Maternal Malnutrition Globally: Epidemiology and Links to Childhood Malnutrition

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Framework for Actions to Achieve Optimum Fetal and Child Nutrition and Development

Benefits during the life course
- Morbidity and mortality in childhood
- Cognitive, motor socioemotional development
- School performance and learning capacity
- Adult stature
- Obesity and NCDs
- Work capacity and productivity

Optimum fetal and child nutrition and development
- Breastfeeding, nutrient rich foods, and eating routine
- Feeding and caregiving practices, parenting stimulation
- Low burden of infectious diseases
- Food security, including availability, economic access, and use of food
- Feeding and caregiving resources (maternal, household, and community levels)
- Access to and use of health services, a safe and hygienic environment

Nutrition specific interventions and programmes
- Adolescent health and preconception nutrition
- Maternal dietary supplementation
- Micronutrient supplementation or fortification
- Breastfeeding and complementary feeding
- Dietary supplementation
- Dietary diversification
- Feeding behaviours and stimulation
- Treatment of severe acute malnutrition
- Disease prevention and management
- Nutrition interventions in emergencies

Nutrition sensitive programmes and approaches
- Agriculture and food security
- Social safety nets
- Early child development
- Maternal mental health
- Women’s empowerment
- Child protection
- Classroom education
- Water and sanitation
- Health and family planning services

Knowledge and evidence
- Politics and governance
- Leadership, capacity, and financial resources
- Social, economic, political, and environmental context (national and global)

Building an enabling environment
- Rigorous evaluations
- Advocacy strategies
- Horizontal and vertical coordination
- Accountability/incentives regulation, legislation
- Leadership programmes
- Capacity investments
- Domestic resource mobilisation
Adolescent Nutrition
As many as half of all adolescent girls in some countries are stunted, increasing risk of complications in pregnancy and delivery and of poor fetal growth.
Maternal Nutrition
Maternal Malnutrition Globally

• Maternal malnutrition accounts for 7% of the global disease burden

• Contributes to at least a fifth of maternal deaths along with the increased probability of poor pregnancy outcomes

• Short maternal stature may lead to obstructed labour and maternal and fetal or neonatal death

• Widely prevalent in the regions of South East Asia, South America and Africa; some countries in the region have maternal undernutrition prevalence as high as 35%.
Trends in Thinness and Obesity for Women Aged 20-29 Years in UN Regions and Globally (1980-2008)

Prevalence of low BMI in adult women has decreased in Africa/Asia since 1980, but remains higher than 10%

Maternal overweight and obesity has increased steadily since 1980; resulting in increased maternal morbidity and infant mortality
Maternal Micronutrient Deficiencies
Over 500 million women of reproductive age are anemic

468 M non pregnant + 56 M pregnant

Source: WHO, 2008
Global Anemia Trends
Stevens et al (Lancet GH 2013)
Iron and Calcium Deficiencies Contribute to Maternal Deaths

Series confirms anaemia is a risk factor for maternal deaths, most likely due to haemorrhage, the leading cause of maternal deaths (23% of total deaths).

Calcium deficiency increases the risk of pre-eclampsia, currently the second leading cause of maternal death (19% of total deaths).

Addressing these deficiencies could result in substantial reduction of maternal deaths.
Biochemical vitamin A deficiency (retinol) as a public health problem by country 1995–2005: Pregnant women
Linking Maternal & Fetal/Newborn Nutrition
Evidence Highlights Importance of Nutritional Status in Women Before and During Pregnancy

Short maternal stature may lead to obstructed labour and maternal and fetal or neonatal death

Maternal stunting and low Body Mass Index increases the risk of fetal growth restriction (small for gestational age)

Maternal obesity leads to gestational diabetes, pre-eclampsia, haemorrhage and higher risk of neonatal and infant death
Current trends in Low Birth Weight

Source: UNSCN, 2010
32.4 million babies were born SGA in 2011; 27% of all births in LMICs
Risks of SGA for Mortality and Preterm Birth for Neonatal Mortality

Reductions in child mortality could be achieved by targeting interventions to reach babies born too small or too soon.
How does fetal nutrition affect early child nutrition?
Prevalence of Wasting and Severe Wasting in Children <5 Years Old by UN Regions, 2011

52 million children under 5 are wasted, 19 million severely wasted
Risk of SGA for Stunting

20% of stunting by 24 months can be attributed to being SGA
Countries With High Burden of Malnutrition

These 34 countries account for 90% of the global burden of malnutrition
What about Mortality Risks?
What works?
First ever multi-stakeholder consensus on what works for RMNCH

Led by WHO, Aga Khan University and PMNCH with 40+ friends...

