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Combating the triple burden of malnutrition: World Health Assembly targets for 2025

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Introduction

The importance of nutrition in improving health, human development and national development has been well recognised globally. In the second half of the last century, efforts were made by the UN, various bilateral and multilateral organisations and developing countries themselves to plan and implement appropriate interventions to reduce poverty, improve food security, and the health and nutritional status of the citizens. The special focus groups for these efforts were women and children. However, these interventions were not comprehensive and integrated programmes with well-defined goals and time lines; as a result the progress has been patchy and suboptimal.

Learning from the experiences of the past, efforts were made in the new millennium to initiate and implement global, comprehensive programmes to accelerate the decline in under-nutrition and associated morbidity. Well-defined targets were set, to be achieved within a defined time frame. In September 2000, the General Assembly of the United Nations (UN) approved the Millennium Declaration, committing all the nations of the world to participate in a new global partnership to achieve basic human rights to food, health, education and improved quality of life. Eight Millennium Development Goals (MDGs) with 21 targets and 60 indicators, to be achieved by the end of 2015 were also approved¹. The UN agencies monitored and documented progress towards these targets till 2015 globally. In India, the Ministry of Statistics and Programme Implementation undertook the responsibility of monitoring the progress towards the MDG goals.

Monitoring the progress towards MDGs between 2000 and 2015 brought to light the fact that all the countries of the world are currently facing a triple burden of malnutrition: under-nutrition, over-nutrition and micro-nutrient deficiencies. In addition to the familiar triad of persistent poverty, under-nutrition and morbidity, the world has to cope with rising trends in over-nutrition and associated non-communicable diseases. Globally, anaemia is the most common micro-nutrient deficiency that is associated with adverse health consequences. Taking cognisance of these findings, the World Health Assembly (WHA) in 2012, set targets for reduction in the triple nutrition burden to be achieved by 2025². Sustainable Development Goals (SDG) approved by the UN as the way forward to 2030³, recognised the importance of nutrition as a major contributor to human development and improvement in quality of life; SDG

incorporated the WHA targets for nutrition in SDG²: end hunger, achieve food security and improve nutrition. Nutrition has been accepted as a decisive enabler of SDG³: ensuring healthy lives and promoting well-being for all at all ages. The 2030 Agenda for Sustainable Development has given an added impetus to improving the nutritional status of the global population.

The UN General Assembly Resolution 70/259 has proclaimed that 2016-2025 will be the UN Decade of Action on Nutrition. It specifically calls upon the World Health Organisation (WHO) and the Food and Agriculture Organization of the United Nations (FAO) to lead implementation of nutritional interventions. In response to this call, the Department of Nutrition for Health and Development (NHD) of the WHO embarked on defining a coherent global decadal plan. The document "Ambition and Action in Nutrition 2016-2025"⁴ outlines the inclusive, multi-level, fit-for-purpose nutrition strategy for all nations to achieve the nutrition targets set by WHA in 2012. This article briefly summarises the WHO decadal action plan for nutrition, and reviews the current Indian situation and the likely progress during the next ten years towards 2025 WHA targets.

WHA targets, Sustainable Development Goals, and WHO decadal action plan

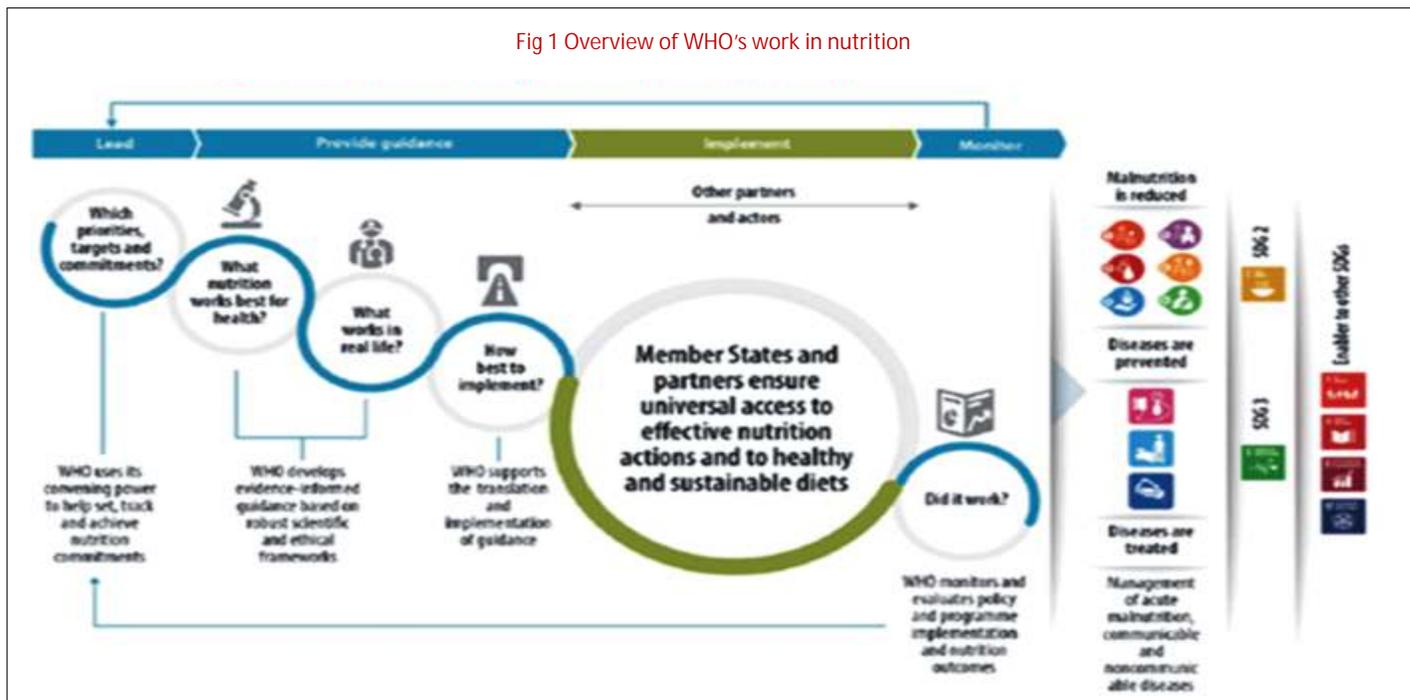
In 2012, the World Health Assembly set six global nutrition goals to be achieved by 2025. These are:

