) in the ODK/CommCare app
12. If a child has a MUAC <11.5 cm a referral form must be filled and referred to health center

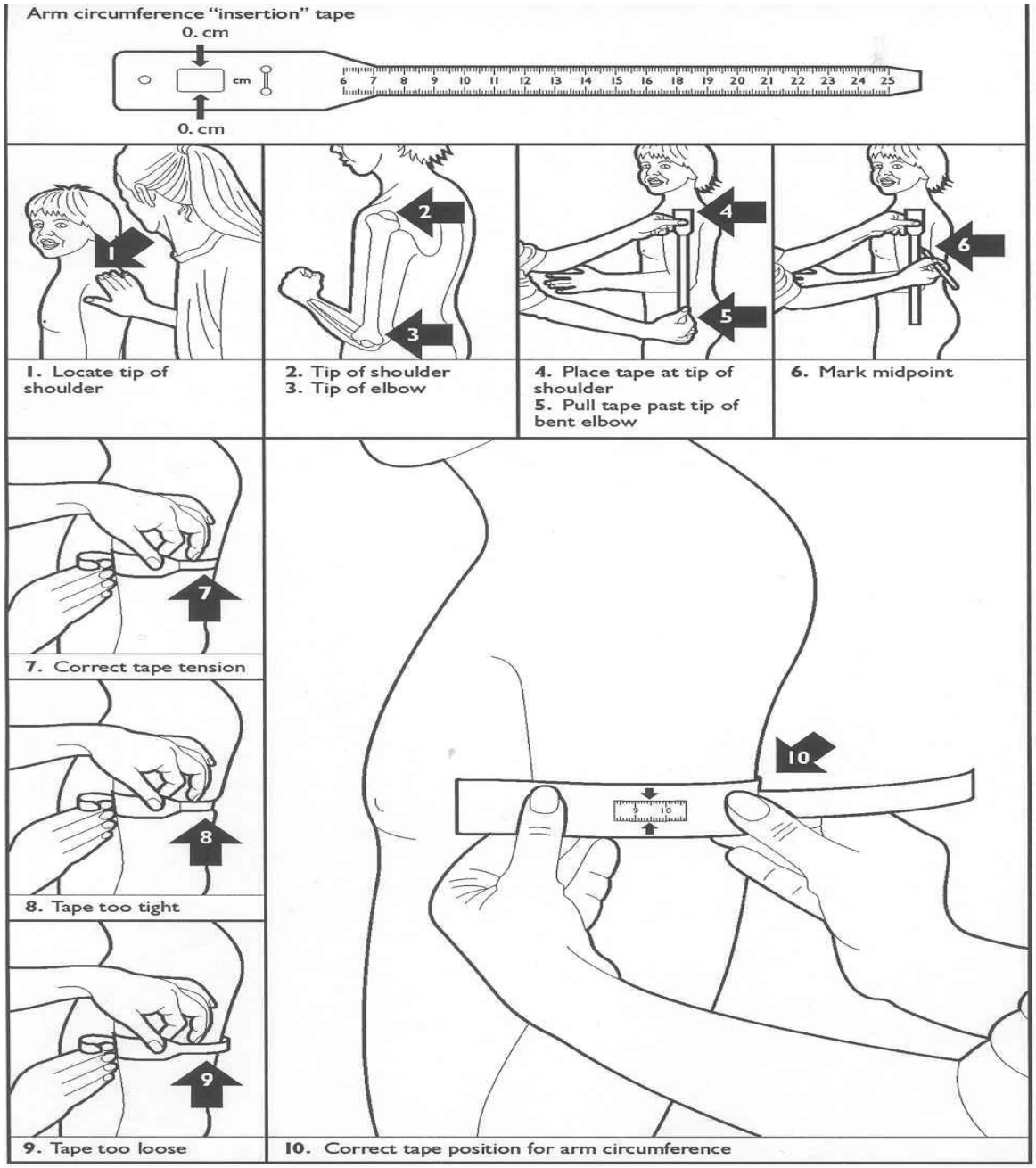

Figure 13: Measuring MUAC

2.5.5 Common Mistakes

- Measuring MUAC on the right arm.
- Estimating (rather than measuring) the mid-point of the upper arm.
- Bending the MUAC tape when measuring the midpoint.
- Not measuring the midpoint from the tip of the shoulder to the elbow bend.
- Pulling the MUAC tape too tight.
- Not pulling the MUAC tape tight enough (too slack).
- Not reading the tape accurately (to nearest 0.1 cm).

