Height/Length Measurement Device

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James Powell

Nutrition Supply Forum
6 Nov 2019
Agenda

• Overview of Multiple-Indicator Cluster Surveys
• Update on Height/Length Measurement Device
Overview

• Brief introduction to MICS
• Content
• Nutrition supplies - present
• Future
<table>
<thead>
<tr>
<th>Round</th>
<th>Year/Period</th>
<th>Emphasis</th>
<th># of Surveys</th>
</tr>
</thead>
<tbody>
<tr>
<td>MICS1</td>
<td>1995</td>
<td>World Summit for Children Goals</td>
<td>63</td>
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<tr>
<td>MICS2</td>
<td>2000</td>
<td>World Summit for Children Goals</td>
<td>65</td>
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<tr>
<td>MICS3</td>
<td>2005-09</td>
<td>World Fit For Children Goals, MDGs, Other Global Monitoring Frameworks</td>
<td>53</td>
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<tr>
<td>MICS4</td>
<td>2009-13</td>
<td>MDGs, Other Global Monitoring Frameworks</td>
<td>60</td>
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<tr>
<td>MICS5</td>
<td>2013-16</td>
<td>Final MDG Assessment, A Promise Renewed, Other Global Monitoring Frameworks, baseline for post 2015 goals/targets</td>
<td>52</td>
</tr>
<tr>
<td>MICS6</td>
<td>2016-20</td>
<td>SDGs, other globally recommended indicators, new topics, emerging issues</td>
<td>68</td>
</tr>
</tbody>
</table>
MICS

23 Years

116 Countries

323 Surveys
### In MICS

#### HOUSEHOLD
- List of Household Members
- Education [3+]
- Household Characteristics
- Social Transfers
- Household Energy Use
- Insecticide-Treated Nets
- Water and Sanitation
- Handwashing
- Salt Iodization

#### WOMEN AGE 15-49
- Woman’s Background
- Mass Media and ICT
- Fertility/Birth History
- Desire for Last Birth
- Maternal and Newborn Health
- Post-natal Health Checks
- Contraception
- Unmet Need
- Female Genital Mutilation/Cutting
- Attitudes toward Domestic Violence
- Victimization
- Marriage/Union
- Adult Functioning [18-49]
- Sexual Behaviour
- HIV/AIDS
- Circumcision
- Tobacco and Alcohol Use
- Life Satisfaction

#### MEN AGE 15-49
- Man’s Background
- Mass Media and ICT
- Fertility
- Attitudes toward Domestic Violence
- Victimization
- Marriage/Union
- Adult Functioning [18-49]
- Sexual Behaviour
- HIV/AIDS
- Circumcision
- Tobacco and Alcohol Use
- Life Satisfaction

#### CHILDREN AGE 5-17
- Child’s Background
- Child Labour
- Child Discipline [5-14]
- Child Functioning
- Parental Involvement [7-14]
- Foundational Learning Skills [7-14]

#### CHILDREN UNDER 5
- Under-Five’s Background
- Birth Registration
- Early Childhood Development
- Child Discipline [1-4 years]
- Child Functioning [2-4 years]
- Breastfeeding and Dietary Intake [0-2 years]
- Immunization [0-2 years]
  - incl. Facility Form
- Care of Illness
- Anthropometry