- 30% reduction in low birth weight (LBW);
- increase in the rate of exclusive breastfeeding (EBF) in the first six months up to at least 50%;
- 40% reduction in the number of children under-five who are

CONTENTS

- | | |
|--|---|
| • Combating the triple burden of malnutrition: World Health Assembly targets for 2025
K. Kalaivani and Prema Ramachandran | 1 |
| • Foundation News | 8 |
| • Nutrition News | 8 |

Fig 1 Overview of WHO's work in nutrition



stunted;
 • reduce and maintain childhood wasting to less than 5%;
 • ensure that there is no increase in childhood overweight;
 • 50% reduction of anaemia in women of reproductive age.

These have been incorporated into the Sustainable Development Goals for 2030; the monitoring mechanisms for assessing progress towards these goals are being set up globally, including in India. In the last two decades there has been a growing recognition that:

- persistent under-nutrition and micro-nutrient deficiencies

continue to require effective scaled up implementation of ongoing interventions,
 ➤ and the rise in overweight, obesity and associated increased risk of non-communicable diseases (NCDs) requires immediate implementation of newer interventions for prevention, early detection and effective management.

Nutrition and interventions for ensuring normal nutritional status for all, ranges across sectors from agriculture to health and programmes spanning the spectrum from poverty alleviation and under-nutrition reduction to coping with obesity and associated

Fig 2 Scope of WHO's Ambition and Action in nutrition 2016-2025

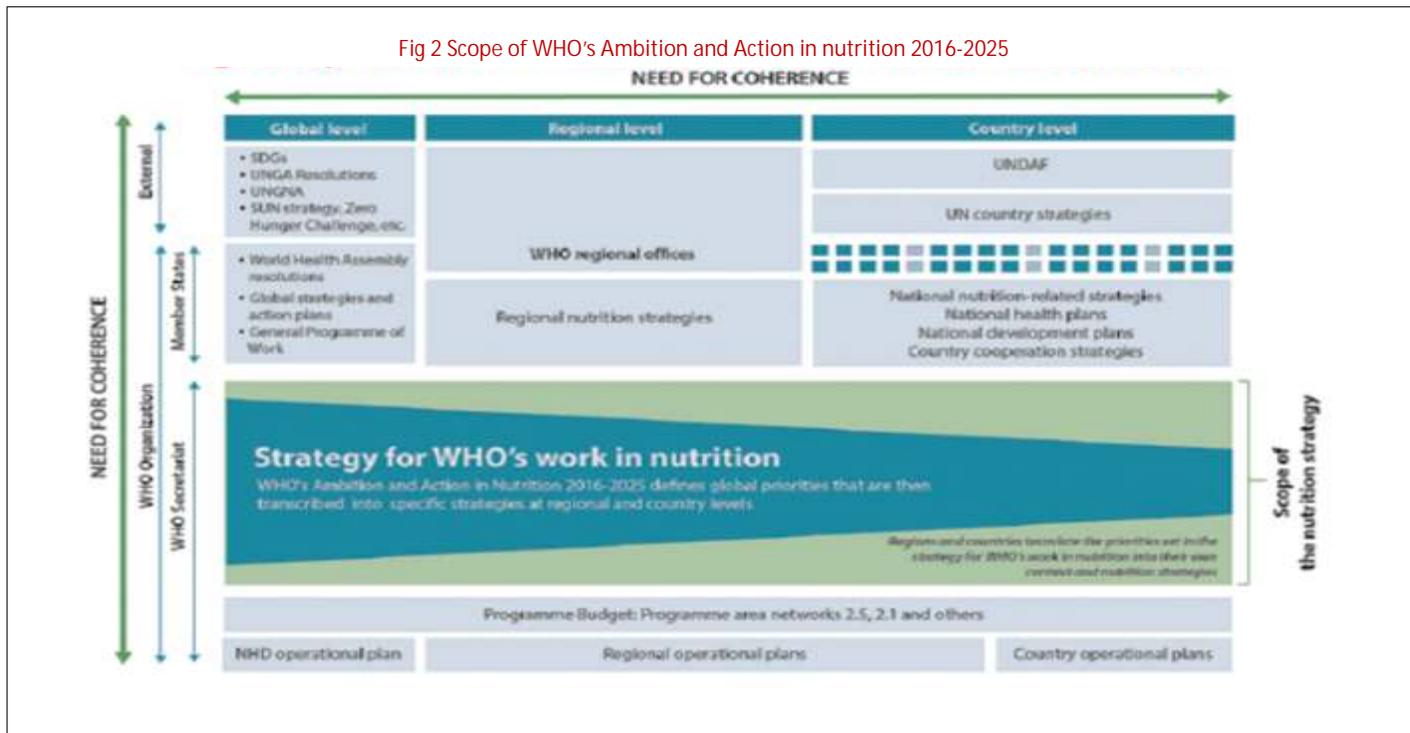
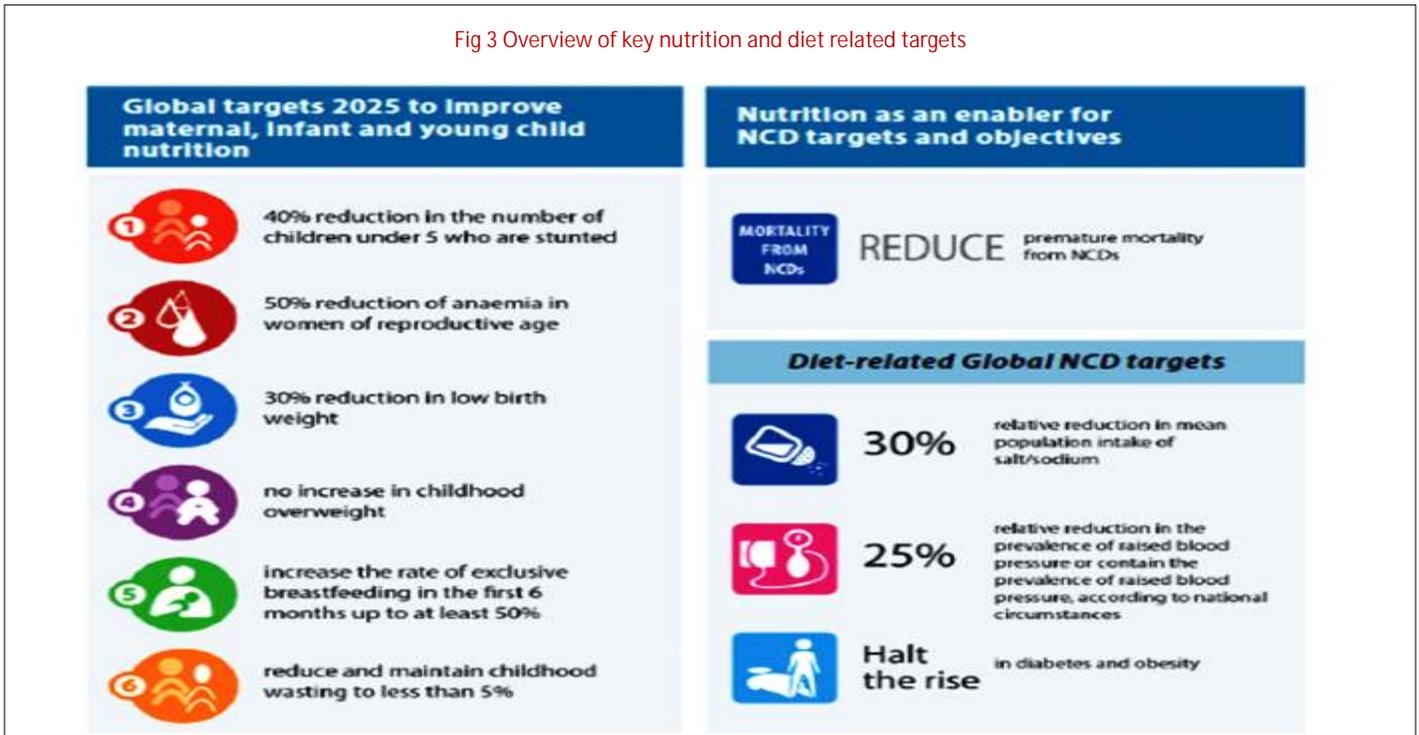


