Developmental performance of hospitalized severely acutely malnourished under-six children in low income setting
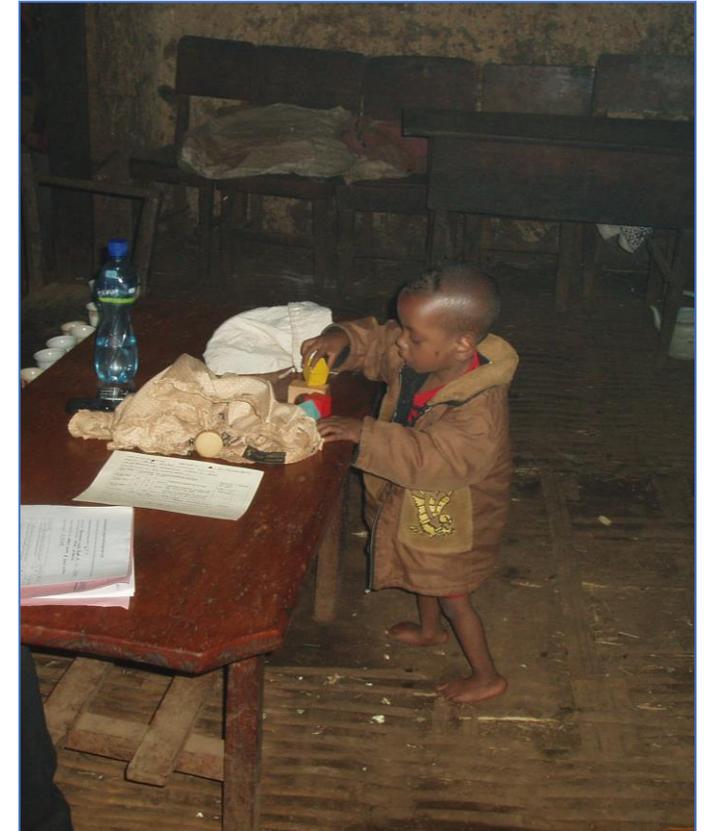
Teklu Gemechu Abessa

OVERVIEW

- ## BACKGROUND

  - Severe acute malnutrition (SAM) is one of the serious child health challenges, mainly in low and middle income countries.

  - Retrospective studies show that SAM hampers child development. However, to what extent SAM impairs development at its acute stage in children of different ages is not well documented.
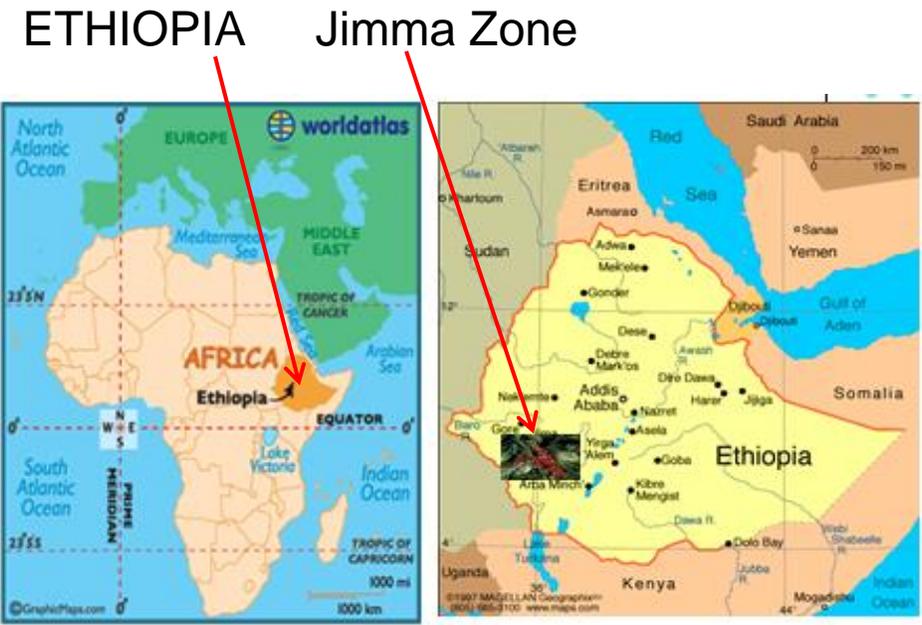
OVERVIEW

- OBJECTIVES
  - The objective of the study was to compare under-six severely acutely malnourished (SAM) children with that of non-malnourished healthy children on five developmental areas: personal social (PS), fine motor (FM), language (LA), gross motor (GM) skills, and social-emotional (SE) competences.