#### WATER QUALITY

#### GPS DATA COLLECTION
<table>
<thead>
<tr>
<th>Category</th>
<th>Women Age 15-49</th>
<th>Men Age 15-49</th>
<th>Children Age 5-17&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Children Under 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WOMEN AGE 15-49</strong></td>
<td>Woman’s Background</td>
<td>Man’s Background</td>
<td>Child’s Background</td>
<td>Child’s Background</td>
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<tr>
<td></td>
<td>Mass Media and ICT</td>
<td>Mass Media and ICT</td>
<td>Child Labour</td>
<td>Birth Registration</td>
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<td></td>
<td>Fertility/Birth History</td>
<td>Fertility</td>
<td>Child Discipline</td>
<td>Early Childhood Development</td>
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<td></td>
<td>Desire for Last Birth</td>
<td>Attitudes</td>
<td>[5-14]</td>
<td>Child Discipline</td>
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<td>Maternal and Newborn Health</td>
<td>toward Domestic Violence</td>
<td>[1-4 years]</td>
<td>[1-4 years]</td>
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<td></td>
<td>Post-natal Health Checks</td>
<td>Victimization</td>
<td>Child Functioning</td>
<td>Child Functioning</td>
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<td></td>
<td>Contraception</td>
<td>Marriage/Union</td>
<td>Parental Involvement</td>
<td>Marriage/Union</td>
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<td></td>
<td>Unmet Need</td>
<td>Adult Functioning</td>
<td>[7-14]</td>
<td>Adult Functioning [18-49]</td>
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<tr>
<td></td>
<td>Female Genital Mutilation/Cutting</td>
<td>Sexual Behaviour</td>
<td>[7-14]</td>
<td>Sexual Behaviour</td>
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<td></td>
<td>Attitudes toward Domestic Violence</td>
<td>HIV/AIDS</td>
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<td></td>
<td>Victimization</td>
<td>Circumcision</td>
<td></td>
<td>Circumcision</td>
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<td></td>
<td>Marriage/Union</td>
<td>Tobacco and Alcohol Use</td>
<td></td>
<td>Tobacco and Alcohol Use</td>
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<td></td>
<td>Adult Functioning</td>
<td>Life Satisfaction</td>
<td></td>
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<td></td>
<td><strong>CHILDREN UNDER 5</strong></td>
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<td></td>
<td></td>
<td>Under-Five’s Background</td>
<td>Anthropometry</td>
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<td></td>
<td></td>
<td></td>
<td>Birth Registration</td>
<td></td>
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<td></td>
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<td>Immunization [0-2 years]</td>
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<td></td>
<td>incl. Facility Form&lt;sup&gt;8&lt;/sup&gt;</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Care of Illness</td>
<td></td>
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</tbody>
</table>

<sup>a</sup> Children aged 5-17 include the following topics:

- Child’s Background
- Child Labour
- Child Discipline [5-14]
- Child Functioning
- Parental Involvement [7-14]
- Foundational Learning Skills [7-14]
- Salt test kits
- Length/Height measuring device
- Weight measuring device
- Mean # households ~ 13,000 (880 – 64,000)
- Mean # surveys ~ 15 (5 – 30)
- Somewhat stable
• Well…

• Permanent and increasing demand to include a multitude of questions, some requiring equipment

• Increased demand for “easier” tests and for precision and accuracy – titration, micronutrients

• Counter-pressure to reduce
Coordinates

Multiple Indicator Cluster Surveys
- Web: mics.unicef.org
- E-mail: mics@unicef.org

Attila Hancioglu
Global MICS Coordinator

Bo Robert Beshanski-Pedersen
Household Survey Consultant
Global MICS Team
Innovation Project Update

Nutrition Supply Forum
6 Nov 2019
Current Device

Recent reviews of household survey data quality have shown that the current techniques and devices used to measure height and length of infants, children and adults may not produce accurate results. UNICEF is therefore seeking solutions that are capable of producing highly accurate recorded readings.
Existing Challenges

Measurement
- Wobble of board
- Movement of child
- Reading measurement
- Rounding
- Positioning

Transfer of data
- Writing it down
- Sending it for transfer
- Manual input
Use cases:
- Household Data Collection (MICS, DHS etc.)
- General Growth Monitoring (Communities and clinics)

Currently available sizes:
- A portable baby/child length and height measuring board, made of wood. Accuracy/Precision of the device: ± 0.2 cm. Range 0-120cm.
- A portable baby/child/adult length and height measuring board, made of wood. Accuracy/Precision of the device: ± 0.2 cm. Range 0-210cm. (2 items: main board + extension).
Background