Fig 3 Overview of key nutrition and diet related targets



non-communicable diseases. Concerns have been expressed that this very ubiquitous nature of nutrition can lead to duplication of efforts and strategic and operational dilution.

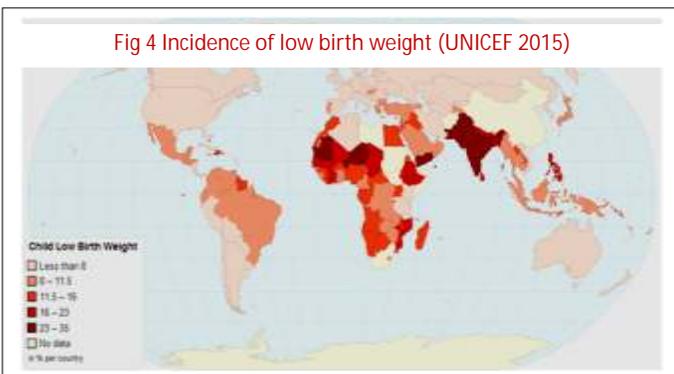
The WHO document "Ambition and Action in Nutrition 2016-2025" defines five guiding principles that provide a framework for action while ensuring coherence:

- anchor WHO's Ambition and Action in Nutrition 2016-2025 in the SDGs and the UN Decade of Action on Nutrition;
- ensure a strategic focus for WHO's work in nutrition;
- develop an integrated approach;
- promote collaboration and partnering within and outside of WHO;
- recognize the role of key nutrition actions.

WHO has identified the following six priority areas of work:

Leadership

- 1 shape the narrative of the global nutrition agenda
- 2 leverage changes in relevant non-health sectors to improve and mainstream nutrition
- 3 leverage the implementation of effective nutrition policies and



programmes in all settings, including in situations of emergencies and crises

Guidance

- 4 define healthy sustainable diets and guide the identification and use of effective nutrition actions
- 5 improve the availability of nutrition actions in health systems

Monitoring

- 6 support the establishment of targets and monitoring systems for nutrition targets.

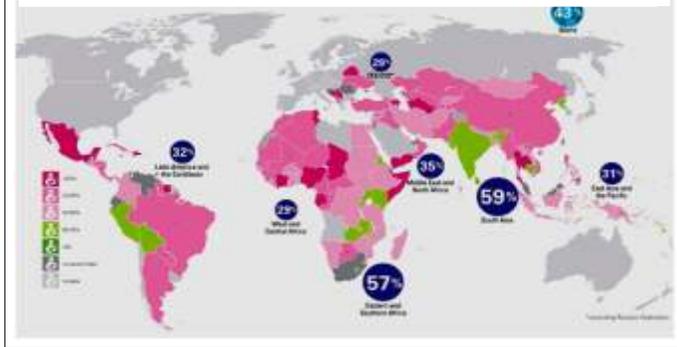
The Action Plan provides an overview of the reorganised cohesive plan to achieve reduction in malnutrition and progress towards the SDG targets (Fig1). The document defines the scope of WHO's ambition and action in nutrition and emphasises the need for coherent action by concerned agencies and all countries (Fig 2).

