ISSN :2584-2706 DOI: https://doi.org/10.5281/zenodo.23879227

How Malnutrition in Children Under 5 Years in Musanda Sub-Location, Mumias West Sub-County, Kakamega County was Eradicated

Janes Otieno Ouko; Susan Karusa Kisanya
Kakamega County, Department of Community Health & Nutrition

Abstract
Malnutrition among children under five years remains a major contributor to child illness and death in Kenya, including Kakamega County. In Musanda Sub-location, Mumias West Sub-county, the 2022 verbal autopsy conducted by KEMRI attributed 44.4% of under-five deaths to malnutrition, 33.3% of them severe cases, and the area accounted for 44.4% of children with faltering growth in the sub-county. This study aimed to identify malnourished children below five years in Musanda and to put in place interventions, using locally available foods, to improve their nutritional status. A descriptive cross-sectional design with multistage sampling was used. Data were collected through WHO-standard anthropometric measurements, structured caregiver questionnaires, key informant interviews and focus group discussions with mothers. Interventions included training of Community Health Promoters and health care workers on the Baby Friendly Community Initiative, mother-to-mother support groups, Positive Deviance Hearth sessions with household follow-up, a multisectoral nutrition stakeholders forum, and community nutrition open days with growth monitoring.

Of 506 children under five screened, 122 (24.1%) had moderate malnutrition, 25 (4.9%) had severe malnutrition and 169 (33.3%) were underweight. Since April 2023, 118 children (86%) with moderate malnutrition, all 25 severe cases (100%) and 142 underweight children (89.9%) have improved. These findings show that community-led, multisectoral interventions built on locally available foods and behaviour change can substantially reduce undernutrition in children under five.

Keywords: *Malnutrition, Under-Five Children, Positive Deviance Hearth, Baby Friendly Community Initiative, Musanda, Mumias West, Kakamega County.*

I. BACKGROUND

Malnutrition refers to deficiency or excess in nutrients. For this research we focus on undernutrition.Globally,46% of child mortality is caused by malnutrition . As of 2022,approximately 148.1 million children under 5 were stunted,representing 22.3% of this age group globally. Around 45 million children under 5 suffered from wasting in 2022,acconting for 6.8% globally. UNICEF reports that 27% of children under 5 world wide experiences severe food poverty, consuming only one or two food groups daily which increases the risk of malnutrition and developmental issues (The Guardian) In Sub-Saharan Africa,the prevalence of stunting among children under five in Africa was 30% in 2022 indicating high burden despite improvements over the past two decades(Knowledge for policy 2023) The prevalence of wasting in the region remained just below the global estimate of 6.8% in 2022.Approximately one in three children under 5 in Africa , about 64 million live in severe child food poverty, making them upto 50% more likely to experience wasting.

In Kenya,0-59 months children with faltering growth was 99,483 and 79,922 in 2022 and 2023 respectively.26% of the children have stunted growth according to KHIS, Kakamega county, stunting growth stands at 11.5%[28,652],underweight at 6.4%[15,945],wasting at 1.5%.Estimated cases of low birthweight is at 3737 annually.

In Mumias west, faltering growth of under 5 children in 2022 and 2023 was 283 and 694 respectively. Musanda Dispensary represents 44.2% of this data Musanda Dispensary has an estimated under 5 years population of 852 and under 1year of 212 Children with faltering growth in 2022 and 2023 in Musanda Dispensary was 5 and 307 respectively. This represents 44.4% of Mumias west subcounty children affected.

In Musanda 44.4% of under 5 child deaths was caused by malnutrition.33.3% being severe cases as per the Verbal Autopsy in 2022 conducted by KEMRI.

Malnutrition in children under five years remains a significant concern in many parts of Kenya, including Kakamega County.

ISSN :2584-2706 DOI: https://doi.org/10.5281/zenodo.23879227

Although the county has made commendable progress in reducing stunting and other forms of under nutrition through community-led initiatives and multispectral collaboration, malnutrition continues to impact the health and development of vulnerable children. According to the Kenya Demographic and Health Survey (KDHS) 2022, Western Kenya—where Kakamega is located—records a stunting prevalence of 26%, a slight decline compared to previous years, but still indicative of chronic malnutrition (Kenya National Bureau of Statistics [KNBS], 2023). Specific data from Kakamega County's nutrition scorecard reveals that stunting rates have dropped from 28% in 2014 to 12% in 2022, while wasting and underweight rates are currently estimated at 2% and 5% respectively (Nutrition Scorecard Hub, 2023).