- STUDY SETTING
  - The study was conducted in **Jimma Zone**, South west Ethiopia

ETHIOPIA   Jimma Zone

OVERVIEW

- DESIGN
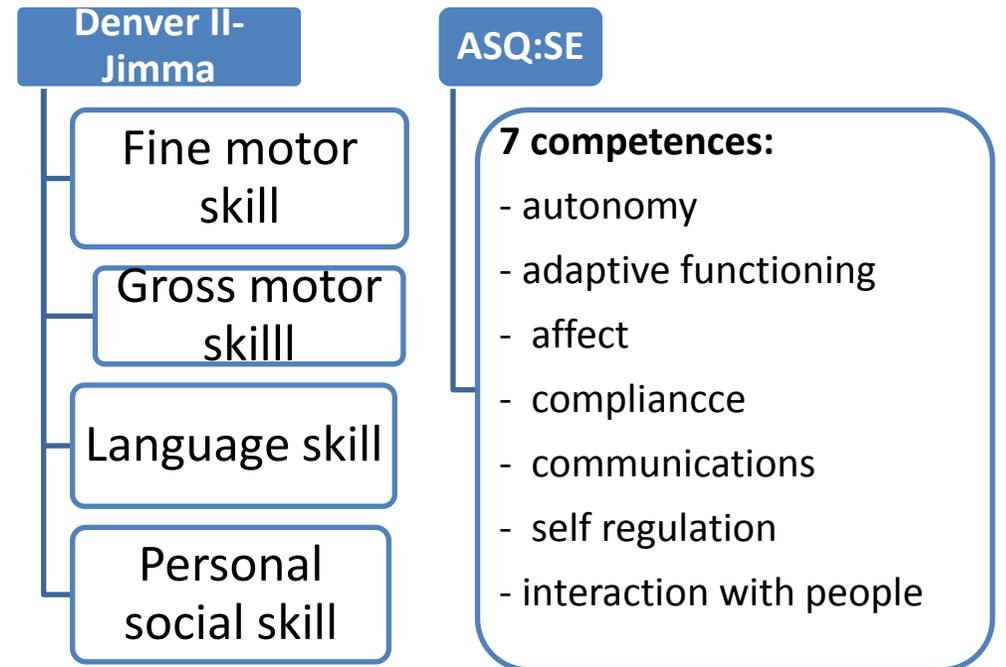 - A cross-sectional study design was used.
- MEASUREMENT TOOLS

  Two culturally adapted tools were used:

  (1) the Denver II-Jimma: to assess the children's performance on personal social (PS), fine motor (FM), language (LA), gross motor (GM) skills, and

  (2) Adapted Ages and Stages Questionnaires: Social-Emotional (ASQ:SE): to assess social-emotional (SE) skills.

Assessment tools and skills assessed

Denver II-Jimma

- Fine motor skill
- Gross motor skilll
- Language skill
- Personal social skill

ASQ:SE

7 competences:
- autonomy
- adaptive functioning
- affect
- compliancce
- communications
- self regulation
- interaction with people

OVERVIEW

- METHODOLOGY

- SUBJECTS AND SAMPLING

  - SAM children and non-malnourished healthy children matched for age and gender (N=620; age range : 3 to 66 mo.)

    - SAM Children (n=310: male=50%; mean age=30.7 mo.; SD=15.2 mo.) admitted to the nutritional rehabilitation unit (NRU) at Jimma University's Hospital (available sample)

    - Healthy children (n=310: male=50%; mean age=29.6 mo.; SD=15.4 mo.) living in Jimma Town (purposive sampling)

- STATISTICAL ANALYSIS

  - Multivariable Poisson regression analysis was used to compare the developmental performance scores of SAM and non-malnourished children.