There are two sets of target to be achieved by 2025: (a) global targets for improving maternal, infant and young child nutrition and (b) nutrition as an enabler for NCD targets and objectives (Fig 3).

India's progress towards WHA targets



Fig 6 Exclusive breast-feeding at six months of age (UNICEF 2016)



India achieved MDG targets for poverty reduction and food security. India's progress towards combating maternal and child under-nutrition was fairly good even though the country could not reach the target set for under-five under-nutrition reduction by 2015. The current status regarding the six priority areas identified in 2012 and the likely progress towards targets set for 2025 is reviewed in the next few pages.

Target 1: Achieve a 30% reduction in low birth weight (LBW)

India has the highest rate of LBW in the world⁵ (Fig 4). About a third of Indian neonates weigh less than 2.5 kg at birth. The reduction in low birth weight rates over the past six decades was very slow. Some of the major factors associated with LBW such as low maternal and paternal height cannot be altered through short term interventions. However, maternal under-nutrition, low pre-pregnancy weight and pregnancy weight gain, anaemia in pregnancy and pregnancy-induced hypertension can be detected and treated by improving the coverage, content and quality of antenatal care. It has been estimated that early detection and appropriate management of these problems can bring about reduction in the LBW rates by about 5%. However, it is not realistic to expect a 30% reduction in LBW by 2015.

The major reason for concern about the high rate of LBW is its impact on child survival. LBW could be due to prematurity (born before 37 weeks of pregnancy) or intrauterine growth retardation (IUGR). Studies carried out by Dr Shanti Ghosh⁶ and later confirmed by many others showed that a majority of LBW babies in India are IUGR. With warmth, breast feeding and prevention of infection most term IUGR babies survive. Based on these studies, it was recommended that only preterm babies and those weighing below 2kg should be admitted into intensive care in nurseries. India has been following these guidelines and has saved millions of lives within the existing health care constraints. Despite high LBW rates (30%) and high under-nutrition rates (>40%) in pre-school children, the rates for

Fig 8 Prevalence of stunting (WHO 2015)

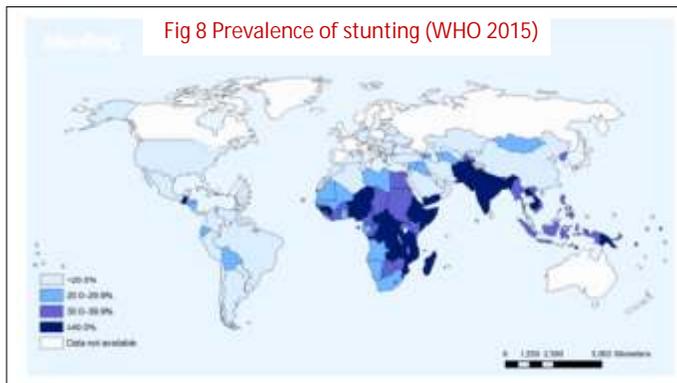
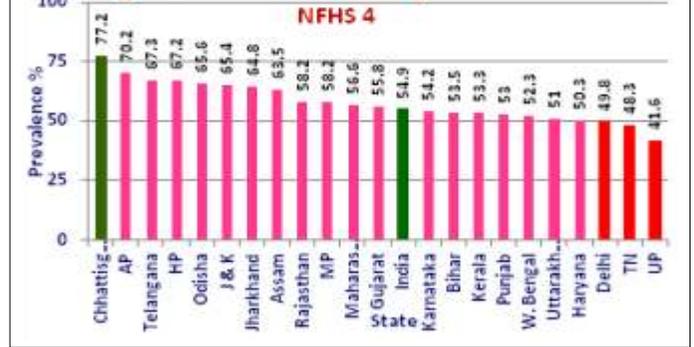


Fig 7 Exclusive breast Feeding at 6 Months



neonatal, infant and under-five mortality in India, both in 1990 and in 2015, are comparable to those of other developing countries⁷ (Fig 5). India narrowly missed achieving the MDG for reduction in under-five mortality. India can and will achieve SDG targets for IMR and U5 MR by 2030 despite not achieving the target set for reduction in low birth weight.

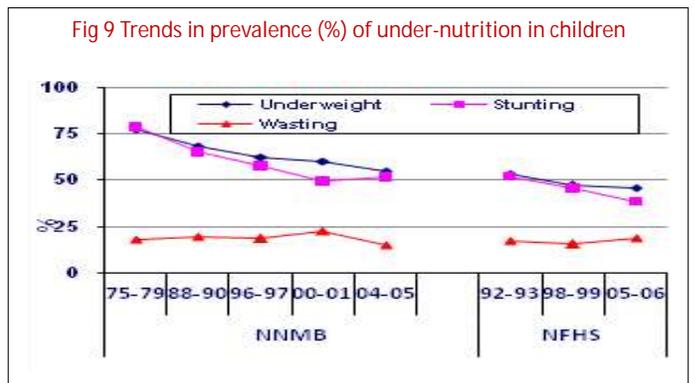
Target 2: Increase exclusive breast feeding at six months to 50%