The progress is largely attributed to multi-sectorial nutrition programs such as the Positive Deviance Hearth (PDH) model and community-based nutrition rehabilitation activities, with support from stakeholders like USAID Advancing Nutrition and county health departments (USAID Advancing Nutrition, 2023).These programs have emphasized behavioral change, maternal education, and improved child feeding practices.

However, persistent challenges remain. Approximately 33% of households in Kakamega are still unable to access a minimum diverse diet, reflecting ongoing food insecurity and poverty issues (Nutrition Scorecard Hub, 2023). Sub-county disparities further complicate the situation, with areas like Kakamega North exhibiting relatively higher rates of wasting due to limited access to health services, education, and clean water (Wekesa et al., 2018). Cultural practices, low maternal literacy, and limited awareness about optimal infant feeding practices continue to exacerbate the issue.

Addressing malnutrition in Kakamega requires a deeper understanding of the socio-economic and environmental drivers of undernutrition and the effectiveness of current intervention strategies.

II. MAIN OBJECTIVE

To eradicate malnutrition of children below the age of five years in Musanda using locally available foods

Objectives

- To strengthen behaviour change on maternal infant and young child feeding practices in Musanda.
- Overall aim of the study was to identify children below the age of five years who were malnourished and possible interventions put in place
- Verbal autopsy done was to know possible cause of death in children below the age of 5 years

III. METHODOLOGY.

KHIS DATA RESULTS FOR MUSANDA DISPENSARY 2022/2023

YEAR	Faltering growth	MUAC Yellow	MUAC Red	Marasmus	Stunted 6-23	Stunted 24-59
2022	5	8	0	0	0	1
2023	307	74	20	13	24	25

YEAR	Severe underweight 6-23	Severe underweight 24-59	Underweight 0-6	Underweight 6-23	Underweight 24-29
2022	1	0	0	12	
2023	4	6	12	30	3 48

Research Methodology

ISSN :2584-2706 DOI: https://doi.org/10.5281/zenodo.23879227

1.Study Area
The study was conducted in Kakamega County, located in the western region of Kenya. The county is predominantly rural and has a high population density. It comprises diverse agro-ecological zones, and its economy largely depends on agriculture. The study focused rural and peri-urban areas within Mumias West sub-county Musanda sub-location.

2.Study Design
This research employed a **descriptive cross-sectional study design** to assess the prevalence, causes, and impacts of malnutrition among children under five years of age. The design was chosen because it allows for the collection of data at a single point in time, making it cost-effective and practical for evaluating nutritional status and related factors.

3.Target Population
The target population consisted of children aged 0–59 months and their caregivers residing in Kakamega County. Health workers, community health volunteers (CHVs), and nutrition officers were also engaged to provide expert insights and contextual data.

4.Sample Size and Sampling Technique
A multistage sampling technique was used:

- **Stage 1:** Purposive selection of Musanda sub-location based on previous malnutrition reports.
- **Stage 2:** Random selection of villages in Musanda ward within Mumias West sub-county.
- **Stage 3:** Systematic sampling of all households with children under five.

5.Data Collection Methods

- **Anthropometric Measurements:** Weight-for-age, height-for-age, and weight-for-height were measured using standardized WHO procedures to determine levels of stunting, wasting, and underweight. This was done during community outreaches and household visits conducted by the Community Health Promoters
- **Structured Questionnaires:** Administered to caregivers to collect information on dietary practices, socio-economic status, health-seeking behaviors, and household food security. Visits was done by the CHPs to Musanda market interacting with business people taking note of the goods in the market.
- **Key Informant Interviews (KIIs):** Conducted with nutrition officers, CHPs, Community Health Officer and local health officials to gain insights into existing interventions and challenges.
- **Focus Group Discussions (FGDs):** Held with mothers of under-five children to explore community perceptions, cultural practices, and feeding patterns.
- Training of Community Health Promoters and Health Care Workers on implementation of Baby Friendly Community Initiative[BFCI], Establishing active mother to mother support group
- Positive Deviance hearth training followed by hearth sessions for 12 days and household follow-up.
- Establishment of multisectoral nutrition stakeholders forum to enhance food security
- Community nutrition open days outreaches, nutritional assessment, growth and monitoring using Child Welfare Clinic (CWC) booklet supported by UBJ

