

# Nutrition interventions in the INDEPTH population cohorts in Africa & Asia - an overview

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# Outline

- Background
- Objective
- Method
- Results
- State of research
- Policy implications
- Acknowledgements

# What **was** the value of INDEPTH? 1/2

- INDEPTH provided platform for on-going longitudinal health and demographic tracking with a **global reach**, operating in different health systems and cultures with varied epidemiology that offers a unique medium for the **study of the impact of policy and practice**, the **testing of population-level indicators**, and the **development and validation of effective interventions for population-level impact**

INDEPTH was often the only source of large scale prospective multi-site and country community health data in a LMIC and can act as the bridge to community health

# What **was** the value of INDEPTH? 2/2

- Opportunity to leverage the collective value of quantitative and qualitative data across HDSS sites and conduct multi-site research and surveillance through effective cross-site collaboration and timely data collection
- Ability to capitalize on established links between HDSS sites and health and other policymakers to magnify research findings and enable evidence-based decisions
- Engage community of scientists, technical experts to shape and execute research projects and policy engagements
- Use low-cost researchers (MScs & PhDs) via training partnerships with universities

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# Background

❑ **Nutrition** - 'science of food, the nutrients and other substances therein, their action, interaction and balance in relation to health and disease, and the processes by which the organism ingests, absorbs, transports, utilises and excretes food substances (Lagua et al, 1999).

❑ **Malnutrition** - inadequate or excess intake of protein, energy and micronutrients such as vitamins, and the frequent infections and disorders that result' (WHO, 2000)

## Cont'd- Background

- ❑ It was estimated already in 2011 that globally 2 billion people suffered from malnutrition (FAO,2011).
- ❑ Malnutrition was recognised as a leading cause of death, disability, and ill health (WHO, 2013).
- ❑ Malnutrition was consequently the most important risk factor for the burden of disease in developing countries (Nemer et al, 2001).
- ❑ Key on the global development agenda, as the era of the post-Millennium Development Goals approaches.

## Study Objectives

- ❑ To synthesize key findings to inform researchers and policy-makers of new evidence and knowledge and neglected areas and gaps in nutrition research
- ❑ To identify possible recommendations to enhance policy or programme implementation.

## Review Method (1/2)

- ❑ Peer-reviewed publications on nutrition research conducted by INDEPTH member centres
  - Existing INDEPTH database and other data sources from 1998 to 2013.
  - Covering nine countries in Africa and five in Asia.
- Terms used: *nutrition; malnutrition; under and over nutrition; overweight; low- and middle-income countries; LMICs; health and demographic surveillance system*

## Review method (2/2)

- Inclusion criteria

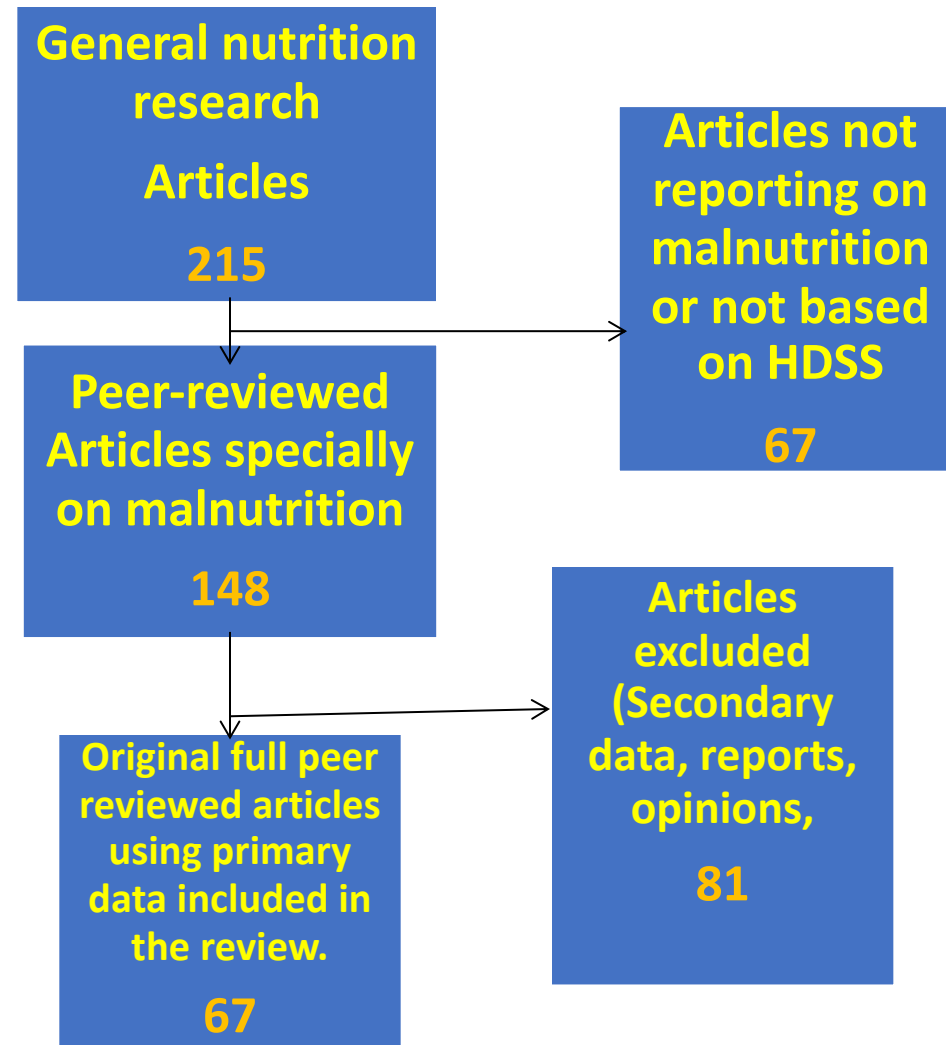
- Original research work
- Studies at INDEPTH member HDSSs
- Published in English peer-reviewed journals