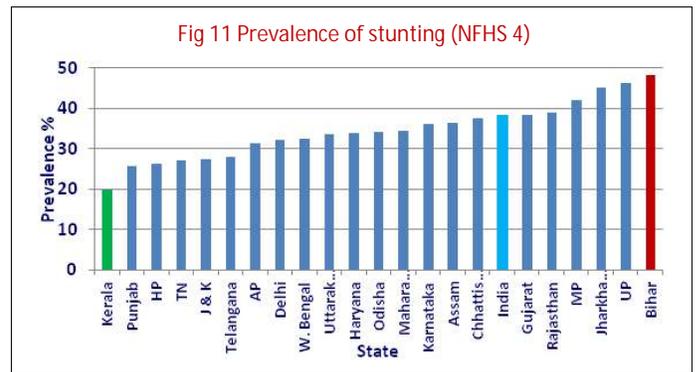
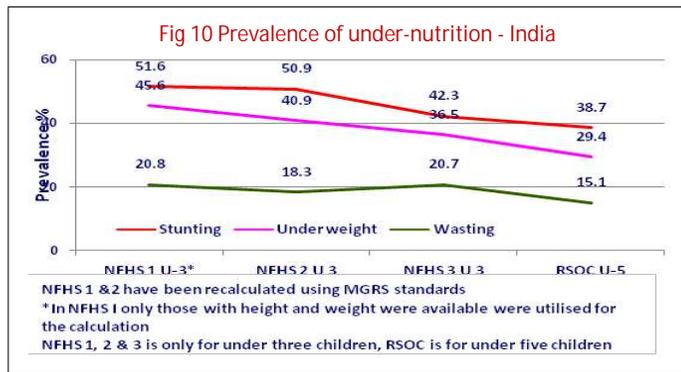
In most countries of the world, especially the developed ones, breast-feeding is still not universal even though enormous efforts have been made to provide nutrition education and personalized counselling on its importance. Even among countries with relatively high breast-feeding rates, only a third or less of infants upto six months (Fig 6)⁸ are exclusively breast-fed.

In India, breast-feeding is nearly universal. Data from the National Health Survey 4⁹ (2015- 16) show that 54.9% of mothers exclusively breast-feed their infants for 6 months, thereby giving their infants the best start in life. India has already achieved the WHA target of EBF of 50% by 2025. It is logical to expect that the country will continue to be the world leader in terms of universal breast feeding and highest EBF rates at six months. If the momentum of nutrition education on importance of EBF upto 6 months is kept up, the country can, by 2030 achieve near-100% EBF in infants in the first six months of life.

There are substantial inter-state and urban-rural differences in exclusive breast feeding rates (Fig 7)⁹. Chhattisgarh tops the states with over 75% of mothers exclusively breast-feeding their infants. UP, Delhi and TN have exclusive breast feeding rates below 50% at six months. Special efforts have to be made to improve exclusive breast feeding in these states. Exclusive breast feeding rates are lower in urban areas. Studies carried out by Nutrition Foundation of India have shown that the Mother Child Protection Card (MCPC) offers

Fig 9 Trends in prevalence (%) of under-nutrition in children





considerable support to the field workers' message that all infants should be exclusively breast-fed in the first six months. A majority of urban mothers are literate; they can readily read and understand the messages on optimal infant feeding practices. By plotting weight-for-age in the MCPC, it is possible to demonstrate that exclusively breast-fed infants grow well in the first six months of life. These efforts may go a long way to improve exclusive breast feeding up to six months among urban women.

Target 3: Achieve 40% reduction in stunting by 2025

Stunting in under-five children is considered to be an important indicator of household food insecurity and chronic energy deficiency. South Asian countries have achieved national food security decades ago and there has been substantial reduction in poverty and improvement in household food security also. However, the prevalence rates of stunting, under-weight and wasting in these countries have remained the highest in the world, comparable to Sub-Saharan Africa¹⁰ (Fig 8). There is a growing recognition that food insecurity may not be the main factor responsible for high stunting rates in South Asian children, as had been assumed earlier. State of Food Insecurity¹¹ (2013) acknowledges that there is a disconnect between food security and under-nutrition in South Asian countries.

In India, data on time trends on prevalence of stunting, underweight and wasting in under-five children from the mid-Seventies till 2015 are available from the surveys carried out by the National Nutrition Monitoring Bureau¹² (NNMB) National Family Health Surveys^{9, 13-15} (NFHS 1-4), Rapid Survey of Children¹⁶. Data from NNMB surveys indicate that, since the 1970s, there has been a steady decline in stunting and underweight (Fig 9). Data from NFHS had shown a similar slow but steady decline in stunting, approximately 1% per year (Fig 10). It is noteworthy that stunting and underweight have been declining at similar rates whereas the prevalence of wasting has remained unaltered.

In India, household food insecurity is not the major factor responsible for the high rates of stunting and underweight. Low birth weight and the consequent low trajectory of linear growth play major roles in the current high prevalence of stunting. Given the low average rates of reduction in stunting in the last four decades, it is unlikely that the country could achieve the WHA target of 40% reduction in stunting rates by 2025.

There are substantial inter-state differences in the prevalence of stunting. Interstate differences in stunting rates recorded in the NFHS 4⁹ are shown in Fig 11. There is a more than two-fold difference between the lowest and highest prevalence rates among states. It will not be possible for any of the states to achieve 40% reduction in prevalence of stunting between 2015 and 2025. But some of the states may be able to achieve the computed national target for reduction in stunting by 2025.

Target 4: Reduce and maintain childhood wasting to less than 5%

Difficulties in accurately measuring length/height of children as compared to weighing them has been the major factor responsible for the widespread use of weight-for-age as the criterion for assessment of nutritional status in children. Despite the awareness that wasting is the best anthropometric index for assessing current energy deficiency, it was not widely used because height measurement was difficult and age- and sex-specific standards for BMI-for-age in children were not available. Improvement in housing made smooth level floor and vertical walls available in urban and rural houses. As a result, it was possible to use simple robust inexpensive wall mounted stature meters for measurement of height. WHO Multi Country Growth Reference Standards¹⁷ [MGRS] provided BMI-for-age standards for 0-18 years. These developments have dramatically altered the situation in the last decade and resulted in wider use of wasting as a criterion for under-nutrition. WHA/SDG targets include reduction in wasting (< -2SD BMI-for-age) to below 5% and maintaining it at that level.