ISSN :2584-2706 DOI: https://doi.org/10.5281/zenodo.23879227







ISSN :2584-2706 DOI: https://doi.org/10.5281/zenodo.23879227







ISSN :2584-2706 DOI: https://doi.org/10.5281/zenodo.23879227

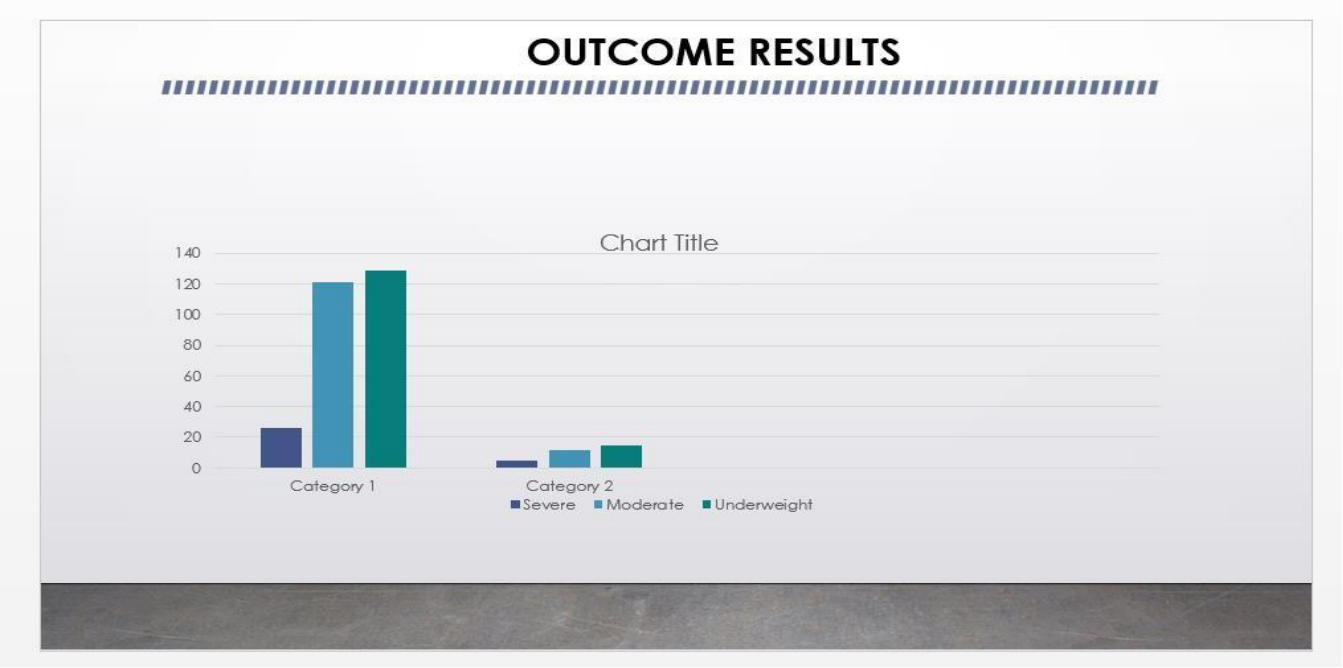


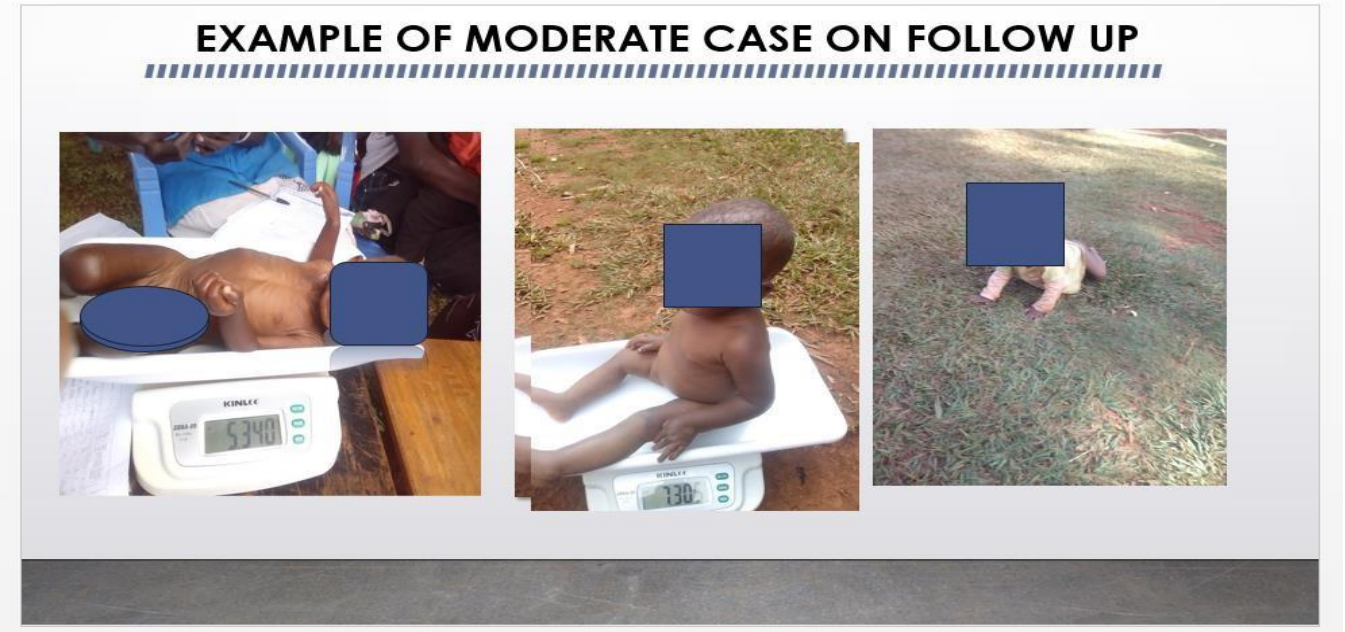
6. Data Analysis

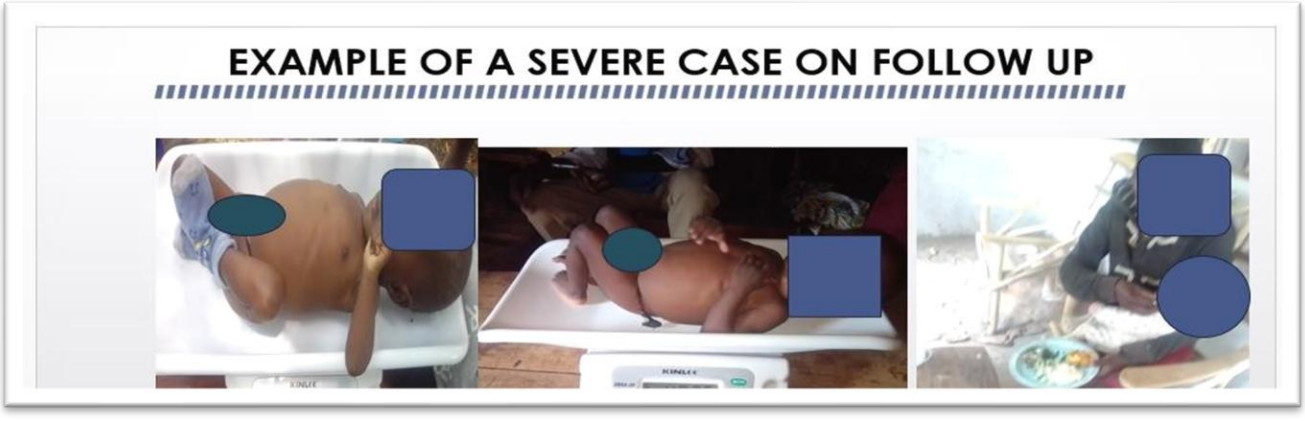
Quantitative data was entered and analyzed , with descriptive statistics (frequencies, percentages, means) used to summarize findings. Nutritional indices were calculated using WHO Anthro software. Qualitative data from KIIs and FGDs were transcribed, coded, and thematically analyzed.

- Total under 5 screened were 506
- Children with moderate malnutrition [MUAC Yellow] =122 [24.1%]
- Children with severe malnutrition [MUAC Red]=25 [4.9%]
- Total under weight =169 [33.3%]
- Between April 2023 to date;Atotal of 118 children[86%] with moderate malnutrition improved,25 severe cases improved [100%].Total underweight improved were 142[89.9%]

