

Training Local Health Assistants for a Community Health Survey in Zambia: Longitudinal Monitoring of the Growth and Nutrition of Children

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Introduction

In Zambia, drought and unpredictable erratic rainfall is a major factor affecting the health and nutrition of the inhabitants, particularly small children. A recent national survey conducted in Zambia indicated that the nutritional status of children was poor because 50% of children between 3 and 59 months of age had stunted growth (extremely short for their age), 20% were underweight (low weight for their age), and 6% showed growth wasting (low weight for their height).

By contrast, between 1991 and 2004, data from six cross-sectional national surveys did not show any evidence of effects of drought. Therefore, an intensive, village-level, longitudinal monitoring survey is required to assess the effects of drought on the growth and nutrition of children.

To conduct a longitudinal survey to monitor the growth and nutrition of children and adults that live in villages, prospective local health assistants (enumerators) participated in an intensive 1-week program in September 2007. This report presents a summary of the 1-week intensive program to train local health assistants to make anthropometric measurements.

Local health assistant (enumerator) candidates

Initially, six youths with more than secondary school education were selected by a local supervisor, a staff from a nongovernmental organization. The youths were from villages near the subject villages. They were required to have fluency in both local language (Tonga) and English, ability to handle numerical data, basic mathematical and interviewing skills.

Training schedule

The candidates took part in a 1-week program for training to make anthropometric measurements. Training occurred at the base camp in the morning (or the whole of Day 2) and on the job at four villages (villages A, B, C, and D) in the afternoon (Table 1).

Table 1 Training schedule for 17–23 September 2007.

Day	Date	Morning	Afternoon
1	17 Sep	Equipment preparation; technical staff meet with local supervisors	
2	18 Sep	Instruction and explanation of the survey and training program, questions and answers	
3	19 Sep	Introduction to anthropometry and explanation of the equipment	Demonstration and practicing of the measurements; on-the-job training in village A
4	20 Sep	Focus training for important measurements (<i>i.e.</i> , height and skinfold thickness)	Demonstration and practicing of the measurements; on-the-job training in village B
5	21 Sep	Examination of measurements; English listening comprehension	Demonstration and practicing of the measurements; on-the-job training in village C
6	22 Sep	Instruction for three new candidates (two young men and one young women)	Demonstration and practicing of the measurements; on-the-job training in village D
7	23 Sep	Off (self-practice at home)	

Measurements and equipment

Four measurements (body length and height, weight, circumference, and skinfold thickness) were taught. The measurements, equipment, accuracy, and remarks are summarized in Table 2.

Table 2 Measurements and equipment.

Measurement	Equipment	Accuracy	Remarks
Body length	Measuring board built by a local carpenter	0.1 cm	For infants aged 0–2 years, unable to stand unaided
Height	Metal tape measure (wall mounted)	0.1 cm	For children able to stand unaided and adults
Weight	Portable digital scale	0.1 kg	
Circumference (upper arm, waist, and hip)	Plastic tape	0.1 cm	Left side
Skinfold thickness (triceps and subscapular)	Adipometer (plastic calipers)	0.2 mm	Left side

Precautions and technical problems identified during the training program

1) All measurements

- Learn to how to prepare and operate each instrument correctly.
- Learn how to read the scale and variables quickly and correctly.

2) Height

- A flat place is needed for the measurement.
- The measuring board is used for infants who cannot stand unaided.
- Ask the subjects to take off their footwear before the measurement.

3) Weight

- The scale needs to be put on a hard flat place. The results depend on the type of surface on which the scale is placed, *e.g.*, soil, glass, stone, wood, concrete, etc.
- The subjects should wear light clothing (*e.g.*, T-shirt and trousers/skirt).
- Take off footwear before the measurement.
- Remove heavy items such as keys and coins (purse) from the subject's pockets.
- Help children and the elderly to get on the scale, but do not touch them during the measurement.

4) Circumferences/girths

- The determination of the measurement points (surface landmarks) is important.
- The midpoint of the arm is taken as the point on the lateral side of the arm midway between the lateral border of the acromion and the olecranon when the arm is flexed at 90 degrees.
- The waist is measured as the minimum circumference between the iliac crests and lower ribs.
- Hip circumference should be measured at the level of the greatest protrusion of the buttocks.

5) Skinfold thickness

- Learn to how to operate the adipometer (a device for measuring subcutaneous fat).
- Measurement points (surface landmarks).
- For women, take care that their back is exposed when measuring the subscapular skinfold thickness.

Final examination and results

- 1) Measurements: Height, arm circumference, and skinfold thickness (triceps and subscapular);
- 2) Reading scales: Arm circumference, height, and subscapular skinfold thickness;
- 3) Basic skill test: Listening comprehension in both Tonga and English, arithmetic test, dictation test to measure note taking skills.

Two men and two women satisfactorily passed the anthropometric and basic skill tests. However, one woman barely passed both tests and the remaining woman clearly failed the measurement test. Additional three candidates (two men and one woman) were recruited to replace the vacant position and to keep the other two as reserved backup if qualified.

All three new comers together with the below average performer of the original group were subject to the same anthropometric measurement test. All three new comers satisfactorily passed the test. It is worth noting that the basic arithmetic test has revealed that 3 out of 8 candidates have weak mathematic skill. To avoid calculation mistakes, calculators were provided to every enumerator. The listening test also captured a candidate with possible minor degree of hearing impairment. He was instructed to repeat answers to the respondents during field interviews before recording the responses in the questionnaires.

Note

The 1-week training program was developed and conducted in cooperation with Dr. Thamana Lekprichakul. The author mainly taught anthropometric measurements and Dr. Lekprichakul organized the final examination.

References

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Photos



Measuring board for infants



Height



Weight



Arm circumference



Subscapular skinfold thickness



Final examination



Enumerators