2.5.6 Handling of MUAC tape

- Only use one MUAC tape at a time, always place an extra piece at the bag
- Do not throw the teared, faded, broken MUAC in the community, always bring and dispose the waste in the district office

Module 3: Interpretation of measurements

Indicator	Measures	Commonly known as	Target population	Indices	Variables needed	Cut-off points	Classification
Weight for height	Wasting	Acute malnutrition (undernutrition)	Children (6-59 months)	Weight for height z-score (WHZ)	Sex Weight Height	<-3 WHZ	Severe wasting
						≥-3 and <-2 WHZ	Moderate wasting
						≥-2 WHZ	Normal
Height for age	Stunting	Chronic malnutrition (undernutrition)	Children (6-59 months)	Height for Age z-score (HAZ)	Age Sex Height	<-3 HAZ	Severe stunting
						≥-3 and <-2 HAZ	Moderate stunting
						≥-2 WHZ	Normal
Weight for age	Underweight	Acute and chronic malnutrition (undernutrition)	Children (6-59 months)	Weight for height z-score (WAZ)	Age Sex Weight	<-3 WAZ	Severe underweight
						≥-3 and <-2 WAZ	Moderate underweight
						≥-2 WAZ	Normal
MUAC child	Wasting	Acute malnutrition (undernutrition)	Children (6-59 months)	MUAC measures	MUAC in millimetre (mm)	< 11.5 cm	Severe wasting
						≥11.5 and <12.5 cm	Moderate wasting
						≥12.5 cm	Normal
MUAC adult	Wasting	Acute malnutrition (undernutrition)	Adolescent and adult	MUAC measures	MUAC in centimetre (cm)	< 21 cm	Severe wasting
						≥ 21 and <23 cm	Moderate wasting
						≥23 cm	Normal
BMI adolescent	undernutrition	BMI	Adolescent	BMI z-score (BMIZ)	Weight Height	<-3 BMIZ	Severe undernutrition
						≥-3 and <-2 BMIZ	Moderate undernutrition
						≥-2 BMIZ	Normal
BMI adult	undernutrition	BMI	Adult	BMI (BMI)	Weight; Height	< 18.5kg/m2	Undernutrition
Short stature	Stunting	Chronic malnutrition	Adult	Height measurement	Height	<145 cm	Short stature

Note: Z-scores are based on WHO 2006 growth standards

Module 4: Training of data enumerators

The anthropometric survey training will be hosted 3 days in a convenient location in Jumla.

4.1 Training procedures

We will use a variety of training approaches and materials such as:

- Written materials e.g., booklets with simple field protocols with diagrams
- Verbal lectures with slides & diagrams
- Practical demonstrations where data collectors can practice the techniques
- Quizzes to test the understanding of data collectors
- Visual observation to ensure protocols have been correctly understood
- Standardization test to standardize the measurers

4.2. Training topics

We will cover project overview and standard procedures of measurement and other important topics in the training course. The training agenda is presented in Appendix-III.

4.3. Logistics to organize for course

- Accommodation and food for all data collectors
- Venue to host the training course with indoor and outdoor areas
- Printed training materials, and anthropometric manual
- Measurement equipment to practice with
- Staff travel to and from course location

Module 5: Responsibility of team members

5.1 Nutrition survey assistants

Taking anthropometric measurements of participant is one of the main responsibility of the nutrition survey assistant. For anthropometric measurement, nutrition survey assistant will always be a measurer and requires that he or she follows the procedures specified in this manual. No steps in the procedures should be omitted during the data collection process. Measurers will be assisted by another trained team member <u>however it should be emphasised that the measurer will hold the overall responsibility for determining final measurements and making sure they have been properly recorded on the ODK/CommCare</u>. The measurer is also responsible for carrying and taking care of the equipment used for anthropometric measurements and reporting to the supervisor immediately if any of the equipment is malfunctioning.

5.2 Pollinator survey assistants

Two trained people are always required to measure a child's height and length; i.e. a measurer and an assistant. In our study, pollinator survey assistants in the respective clusters will assist the nutrition survey assistant (measurer). The measurer (nutrition survey assistant) reads the measurements while the assistant (pollinator survey assistant) helps and records the measurements on the rough paper at the time of measurement before the measurer record the information in the tablet.