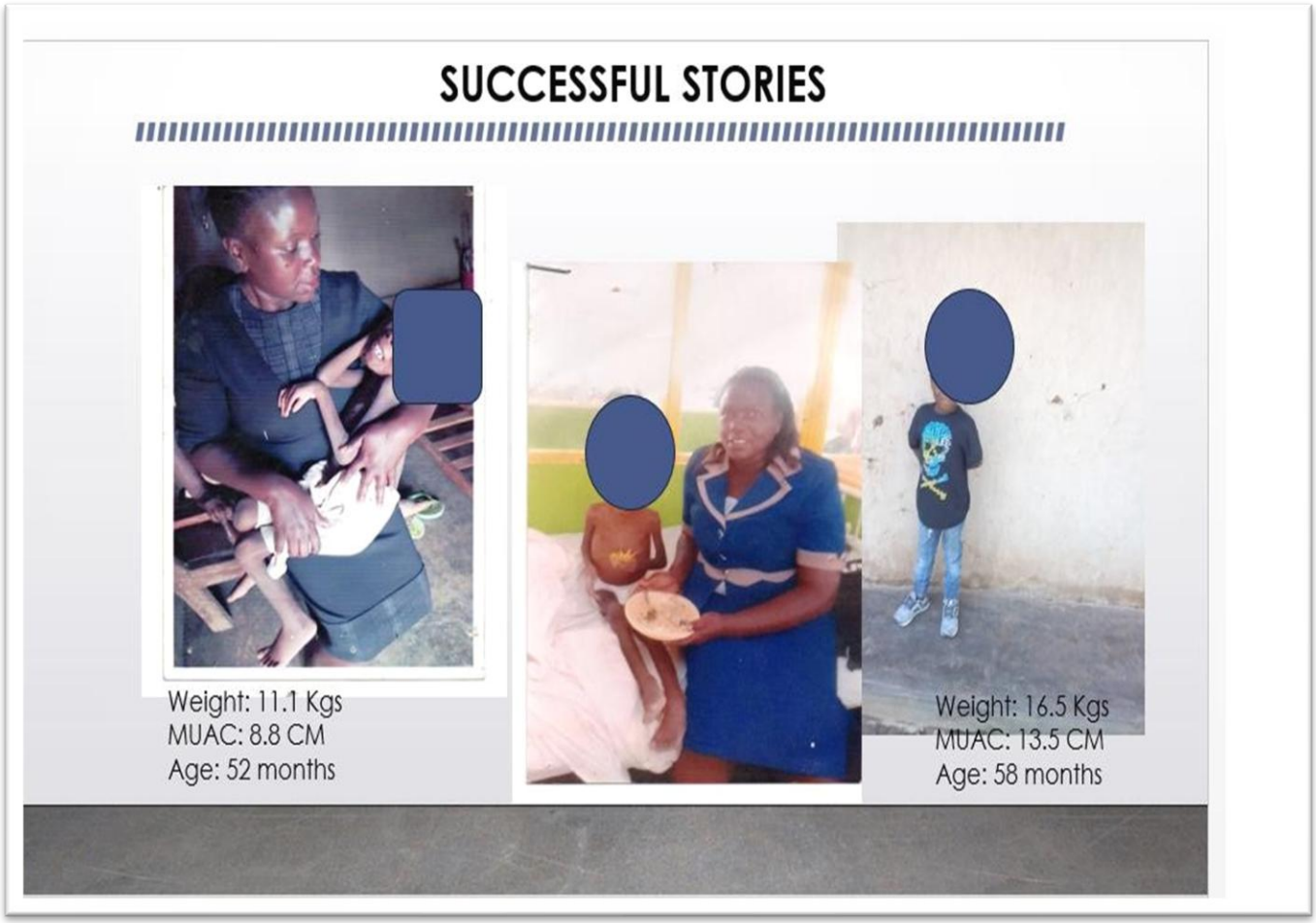
ISSN :2584-2706 DOI: https://doi.org/10.5281/zenodo.23879227







ISSN :2584-2706 DOI: https://doi.org/10.5281/zenodo.23879227





ISSN :2584-2706 DOI: https://doi.org/10.5281/zenodo.23879227

7. Ethical Considerations

Ethical approval was obtained from the relevant institutional review board and the Kakamega County Health Department. Informed consent was sought and signed from all participants and the permission to display the photos was accepted.
Participation was voluntary, and no harm was posed to the subjects during data collection.

IV. CONCLUSION

Malnutrition was a serious public health problem among children under five years in Musanda Sub-location, with nearly one in three of the 506 children screened being underweight and about 29% (24.1% moderate and 4.9% severe by MUAC) acutely malnourished. The verbal autopsy findings, which linked 44.4% of under-five deaths to malnutrition, confirmed the seriousness of the problem.