65 THOUSAND DEVICES SUPPLIED

2014-2018

11.9 MILLION USD
Explore Phase - Research

- Validated the assumed need
- Investigated reasons for the low quality of data
- Identified measurement devices commercial available and technologies in development
- Identified the key stakeholders

Through:
- Literature review
- Interviews and consultations with subject matter experts and key stakeholders
- Interviews with nutrition specialists from the 5 most procuring country offices of measuring boards
- Market review (current products and future measurement technologies)
- Field observations including interviews with measurers during MISC 5, Nigeria
MICS Anthropometric field data collection - Nigeria
Purpose of Project

The goal of the project is to increase the quality of anthropometric data through development of portable, accurate and child-friendly height/length measurement devices.
## Target Product Profile (TPP)

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Minimum Performance</th>
<th>Ideal Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy of device</td>
<td>Measurement of static object ± 3 mm</td>
<td>Measurement of static object ± 1mm</td>
</tr>
<tr>
<td>Accuracy of recorded readings</td>
<td>Field measurement of humans (infants, children and adults) recorded by trained</td>
<td>Field measurement of humans (infants, children and adults) recorded by trained</td>
</tr>
<tr>
<td></td>
<td>surveyors within ± 3 mm</td>
<td>surveyors within ± 1mm</td>
</tr>
<tr>
<td>Physical characteristics</td>
<td>The device must be child-friendly and designed to avoid distress or harm of the</td>
<td></td>
</tr>
<tr>
<td></td>
<td>individual</td>
<td></td>
</tr>
<tr>
<td>Time for Result</td>
<td>Immediate</td>
<td></td>
</tr>
<tr>
<td>Method of Use</td>
<td>a) Recumbent length of a baby up to 24 months old. b) Height of a child aged 24</td>
<td>Measurement of height/length regardless of position and performed with a single</td>
</tr>
<tr>
<td></td>
<td>months and up in vertical position. c) Height of adults in vertical position.</td>
<td>device.</td>
</tr>
<tr>
<td>Output</td>
<td>Digital display in cm with one decimal digit</td>
<td></td>
</tr>
<tr>
<td>Operating Conditions</td>
<td>Stored and used in a wide-ranging climate (heat, cold, humid, dry, dust, wet). Used</td>
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</tr>
<tr>
<td></td>
<td>at health clinics and for mobile field use. Often moved in and out of vehicles; carried</td>
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</tr>
<tr>
<td></td>
<td>over distance on harsh and bumpy terrain.</td>
<td>over distance on harsh and bumpy terrain.</td>
</tr>
<tr>
<td>Portability</td>
<td>The device is comfortably and easily relocated from one site to another by the use/</td>
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</tr>
<tr>
<td></td>
<td>support of handles, straps of backpacks. Max. 6 kg.</td>
<td>support of handles, straps of backpacks. Max. 2 kg.</td>
</tr>
<tr>
<td>Power requirements</td>
<td>Rechargeable battery lasting for minimum 24 hours</td>
<td>Rechargeable battery lasting minimum 48 hours including a/c plug, DC 12 volt plug</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(for recharge through a car battery) solar powered battery, or a combination</td>
</tr>
</tbody>
</table>
Tender Update

RFP Issued – 90 vendors invited. 6 submitted offers.

- 10 mandatory Requirements (training <1 day, weight <6kg, digital output)
- Technical Evaluation
  - Company Profile (financial statements, children’s rights, production capacity)
  - Evidence
  - Sample (16 areas: power supply, packaging, ease of set up, ease of operation, dim light settings, stability of device)

Financial Proposal Score

Total Score

Outcome: 2 of the 6 pass the evaluation for field trial. 0 products had regulatory approval in place. Any product contracted will need it prior to LTA being signed.

Top reasons for failing review
- Unavailable for manufacturing
- Inaccurate
- Lack digital output
- Missing components in sample
Next Step

1. Q1 2020 Field Validation of Successful bids
   • User feedback
   • Accuracy
   • Training requirements

2. LTA finalization (pending certifications)

3. Q2 2020 Catalogue inclusion

4. Review more radical approaches.