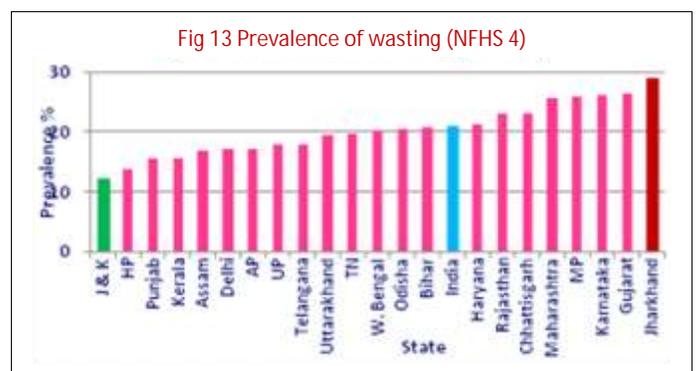
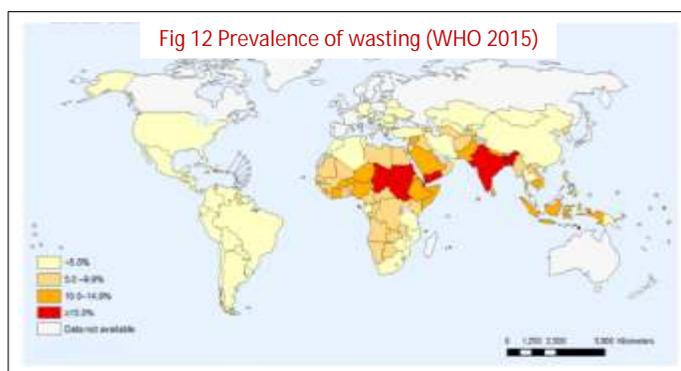
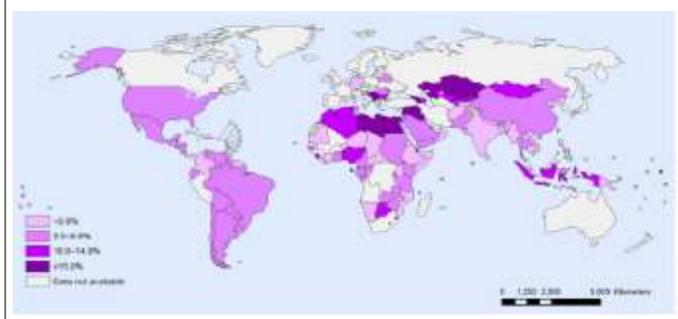


Fig 14 Prevalence of overweight children (WHO 2015)



Prevalence of wasting in South Asia is highest in the world despite reasonable national and household food security in the region (Fig 12)¹⁰. It is estimated that one in five Indian children and one third of Indian adults are wasted⁹. NNMB surveys¹² and NFHS 1-4^{9, 13-15} show that there has not been any sustained reduction in wasting in children over the last four decades. Data from NFHS 4⁹ show that there are substantial inter-state differences in the prevalence of wasting in under-five children (Fig 13). The prevalence is low in states like Jammu & Kashmir and Punjab, and much higher in Madhya Pradesh and Karnataka.

The WHA target for wasting implies a 75% reduction in prevalence rates for India within a single decade (from the current 21% to 5% by 2025). This will be very difficult to achieve. However, states with relatively low wasting rates and with good health infrastructure and efficient ICDS or Mid Day Meal (MDM) programmes can start screening all children and identifying those who are thin. They can provide such identified thin children with additional food supplements regularly. The school health system can also help to ensure early detection and treatment of infections. If these interventions are carried out on scale regularly and effectively these states can substantially accelerate reduction in wasting and bring down wasting prevalence to 5%.

Target 5: Ensure that there is no increase in childhood overweight

Globally, 6% of children and 40% of adults are overweight¹⁸. Over the decades there has been a steady and progressive increase in over nutrition in children across the world¹⁰ (Fig 14). Over-nutrition rates in children are higher in developed countries (Fig 15). In the last two decades, some developing countries have reported steep increases in over-nutrition rates in children and adolescents. This is partly due to increased consumption of high-fat, high-sugar food stuffs and steep reduction in physical activity. Over-nourished children have been shown to be at a higher risk of becoming over-nourished adults and developing non-communicable diseases.

Fig 16 Over-nutrition rates in under-five children (AHS states)

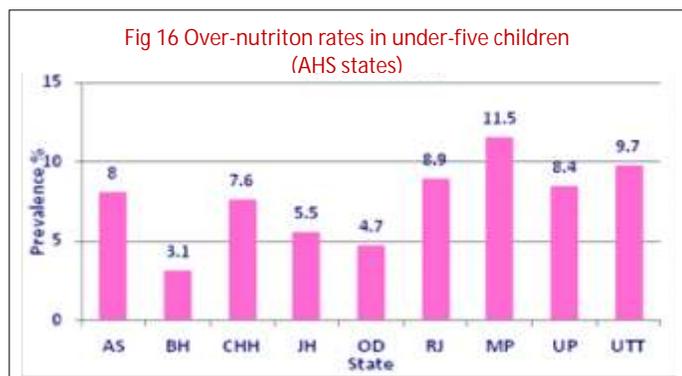
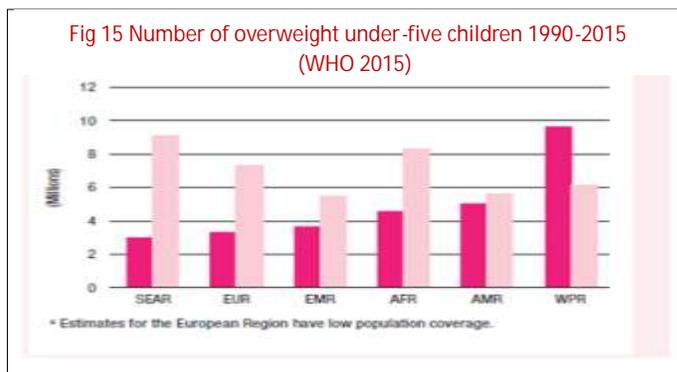