The interventions implemented, namely the Baby Friendly Community Initiative, mother-to-mother support groups, Positive Deviance Hearth sessions with household follow-up, the multisectoral nutrition forum, and community nutrition open days with growth monitoring, produced marked improvement. Since April 2023, 86% of moderately malnourished children, all severely malnourished children and 89.9% of underweight children have improved. These results show that malnutrition can be effectively reduced when communities use locally available foods, caregivers are supported to change feeding practices, and Community Health Promoters, health workers and other stakeholders work together.
Complete eradication, however, requires that these gains be sustained. Household food insecurity, limited dietary diversity, low maternal literacy, cultural practices and limited access to health services and clean water continue to put children at risk of relapse and of new cases.

V. RECOMMENDATIONS

- **Sustain and scale up the Positive Deviance Hearth model.** The county health department and partners should continue hearth sessions with household follow-up in Musanda and extend the approach to other sub-locations in Mumias West and Kakamega County.
- **Strengthen maternal, infant and young child feeding.** Continue behaviour change communication on exclusive breastfeeding for the first six months and timely, diverse complementary feeding, supported by active mother-to-mother support groups.
- **Promote locally available and diverse foods.** Encourage households to grow and use kitchen gardens, nutrient-rich local crops, small livestock and fish, so that children eat a minimum diverse diet.
- **Support the Community Health Promoters.** Provide regular training, supportive supervision, equipment for MUAC screening and growth monitoring, and timely stipends, since they carry out screening, follow-up and referral.
- **Maintain routine screening and growth monitoring.** Continue community outreaches and use of the Child Welfare Clinic booklet to detect faltering growth early and to link severe cases promptly to health facilities.
- **Keep the multisectoral nutrition stakeholders forum active.** Health, agriculture, education, social services, water and sanitation sectors and development partners should coordinate food security, livelihood and nutrition activities.
- **Improve livelihoods and access to services.** Link poor households to social protection, income-generating activities, clean water, sanitation and hygiene services to address the root causes of malnutrition.
- **Continue monitoring, evaluation and research.** Track the nutritional status of children over time, follow up those who have improved to prevent relapse, and document and share lessons for use by other communities and policymakers.

ISSN :2584-2706 DOI: https://doi.org/10.5281/zenodo.23879227

REFERENCES

[1]. **Casimir Funk (1884–1967):** Coined the term **"vital amine" (vitamin)** in 1912 after observing that the hulls of unprocessed rice protected birds from beriberi. His work shifted the understanding of malnutrition away from strictly bacterial infections to nutrient deficiencies.

[2]. **Dr. Cicely Williams (1893–1992):** A Jamaican-born physician who first **identified and named "Kwashiorkor"** in 1933 while working in Ghana. She proved that this severe form of malnutrition (characterized by swollen bellies and edema) was explicitly caused by a lack of protein rather than a lack of vitamins.

[3]. **Professor Sir John Waterlow (1916–2010):** Set up the Tropical Metabolism Research Unit in Jamaica in 1954. He categorized childhood malnutrition into **stunting (low height-for-age) and wasting (low weight-for-height)**. Alongside **Donald McLaren**, Waterlow also famously corrected the global health "protein gap" fallacy in 1974, proving that caloric energy insufficiency was just as crucial as protein intake.

[4]. **Dr. Nevin Scrimshaw (1918–2013):** Founder of the Institute of Nutrition of Central America and Panama (INCAP). He pioneered the clinical understanding of the **lethal cycle between malnutrition and infection**, showing that malnutrition weakens the immune system, making infectious illnesses far more lethal.

[5]. **Dr. Coluthur Gopalan (1918–2019):** Widely recognized as the **"Father of Indian Nutrition Science."** Driven by the 1942 Bengal Famine, his extensive research on protein-calorie malnutrition and micronutrients laid the technical framework for major safety nets like India's Mid-Day Meal Scheme.

[6]. **Drs. Jeffrey Gordon and Tahmeed Ahmed:** In a series of ground-breaking studies culminating in 2024, microbiome scientist Jeffrey Gordon (Washington University) and childhood malnutrition expert Tahmeed Ahmed (icddr,b) discovered that **severe acute malnutrition disrupts the development of a child's gut microbiome**. Their research paved the way for microbiome-directed therapeutic foods to repair gut health. [1, 2]