- Exclusion criteria

- Reviews or commentaries

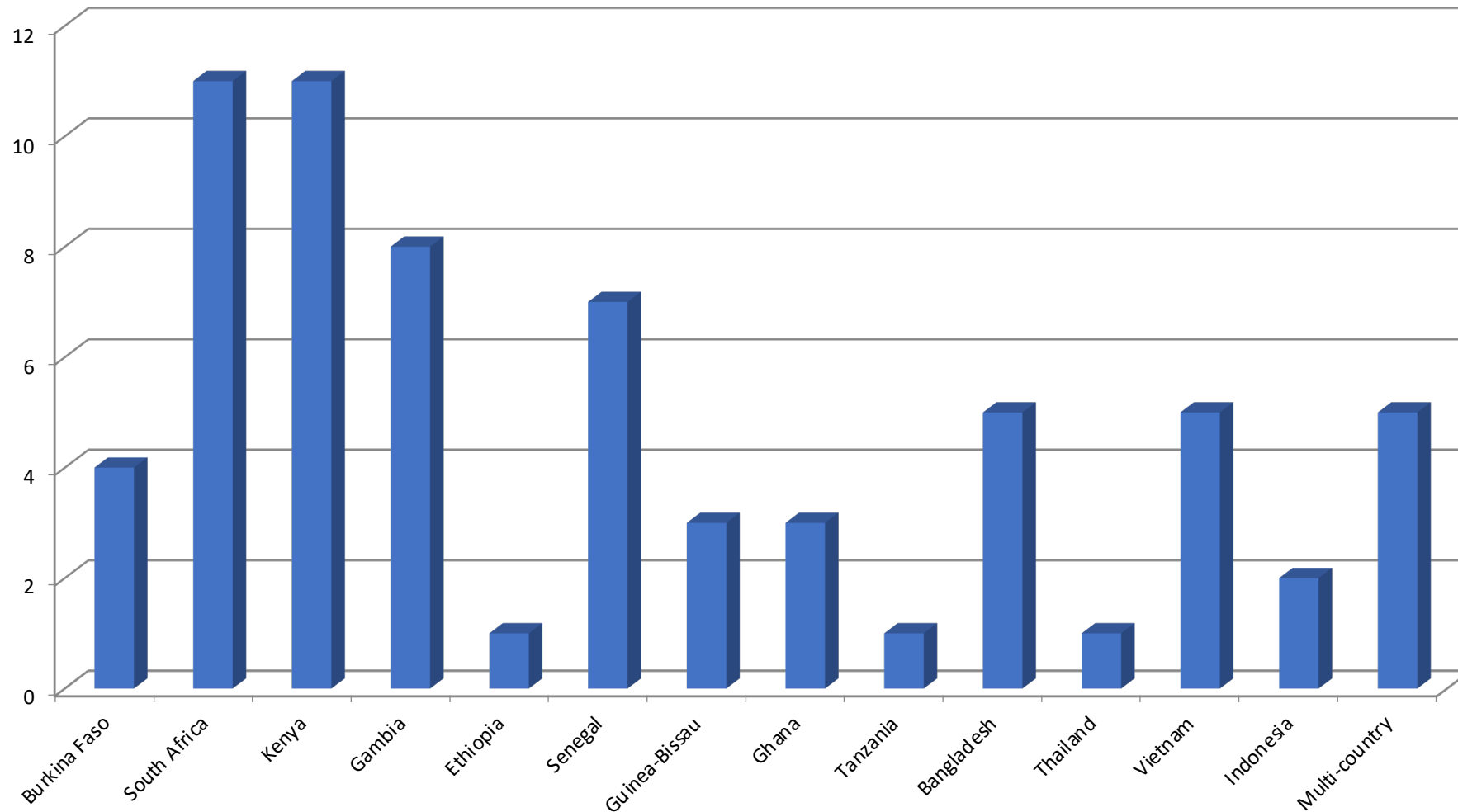
□ Out of the 148 papers reviewed, 67 papers were included in this study. The findings are presented under thematic areas.