OVERVIEW

TIMELINE

- The Data were collected between 15 Jan 2011 and 02

  Nov 2013:

  - ➤ SAM children : 09 Feb 2011-17 Sept 2013

  - ➤ Healthy children: 15 Jan 2011-02 Nov 2013

FINDINGS

CURRENT STATUS

- The data collection and analysis were completed.
- An article prepared out of it is under a review process.

FINDINGS

Key results/findings

Characteristics on which the two groups varied:

- **Residential area**: the SAM live predominantly in the rural areas; all the healthy are from Jimma town

- *Income*: nearly half (51.6%) of the SAM children belong to low-income family; 93.2% of the healthy ones belong to middle or high income family

- *Religion*: most SAM children (92.6%) belong to Muslim mothers and represent one dominant ethnic group (the Oromo) (91.6%); the healthy ones belong to different religions with only 36.5% Islam, and 42.5% Oromo.

- *Maternal education*: majority (96%) of SAM children belong to mothers with primary or no education; 48% of the healthy children belong to mothers with secondary or more education.
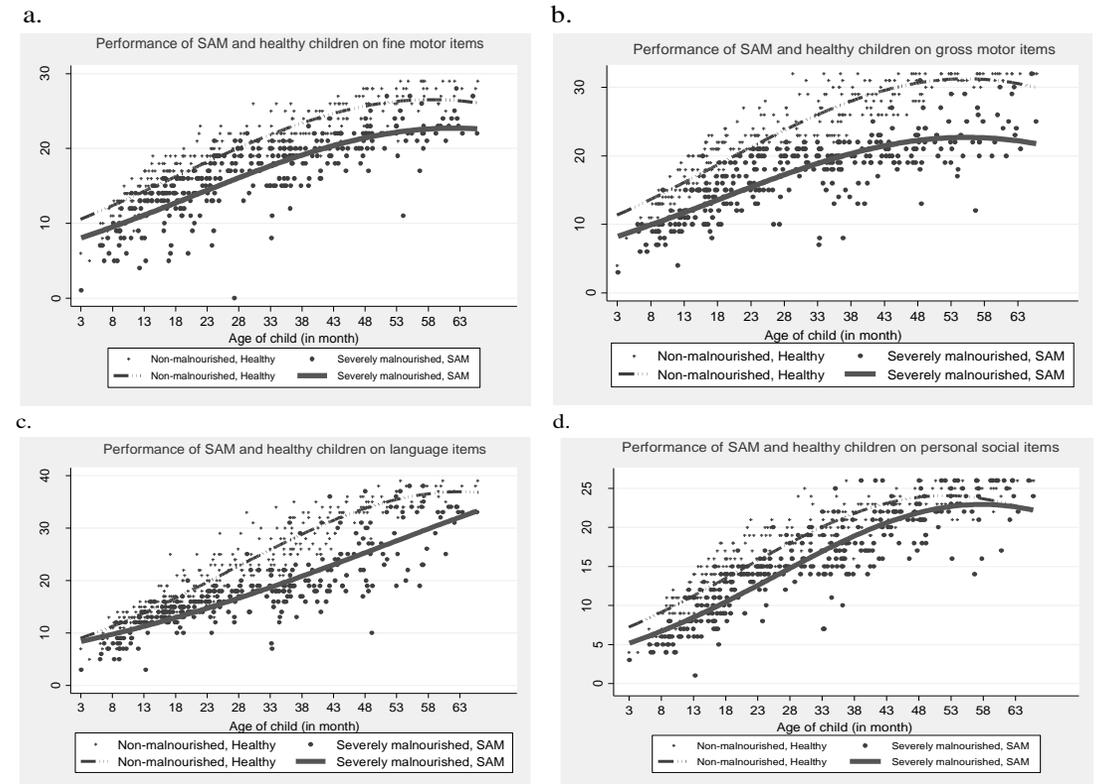
FINDINGS

Key results/findings

Covariates analysis:

- *maternal religion* has no significant association with *all* the five developmental outcomes.