<u>Under no circumstances</u> should an untrained person such as <u>a mother or other caregiver of the child assist</u> in taking the length or height measurement. It is however recommended that a mother or caretaker be near to the child to comfort them and assist in putting the child at ease so that the child can be measured.

5.3 Project coordinator

Project coordinator will be responsible to coordinate the work of the measurer and assistant by making sure he/she knows where to find the households that interviewers are conducting interviews in and to know approximately how many participants and at what time the measurer should visit the household. Project coordinator will ensure the data assistant's punctuality and accountability towards their assigned job. Under any field level challenges like, damage/ loss / replace/ repair of anthropometric equipment or other field level challenges, project coordinate will coordinate with field staffs to solve the issues in consultation with project manager. Project coordinator will be responsible for planning logistical and mobility issues.

5.4 Project manager

The project manager will regularly observe the measurer and assistants performing anthropometric measurements. He will be responsible for ensuring that measurements are taken following the exact steps and procedures outlined in this Manual. In situations where measurers are routinely making errors in taking and/or reading measurement, in manipulating participants and/or equipment, and in reporting the information on the ODK form/ CommCare, project manager should visit the survey cluster and supervise both measurer and assistant when necessary. Project manager should pay special attention to the values to make sure they lie within the ranges. If a value falls outside the acceptable range (flagged data), the manager should ask the measurer to revisit the household, re-measure the child, and check that the child's age has been correctly recorded.

Module 6: Safety measures

6.1 Placement of the measuring board and electronic scale

Measurers should begin to observe possible places where the electronic scale and board can be positioned as soon as they walk into a sample household. They should be selective about where the measuring board and electronic scale is placed. During daylight hours, it is best to measure outdoors. If it is cold, rainy, or if too many people congregate and interfere with the measurements, it may be more comfortable to weigh and measure indoors. Make sure there is adequate light and ensure you place the equipment on a flat and even surface.

6.2 When to weigh and measure

Weights and heights of all eligible participants in the household will be measured after all the questionnaires are completed. Anthropometric measurements can be also done on the separate days of the week based on the availability of pollinator survey assistant. The detail field mobility plan will be presented on "Micro Poll field mobility plan" document. However, if some respondents or children have to leave the household before all questionnaires in the household have been completed, or if a call-back has to be made to interview another respondent, it is best to complete the measurements of the participant who are present. Do not weigh and measure at the beginning of the interview, that is, as soon as you enter a household, since this would likely be perceived as overly intrusive. Good planning will help to ensure that measurers are not wasting time waiting in one household for the interviews to finish, while other interviewers have completed their interviews and are waiting with the respondents and children for the measurer to arrive.

6.3 Weigh and measure one participant at a time

In our study, there will be at least 3 study participants in one household. Therefore, always complete all the measurements (weight, height, MUAC) of the one participant and then only start the another person. Do not mix-match the measurement. Always complete the recording of variable in ODK/CommCare before jumping to another measurement. Likewise, always complete the recording of one participant in ODK/CommCare before jumping to another participant. Do not record all the measurements in rough paper altogether. The assistant record the measurement in rough paper just

after measurer measure the height/weight and speaks out is just to confirm the measurement and recall it during entry in the ODK/CommCare. If it is considered that leaving all of the measurements until after the completion of all questionnaires will cause confusion and errors. It is very important to complete age, sex, weight, height and MUAC measurements for one participants before continuing with the next eligible participant.

6.4 Controlling and taking care of the child

When children are weighed and measured, the measurer and assistant must take care to gently control the child. The strength and mobility of even very young children should not be underestimated. Needless to say, a gentle but firm approach is necessary. Do not apply excessive force on children's limbs to get measurements. The measurer's own sense of calm and self-confidence will be felt by the mother and the child.

When a child comes into contact with any measuring equipment, that is, a measuring board or electronic scale, children must be held carefully so they do not trip or fall. Children should never be left alone with a piece of equipment; physical contact with the child, except for the few seconds while taking his or her weight, should always be maintained.

Measurers and assistants should keep objects out of their hands and pens out of their mouth, hair, or breast pocket when a child is being weighed and measured so that the child will not get hurt due to carelessness. When the pen is not being used it should be placed in the equipment pack, pen case, or on the survey form. Measures and assistants should not have long fingernails and should remove rings and watches before they weigh and measure children to prevent them from getting in the way or harming the child. No member of the field team should smoke cigarette, consume tobacco or any other substances or even food/drinks when in a household or in the process of taking measurements.