Fig 15 Number of overweight under-five children 1990-2015 (WHO 2015)



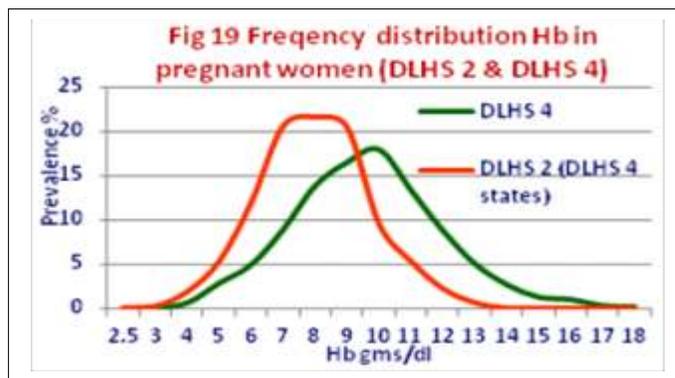
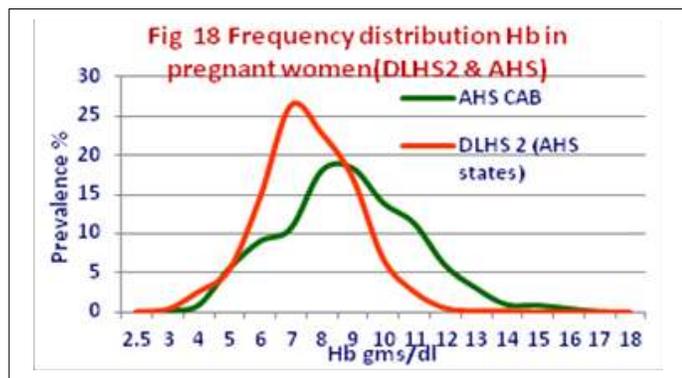
In India, the prevalence rate of overweight is 2% in pre-school children and 15%-20% in adults¹⁵. Even though India has a relatively low prevalence rate of overweight in children, the actual number of such overweight children is higher than any other country, because of India's large population. The rise in over-nutrition rates is relatively slow. The major factor responsible for the rising over-nutrition rates appears to be a steep reduction in physical activity in all domains. There are substantial inter-state differences in overnutrition rates in children (Fig 16). Data from AHS CAB¹⁶ indicate that some states that have high under-nutrition rates also have high over-nutrition rates. The prevalence of over-nutrition is higher in urban children than in rural ones. Long-term follow up studies from India¹⁹ have demonstrated that short, under-weight children who show an increase in BMI in childhood, are more prone for adiposity and non-communicable diseases in adult life. They are more likely to develop hypertension and diabetes at an earlier age.

The increasing use of BMI-for-age as a criterion for nutritional assessment has prevented misclassification of short fat children as under-nourished. These children can now be correctly identified as being overweight for their height and age. Early identification of short and overweight children and initiation of counselling for appropriate lifestyle modifications (reduction in consumption of energy-rich food and increase in physical activity) can lead to some reduction in over-nutrition.

Over the years, there has been growing awareness about the rising trends in over-nutrition in children, and their adverse nutrition and health consequences. Efforts are under way to ensure that children and adolescents do not habitually consume high-fat, high-energy snacks. There is a focus on increasing physical activity in children and setting the trend for a healthy life style throughout life. If these efforts are scaled up and sustained, it will be possible for India to achieve this WHA target of preventing increase in over-nutrition rates in children. Success in this endeavour will ensure that India will not be the home of largest number of overweight persons by 2030 (as some projections have suggested). If over-nutrition

Fig 17 Anaemia in non-pregnant women of reproductive age WHO 2015





rates are kept at the current level, the projected rise in NCD in the next few decades can also be prevented. This will be a major step towards achievement of good quality of life and health for all citizens of the country.

Target 6: Achieve a 50% reduction in anaemia in women of reproductive age

Anaemia is the most common micro-nutrient deficiency disease in the world. The prevalence of anaemia is higher in developing countries than in developed countries²⁰. Anaemia affects half a billion women of reproductive age worldwide. In 2011, 29% (496 million) of non-pregnant women and 38% (32.4 million) of pregnant women aged 15-49 years were anaemic. The prevalence of anaemia was highest in South Asia and in Central and West Africa²⁰. India had always been the country with the highest prevalence of anaemia and the home of the largest number of anaemic individuals in the world (Fig 17)²⁰.

Low dietary intake of iron, folic acid, and other nutrients involved in hemopoiesis is the major factor responsible for the high prevalence of anaemia in developing countries. Poor bioavailability of iron from phytate and fibre rich vegetarian diets aggravates the gap between iron requirement and absorbed iron. Chronic blood loss due to malaria and hook worm infestations are added factors leading to higher prevalence of anaemia in areas where these are endemic. The adverse health consequences of acute and chronic anaemia have been well documented.