- But, *maternal education* and *family socio-economic status* had significant associations.

Inclusion of the covariates in the regression models showed:

- SAM children perform significantly worse than the non-malnourished children on all the five domains of development : fine motor (FM), gross motor (GM), language (LA), personal social (PS), and social-emotional (SE).

- The differences vary depending on the age of the children except on gross motor

Effects of nutritional status on (a)fine motor, (b) gross motor, (c) language, (d) personal social development of under-six children
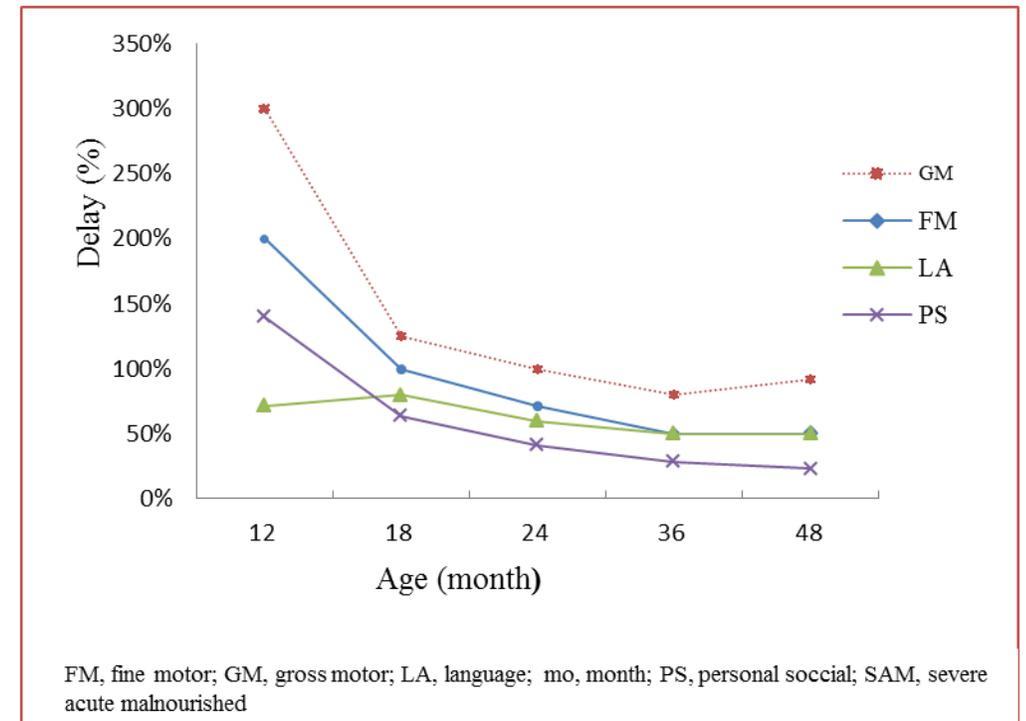
FINDINGS

Key results/findings

- For one-year-old children, developmental performance of SAM children is delayed on:

  - GM by 300%,

  - FM by 200%,

  - PS by 140 % and

  - LA by 71.4%

- For 3-years-old children, developmental performance of SAM children is delayed on GM by 80%, on FM and LA by 50% each, and on PS by 28.6%.

Developmental delay by SAM children on four domains compared to development of non-malnourished healthy children