6.5 Coping with stress

Since weighing and measuring requires touching and handling children/ participants, normal stress levels for this part of the survey work is higher than for where only verbal information is collected. Measurers should always explain the weighing and measuring procedures to the participants/ caregivers and, to a limited extent, the child, to help minimize possible resistance, fear, or discomfort. It should be determined if the participant is under so much stress that the weighing and measuring must stop. Remember, young children are often uncooperative; they tend to cry, scream, kick, and sometimes bite. If a child is under severe stress and is crying excessively, attempts to calm the child should be made for example by returning the child to the mother for a moment before proceeding with the weighing and measuring.

If there are more eligible children in the household, and if a child is terrified and cries too much this can have a big impact on the other children of the household that need to measured. It is better to leave the distressed child to calm down and to come back later to try and weigh and measure the child again. In some cases, it may be possible to weigh and measure a distressed child after he or she has seen other children such as his or her siblings in the household being measured.

Do not weigh or measure a participant if:

- The participant/caregiver refuses
- The participant is too sick or too distressed
- The participant is physically deformed, which will interfere with or give an incorrect measurement. To be sensitive to the feelings of such a child, its parents, and other children, you may want to measure the child and make note of the deformity on the questionnaire.

6.6 Take good care of the equipment and keep it clean

The equipment needs to be cleaned on a very regular basis as it easily becomes dirty. As a courtesy it is important to clean the wooden height boards in between children as the feet and head are placed on the same spot of the wooden board depending on the age of the child.

6.7 Strive for improvement

People can become very skilled in taking measurements if they strive for improvement and follow every step of every procedure the same way every time. The quality and speed of measurements will improve with practice. Do not take these procedures for granted, even though they may seem simple and repetitious and do not omit any of the steps.

6.8 Hygiene

Do not handle participants without clean hands. Likewise, cleaning hands after handling a child/ participant is recommended. It is advisable to carry wet napkins/wipes, an alcohol-based hand gel, or similar to clean hands before and after handling a participant. There will be households in which soap and water is not available and others where measurement without cleaning hands will not be allowed.

Due to COVID-19 global situation, every time during the field activity, both measurer and assistant will wear masks and maintain safe distance as possible. During the survey duration, if any enumerators got affected by COVID-19 infection, then he/she will stop work and remain in their home or hospital until his/her test result turns negative. Likewise, if any members of the HH got affected by COVID-19, the enumerators will not visit that household till all the members of the HHs are not tested negative.

Appendix

Appendix I – Local Event Calendar

Local Event Calendar								
Seasons	**Religious Holidays**	**Local events**	**Other events**	**Month**		**Year**		**Age (M)**
Rainy	*Karkat Sankranti*			July	*Ashar-Shrawan*	2078	2021	0
Rainy	*Ashar 15*	*Dahi Chiura Khane Din*		June	*Jestha -Ashar*	2078	2021	0
Dry	*Buddha Jayanti*	*Ganatantra Diwas*	*Ubhauli Parba*	May	*Baisakh-Jestha*	2078	2021	1
Dry				April	*Chaitra-Baisakh*	2078/2077	2021	2
Dry	*Shivaratri*	*Holi*	*Gyalpo Loshar*	March	*Falgun-Chaitra*	2077	2021	3
Cold	*Shree Panchami*	*Sonam Loshar*	*Democracy Day*	February	*Magh-Falgun*	2077	2021	4
Cold	*Maghi*		*Sahid Diwas*	January	*Paush-Magh*	2077	2021	5
Cold	*Udhauli Parba/Yomari Punhi*	*Tamu Loshar*	*Christmas Day*	December	*Mangsir-Paush*	2077	2020	6
Cold	*Tihar/BhaitikaChhat*	*Brischik Sankranti*	*Guru Nanak Day*	November	*Kartik-Mangsir*	2077	2020	7
Dry	*Dashain/Kojagrat Purnima*		*Jitiya Parba*	October	*Ashwin-Kartik*	2077	2020	8
Dry	*Indra Jatra/ Krishna Astami*	*Rishi Panchanmi (Teej)*	*Bakra Id*	September	*Bhadra-Ashwin*	2077	2020	9
Rainy	*Janai Purnima*	*Gai Jatra*		August	*Shrawan-Bhadra*	2077	2020	10
Rainy	*Karkat Sankranti*			July	*Ashar-Shrawan*	2077	2020	11
Rainy	*Ashar 15*	*Dahi Chiura Khane Din*		June	*Jestha -Ashar*	2077	2020	12
Dry	*Buddha Jayanti*	*Ganatantra Diwas*	*Ubhauli Parba*	May	*Baisakh-Jestha*	2077	2020	13
Dry	*Nepali New Year*	*Loktantra Diwas*		April	*Chaitra-Baisakh*	2077/2076	2020	14
Dry	*Holi*			March	*Falgun-Chaitra*	2076	2020	15
Cold	*Maha Shivaratri*	*Democracy Day*		February	*Magh-Falgun*	2076	2020	16
Cold	*Maghe Sankranti*	*English New Year*	*Sonam Loshar*	January	*Paush-Magh*	2076	2020	17
Cold	*Christmas Day*	*Yomari Punhi*	*Tamu Lohsar*	December	*Mangsir-Paush*	2076	2019	18
Cold	*Haribodhini Ekadasi*			November	*Kartik-Mangsir*	2076	2019	19
Dry	*Dashain, Tihar*	*Chhat*		October	*Ashwin-Kartik*	2076	2019	20
Dry	*Ghatasthapana / Indra Jatra*			September	*Bhadra-Ashwin*	2076	2019	21
Rainy	*Janai Purnima*	*Shree Krishna Janmastami*	*Teez*	August	*Shrawan-Bhadra*	2076	2019	22
Rainy	*Guru Purnima*			July	*Ashar-Shrawan*	2076	2019	23
Rainy	*Ashar Sankranti*			June	*Jestha -Ashar*	2076	2019	24
Dry	*Buddha Jayanti*	*Ganatantra diwas*		May	*Baisakh-Jestha*	2076	2019	25