Figure 1: The review process



# Results

Number of publications by country



# The problem of malnutrition

## Under-nutrition

### ❑ Among Children

- Reduction in underweight prevalence from 40% in June 1999 to 35% in June 2009.
- The prevalence for severe wasting and stunting prevalence remained high in under-five children.

### ❑ Among Adults

- Substantial proportion of the elderly population in rural communities are undernourished.
- Nutritional rickets was more prevalent in infants whose mothers had poor vitamin D status during pregnancy.



## Cont'd-The problem of malnutrition

### Overweight and obesity

#### ☐ Children

- Overweight among children are as high as 22% under 5.

#### ☐ Adolescents

- Adolescent weight status and central obesity were higher among girls than among boys

#### ☐ Gender Patterns

- Females aged 50 years and older were likely to be more obese than males

# The determinants of malnutrition

## Biological causes

### ❑ HIV Status

- Children infected with HIV had significantly worse nutritional outcomes than their uninfected peers.
- Breastfeeding mothers who were HIV positive had poorer protein and micronutrient status than HIV-negative women.
- Anaemia was significantly associated with malnutrition.
- Hospital-acquired bacteraemia (nosocomial bacteraemia) a significant risk factor for severe malnutrition.

# Social causes

## ❑ Wealth/Affluence

- Household wealth and community socio-economic status were significantly associated with childhood stunting.

## ❑ Education

- Mothers' education level was associated with their children's stunting in early childhood and continues to have repercussions for nutritional status later in life

## Cont, social causes

### ❑ Urbanization

- Urban children are less likely to be malnourished than rural children.
- Rural adolescent girls who migrated seasonally to urban areas for work had improved nutritional status.
- Although urbanization appears to reduce the risk of under-nutrition, it may increase that of obesity.

## The effect of malnutrition

- Under-nutrition was a factor in half the in-hospital deaths and half the morbidity from severe diseases such as malaria, gastroenteritis, lower respiratory tract infection, HIV, and invasive bacterial disease etc.
- Under-nutrition also impairs the development of those who survive it.
- Chronically malnourished children may be at higher risk for developing malaria episodes.
- Young adults born in the 'hungry season' (when less food is available) had 10 times higher mortality than those born in the harvest season.

# Tackling malnutrition

## ❑ Role of breastfeeding

- There is a causal link between early breastfeeding and declines in infection-specific neonatal mortality in infants aged between 2 and 28 days.
- Delayed initiation of breastfeeding until after the first day of life led to a 2.6 times higher risk of neonatal mortality as a result of infectious disease, while partial breastfeeding led to a 5.7 times higher risk.
- Non-breastfed infants had a 10-fold higher risk of dying than predominantly breastfed and exclusively breastfed infants.

## Cont'd, Role of breastfeeding

- Children weaned early for reasons other than 'being healthy', including a new pregnancy, had higher mortality.
- Good weaning practices reduce risk factors for severe malnutrition.
- Prolonged breastfeeding beyond the recommended duration, was found to be associated with reduced nutritional status and impaired growth.

## Prevention efforts

- Vitamin A supplementation for children and a supplementary feeding programme for children helped to reduce mortality.
- Multi-nutrient interventions were critical in the prevention efforts.



# The state of research

## ❑ Many issues remain unresolved

- The impact of malaria on malnutrition and of malnutrition on susceptibility.
- There was little attention paid to nutrient supplements or to education and information campaigns to help families improve their diet.
- Activism campaigns to encourage companies to label foods accurately or to reduce sugar or fat content received no attention from HDSS centres.
- Economic benefits of nutrition interventions also received little attention from HDSSs.

## Cont, state of research

- One study calculated the costs of adding nutritional supplementation to the management of HIV-infected children but studies on the cost-effectiveness of nutrition programmes were lacking.

# Policy implications

- ❑ **Importance of adopting a multi-pronged approach to tackling malnutrition.**
- Implementation of nutrition programmes.
- Lessons from other countries on how to reduce malnutrition may be a useful guide for policy-makers who are attempting to tackle the problem in their own countries.

## Acknowledgements

- We thank all INDEPTH member centres who submitted their published papers to the Secretariat.

# Thank you!