FM, fine motor; GM, gross motor; LA, language; mo, month; PS, personal soccial; SAM, severe acute malnourished
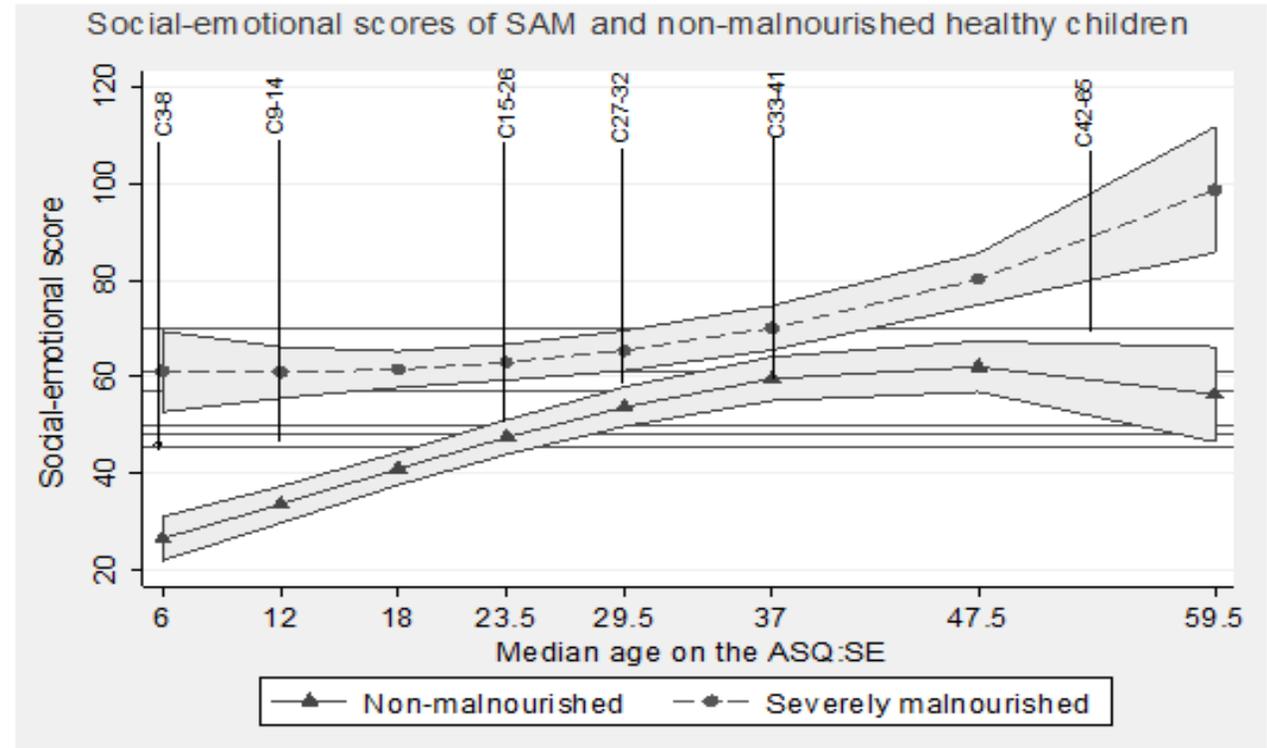
FINDINGS

Key results/findings… cont'd

- Of skills assessed on Denver II-Jimma, GM is the most and PS is the least affected.

- Younger SAM children are more affected than older ones on all the domains of development.

- The delay in FM, GM, LA and PS generally decreases with an increase in age.

FINDINGS

Key results/findings… cont'd

- Social-emotional behavior problems seem to be most pronounced in the very young and older age ranges.

Comparison of the social-emotional scores of the SAM and the non-malnourished healthy children

Social-emotional scores of SAM and non-malnourished healthy children

FINDINGS

Main challenges

- Sometimes, there is a lower motivation and cooperation of the SAM child for testing.

- Difficulty to single out the developmental effect of severe acute malnutrition from hospitalization and other possible prenatal factors.

- Lack of information on to what extent the developmental profiles of the SAM children match with that of the healthy comparison groups before the incident of the acute malnutrition.

RECOMMENDATIONS

Recommendation 1

Since development is affected in SAM children, treatments given to rehabilitate SAM children should include activities that enhance child development.

Recommendation 2

Since different dimensions of development are affected in SAM children, rehabilitation services should include varieties of activities enhancing different areas of development.

Recommendation 3

Rehabilitation of SAM children should also be age-specific and focus on strengthening of motor skills during early age.

CONCLUSIONS

Conclusion 1

The developmental lag in SAM children is multidimensional and affects different domains of development.

Conclusion 2

The developmental lag in SAM children is more severe in younger than older children.

Conclusion 3

The developmental lag in SAM children is more severe on gross motor skills.

THANK YOU !