Dry	*Ram Navami*	*Nepali New Year*	*Lokatantra Diwas*	April	*Chaitra-Baisakh*	2076/2075	2019	26
Dry	*Holi*	*Ghode Jatra*	*Gyalpo Loshar*	March	*Falgun-Chaitra*	2075	2019	27
Cold	*Shree Panchami*	*Democracy Day*	*Maha Shiva ratri*	February	*Magh-Falgun*	2075	2019	28
Cold	*English New Year*	*Mage Sankranti*	*Sahid Diwas*	January	*Paush-Magh*	2075	2019	29
Cold	*Christmas Day*	*Yomari Punhi*	*Tamu Lohsar*	December	*Mangsir-Paush*	2075	2018	30
Cold	*Tihar/Bhaitika/Chhat*		*Guru Nanak Day*	November	*Kartik-Mangsir*	2075	2018	31
Dry	*Dashain / Jitiya Parba*			October	*Ashwin-Kartik*	2075	2018	32
Dry	*Teez*			September	*Bhadra-Ashwin*	2075	2018	33
Rainy	*Eid ul Fitr/Janai Purnima*	*Shree Krisna Janmasthami*		August	*Shrawan-Bhadra*	2075	2018	34
Rainy	*Bhanu Jayanti*			July	*Ashar-Shrawan*	2075	2018	35
Rainy				June	*Jestha -Ashar*	2075	2018	36
Dry	*Ganatantra Dibosh*	*Bhddha Jayanti*		May	*Baisakh-Jestha*	2075	2018	37
Dry	*ShivaRatri*	*Chaite dasain*	*Ramnawami*	April	*Chaitra-Baisakh*	2075/2074	2018	38
Dry	*Gyalbo loshar*	*Holi*		March	*Falgun-Chaitra*	2074	2018	39
Cold	*Mahashivaratri*		*Prajatantra Diwas*	February	*Magh-Falgun*	2074	2018	40
Cold	*Sonam loshar//Prithvi Jayanti*	*Maghi*	*English New Year*	January	*Paush-Magh*	2074	2018	41
Cold	*Christmas Day*			December	*Mangsir-Paush*	2074	2017	42
Cold	*Dipawali/Tihar*			November	*Kartik-Mangsir*	2074	2017	43
Dry	*Ghatasthapana*	*Dasain/Chhat*		October	*Ashwin-Kartik*	2074	2017	44
Dry	*Teez*	*Dasain*		September	*Bhadra-Ashwin*	2074	2017	45
Rainy	*Krishna Janmastami*	*Rakshabandhan*		August	*Shrawan-Bhadra*	2074	2017	46
Rainy	*Bhanu Jayanti*			July	*Ashar-Shrawan*	2074	2017	47
Rainy				June	*Jestha -Ashar*	2074	2017	48
Dry	*Ganatantra Diwas*			May	*Baisakh-Jestha*	2074	2017	49
Dry	*Ramnawami*	*Chaite Dashain*	*Nepali New Year*	April	*Chaitra-Baisakh*	2074/2073	2017	50
Dry	*Mahashivaratri/ Nari Diwas*	*Holi*		March	*Falgun-Chaitra*	2073	2017	51
Cold	*Prajatantra diwas*			February	*Magh-Falgun*	2073	2017	52
Cold	*English New Year*	*Maghi*		January	*Paush-Magh*	2073	2017	53
Cold	*Tamu Loshar*		*Christmas Day*	December	*Mangsir-Paush*	2073	2016	54
Cold	*Dipawali/Chhat*			November	*Kartik-Mangsir*	2073	2016	55
Dry	*Dashain*			October	*Ashwin-Kartik*	2073	2016	56
Dry	*Gatasthapana*			September	*Bhadra-Ashwin*	2073	2016	57
Rainy	*Teez/Kushe aushi*			August	*Shrawan-Bhadra*	2073	2016	58
Rainy	*Guru Purnima*			July	*Ashar-Shrawan*	2073	2016	59