Based on 3 year review – over 50 000 scientific papers

Packages of care across the continuum of care

Supports policy making and resource allocation at global and national level
New sources of information

- BMC Public Health Special issue on LiST interventions (March 2011)
- Lancet Stillbirth series (March 2011)
- Cochrane Library & 3ie/DFID/BMGF reviews
- Pediatric & Perinatal Epidemiology (Maternal Nutrition Supplement) 2012
- Lancet Nutrition series update 2012-2013
- BMC Public Health supplement (Sept 2013)
Interventions Across the Lifecycle

Preconception care: family planning, delayed age at first pregnancy, prolonging of inter-pregnancy interval, abortion care, psychosocial care

- Folic acid supplementation
- Multiple micronutrient supplementation
- Calcium supplementation
- Balanced energy protein supplementation
- Iron or iron plus folate
- Iodine supplementation
- Tobacco cessation

Delayed cord clamping
- Early initiation of breast feeding
- Vitamin K administration
- Neonatal vitamin A supplementation
- Kangaroo mother care

Exclusive breast feeding
- Complementary feeding
- Vitamin A supplementation (6–59 months)
- Preventive zinc supplementation
- Multiple micronutrient suplementations
- Iron supplementation

Decreased maternal and childhood morbidity and mortality
Improved cognitive growth and neurodevelopmental outcomes
Increased work capacity and productivity
Economic development

Disease prevention and treatment
- Malaria prevention in women
- Maternal deworming
- Obesity prevention

Management of SAM
Management of MAM
- Therapeutic zinc for diarrhoea
- WASH
- Feeding in diarrhoea
- Malaria prevention in children
- Deworming in children
- Obesity prevention

Delivery platforms: Community delivery platforms, integrated management of childhood illnesses, child health days, school-based delivery platforms, financial platforms, fortification strategies, nutrition in emergencies

Bhutta et al (Lancet 2013)

Bold=Interventions modelled
Italic=Other interventions reviewed
Packages of Nutrition Interventions

Optimal maternal nutrition during pregnancy
- Maternal multiple micronutrient supplements to all
- Calcium supplementation to mothers at-risk of low intake
- Maternal balanced energy protein supplements as needed
- Universal salt iodization

Infant and young child feeding
- Promotion of early, exclusive breastfeeding for 6 months; continued breastfeeding until 24 months
- Appropriate complementary feeding education in food secure populations and additional complementary food supplements in food insecure populations

Micronutrient supplementation in children at risk
- Vitamin A supplementation between 6-59 months age
- Preventive zinc supplements between 12-59 months of age

Management of acute malnutrition
- Supplementary feeding for moderate acute malnutrition
- Management of severe acute malnutrition
Effect of Scale-up Interventions on Deaths in Children Younger than 5 Years

- Management of SAM
- Preventive zinc supplementation
- Promotion of breastfeeding
- Appropriate complementary feeding
- Management of MAM
- Periconceptual folic acid supplementation or fortification
- Maternal balanced energy protein supplementation
- Maternal multiple micronutrient supplementation
- Vitamin A supplementation
- Maternal calcium supplementation

Number of deaths of children <5 years averted
Impacts

Mortality in children younger than 5 years could be reduced by 15% (range 9-19%)

- 35% (19-43) reduction in diarrhoea-specific mortality
- 29% (16-37) reduction in pneumonia-specific mortality
- 39% (23-47) reduction in measles-specific mortality
- Reduced deaths due to asphyxiation and congenital anomalies
- Little effect on maternal mortality

Stunting overall reduced by at least 20.3% (range 11.1-28.9%)

Severe wasting reduced overall by 61.4% (range 35.7-72%)
Nutrition “blind spots” & the life course

Globally 13 million children are born to women under 20 years of age

There is a gap in the continuum of care for adolescent girls and women before pregnancy
Adolescent Birth Rates

Note: Calculations are based on data for 54 countries with two data points available, 1990 to 2008, and 1997 to 2011. The countries cover over 72 per cent of the populations in the regions above.
Children having Children!

% giving birth before 18 years age

- Poorest Quintile: 60%
- Quintile 2: 50%
- Quintile 3: 30%
- Quintile 4: 20%
- Richest: 10%

MARRYING TOO YOUNG
END CHILD MARRIAGE
"The dual scourge of hunger and malnutrition will be truly vanquished not only when granaries are full, but also when people's basic health needs are met and women are given their rightful role in societies."

Gro H. Brundtland