Women and children are the two most vulnerable groups for anaemia and its adverse consequences. Proven inexpensive interventions are available for preventing and treating anaemia in women. However, these have not been implemented on scale consistently. India was the first among the developing countries to initiate a national anaemia prophylaxis programme for pregnant and lactating women and pre-school children through outreach programmes, even before the essential primary health care

infrastructure was in place. Subsequently, the country built up its health infrastructure and launched the National Anaemia Control Programme aimed at prevention, detection and management of anaemia. However, coverage even in pregnant women has remained suboptimal; coverage in other age groups has been patchy and sporadic. As expected, there are substantial inter-state differences in the reduction in anaemia and current prevalence of anaemia. Data from DLHS 2²¹, DLHS 4²² and AHS CAB¹⁸ carried out in the last ten years using accurate cyanmethaemoglobin method for estimation of Hb have shown that, despite several lacunae in implementation of anaemia control programmes, there has been significant reduction in anaemia and a shift to the right in hemoglobin levels in pre-school children, adolescent girls, and pregnant women (Fig 18-21).

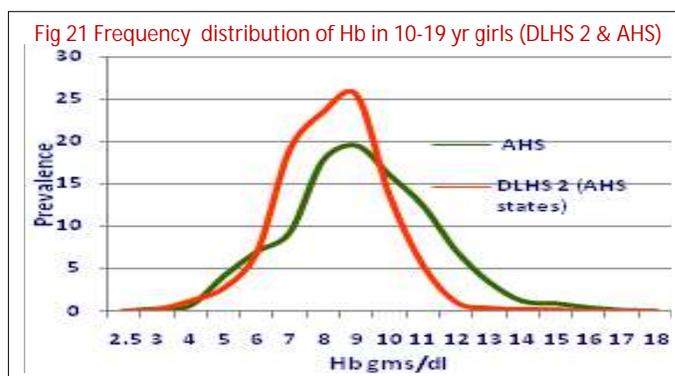
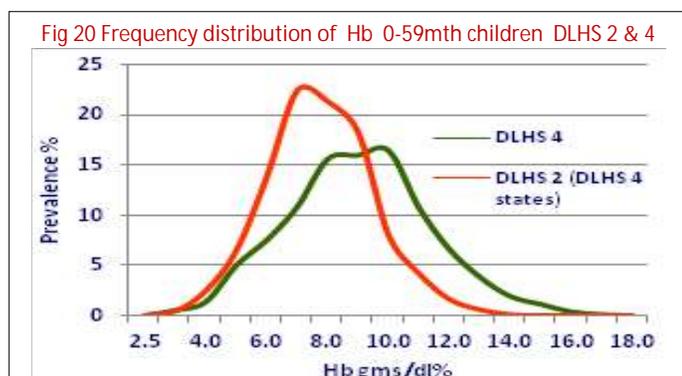
To provide an impetus to tackling the long-standing problem of anaemia, the WHA has set a target of a 50% reduction of anaemia in women of reproductive age by 2025. If energetic steps are taken in India to increase dietary intake of iron:

- through dietary diversification and increasing the consumption of micronutrient-rich vegetables,
- increased use of iron-fortified iodised salt to partly bridge the gap between intake and requirement.

It might be possible to bring about a substantial reduction in the prevalence of anaemia in women and sustain it in the coming decades. However, it may not be possible for either the country as a whole or most of the states to achieve 50% reduction in prevalence of anaemia by 2025.

Conclusion

The triple burden of persistent under-nutrition, micro-nutrient deficiencies and rising over-nutrition, and their adverse health consequences is but one manifestation of the ongoing economic,



social, life style, demographic, nutrition and health transitions. Both WHA 2012 and SDG have set specific targets to be achieved in a given time frame. WHO has outlined the action plan consisting of, simple, effective, inexpensive and time-tested interventions for the prevention and management of this triple burden of malnutrition.

Over the last two decades, there has been a growing recognition in India among programme implementers and the people themselves, that the country is facing a dual burden of under- and over-nutrition. However, there is very little awareness that a majority of Indians are anaemic and anaemia accounts for substantial morbidity in children and even mortality in pregnant women. It is imperative that this third component of the triple burden is recognised and addressed.

India has the necessary knowledge, technology, infrastructure, and human and economic resources to implement interventions on scale. The population is young, literate and rational. People understand the ongoing nutrition and health transition and can be taught to access appropriate services. The country should strive to ensure that programmes across sectors are effectively implemented with the participation of all institutions and the people themselves. Given the vast and varied country and huge population, the country may not be able to achieve all the targets set by WHA for 2025; however these efforts will go a long way to reduce the triple nutrition burden and the associated health consequences.

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FOUNDATION NEWS

- Dr. Prema Ramachandran, Director, NFI, chaired the 17th Meeting of the Technical Resource Group on Research & Development under the National AIDS Control Programme on 18th May, 2017 at NACO, New Delhi

- Dr. Prema Ramachandran also participated in:

- ❖ ICMR Project Advisory & Review Committee Meeting and 6th Data Safety Monitoring Board (DSMB) Meeting on the project titled "Evaluation of Progesterone Vaginal Ring as a New Contraceptive Option in India" on 15th May 2017 at ICMR, New Delhi

- ❖ Task Force meeting on Childhood and Adolescent Anemia on 27th May 2017, at ICMR, New Delhi

- ❖ Final consensus meeting of the Tolerable Upper limits of Nutrient Intake at National Institute of Nutrition, Hyderabad, on 10th June 2017.

NUTRITION NEWS

- The 49th Annual National Conference of the Nutrition Society of India will be held on 3rd and 4th November 2017 at the Department of Food Science and Nutrition, Assam Agricultural University, Jorhat. The theme of the conference is Biodiversity, Traditional Food Systems and Wellness: Connecting Global Priorities.

- Two pre-conference workshops will be held on 2nd November 2017. The topics are:
 - i) Designing, planning and execution of nutrition research studies
 - ii) Management of food analysis laboratoriesThe details of the conference can be downloaded from the website www.nutritionocietyindia.org

- The 50th Annual National Conference of the Indian Dietetics Association will be held in the Science City, Kolkata from 18th to 20th December 2017. The details of the same can be accessed from the website www.idacon2017.com