Appendix II – Anthropometric Survey Checklist

Item	Quantity	Unit	Month 1 (√/X)	Month 2 (√/X)	Month 3 (√/X)	Month 4 (√/X)	Month 5 (√/X)	Month 6 (√/X)	Month 7 (√/X)	Month 8 (√/X)	Month 9 (√/X)	Month 10 (√/X)	Month 11 (√/X)	Month 12 (√/X)
Anthropometric Equipment														
Height board	1	piece												
SECA weighing scale	1	piece												
MUAC tape with rope	2	piece												
Standard weight of 2/5 KG	1	piece												
Standard stick	1	piece												
Other Materials														
File protector (my clear bags)	1	piece												
Bag pack	1	piece												
First Aid kit	1	box												
Batteries	2	set												
Hard clip board	1	piece												
Pen	2	piece												
Pencil	2	piece												
Pencil sharpener	2	piece												
Eraser	2	piece												
Water Bottle	3	piece												
Note Book	1	piece												
Printing Materials														
Official approval letter	1	copies												
Emergency questionnaires	2+2	copies												
Consent form	12	copies												
Daily checklist	1	page												
Event calendar	1	page												
Contact information stakeholders	1	copies												
Contact information survey team	1	copies												
SAM/ MAM referral Slip	10	copies												
Electronic Materials														
Tablet with ODK/CommCare installed, tablet charger	1	copies												

Appendix III – Training Agenda

Day	Section Title	Time	Duration
Day 1	**Breakfast**	30 min	0800-0830
	Welcoming/ Introduction of participants	30 min	0830-0900
	Pre-test	15 min	0900-0915
	Project overview	30 min	0915-0945
	Anthropometric training overview	30 min	0945-1015
	Survey teams	30 min	1015-1045
	Break	**15 min**	**1045-1100**
	Malnutrition	45 min	1100-1145
	Weight	75 min	1145-1300
	Lunch	**60 min**	**1300-1400**
	Height/ Length	90 min	1400-1530
	Break	**15 min**	**1530-1545**
	MUAC	75 min	1545-1700
Day 2	**Breakfast**		0800-0930
	Day 1 Recap	60 min	0900-1000
	Interpretation of measurements	60 min	1000-1100
	Break	**15 min**	**1100-1115**
	Event calendar and daily checklist	30 min	1115-1145
	Roles of survey staffs	60 min	1145-1245
	Lunch	**60 min**	**1300-1400**
	Field plan/ Special cases/ Movement plan	45 min	1400-1445
	Safety measures of tools/ study participant/ surveyor	45 min	1445-1530
	Break	**15 min**	**1530-1545**
	Anthropometric form, questionnaire and data recording on ODK/CommCare app	75 min	1545-1700
Day 3	**Breakfast**		0800-0930
	Day 2 recap	60 min	0900-1000
	Standardization Test	180 min	1000-1300
	Lunch	**60min**	**1300-1400**
	Standardization Test	120 min	1400-1600
	Feedback and results of Standardization test	60 min	1600-1700
	(Field test feedback: entire team and individual teams; Practice identified areas of improvement; Last minute team preparations for the day of data collection)		