

Review Article

Millennium Development Goals (MDG): India's Progress and Way Forward to Sustainable Development Goals

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(Received on 05 May 2016; Accepted on 23 May 2016)

The eight Millennium Development Goals (MDGs), approved by UN Summit in 2000, represent the first global development effort to provide a better future for the millions of poor citizens, with clear goals and a time frame. Four of the MDG goals pertain to health and nutrition; they are: eradication of extreme poverty and hunger; reducing child mortality, improving maternal health, and combating HIV/AIDS, malaria and tuberculosis; India's progress towards targets which pertain to health and nutrition goals are discussed in this article. The progress towards MDG is being monitored by the UN statistical system. India is a signatory to the Millennium Declaration and the progress towards MDGs has been monitored through the national statistical system.

The 2015 review of performance under MDGs, globally and in India showed that

- 50% reduction in poverty has been achieved
- There has been substantial reduction in:
 - under-nutrition but the target of 50% reduction in under-nutrition in children was not achieved
 - under-five mortality but the target of 67% reduction in U5MR was not achieved
 - maternal mortality ratio but the target of 75% reduction in maternal mortality ratio was not achieved
 - HIV, TB and malaria: the target of halting the increase and reversing the incidence of HIV, Malaria and TB has been achieved.

Encouraged by the progress with MDGs, UN General Assembly approved the more ambitious Sustainable Development Goals (SDGs) to be achieved by 2030. The progress under the MDGs, the way forward and prospects of achieving SDGs, globally and in India will be reviewed.

Keywords: Millennium Development Goals; Sustainable Development Goals; Poverty; Food Security; Nutritional Status; Maternal and Under Five Mortality; Communicable Diseases; Non-communicable Diseases

Introduction

In the last century there were many efforts by the developed countries, UN, bilateral and multilateral organisations to help the developing countries to plan and implement appropriate interventions to reduce poverty, improve food security, health and nutritional status of the citizens with special focus on women and children. However there were no integrated global efforts to improve the quality of life of poor citizens from developing countries, through strategies, and

programmes with specific goals to be achieved within defined time frame. In September 2000, the General Assembly of the United Nations, the largest gathering of world leaders in history, approved the Millennium Declaration committing their nations to a new global partnership to achieve basic human right to food, health, education and improved quality of life. Eight Millennium Development Goals, with 21 targets and 60 indicators to be achieved by the end of 2015 were defined and approved (United Nations 2015).

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Four of the MDG goals pertain directly to health and nutrition are:

1. Eradicate extreme poverty and hunger
4. Reduce child mortality rates
5. Improve maternal health and
6. Combat HIV/AIDS, malaria, and other diseases

The Millennium Development Goals (MDGs) have become the most widely accepted yardstick for measuring development efforts by developing countries.

India is a signatory to the Millennium Declaration. The National Population Policy 2000 (DoFW 2000) and the National Health Policy 2002 (DoH 2002) were framed taking into account the MDGs. The Tenth (Planning Commission 2003), Eleventh (Planning Commission 2008) and Twelfth (Planning Commission 2013) Five Year Plans were formulated taking MDGs into account and provided the needed funds for implementing programmes and enabling the country to progress towards MDGs. The progress towards MDGs has been monitored through the national statistical system and an annual MDG Report published by the Government of India (GOI) highlighted progress towards MDGs (MoSPI 2015). In September, 2015, UN General Assembly reviewed the progress achieved under MDG. Encouraged by the achievements in the last 15 years, United Nation General Assembly approved the more ambitious, inclusive, integrated and indivisible plan of action for people, planet and prosperity as Sustainable Development Goals (SDG), the road map for development to be achieved by 2030 (UNDP 2015). SDGs balance the three dimensions of sustainable development: the economic, social and environmental. SDGs envisage a world free of poverty, hunger, disease and want, where all life can thrive; SDGs have 17 goals, two of which pertain to nutrition and health. Under each goal there are well defined targets to measure the progress; these total to 169. This chapter reviews the progress achieved under the four MDGs pertaining to nutrition, and health globally and in India and explores the way forward to achieving SDGs pertaining to nutrition and health in India.

Goal 1: Eradicate Extreme Poverty and Hunger

Target 1 A Achieve 50 % reduction in the households with income less than US\$ 1.25/day

Global scenario

The MDG target of reducing by half the proportion of people living in extreme poverty was achieved ahead of the 2015 deadline. Proportion of people living on less than \$1.25 a day globally fell from 36% (1.9 billion) in 1990 to 15% (836 million) in 2011 and 12% in 2015 (United Nations 2015). The poverty rate in the developing regions has plummeted, from 47% in 1990 to 14% in 2015, a drop of more than two thirds (United Nations 2015). The number of people in the working middle class - living on more than \$4 a day - has almost tripled between 1991 (18%) and 2015 (50%).

There are massive interregional differences in poverty reduction. China achieved spectacular reduction in poverty from 61% to 4 %. India achieved a near 2/3rd reduction in the poverty rates by 2012. By 2011, all developing regions except Sub-Saharan Africa had met the target of halving the proportion of people who live in extreme poverty. Sub-Saharan Africa, where, in 2015 more than 40% the population still live in extreme poverty, requires focussed attention in the next two decades (United Nations 2015).

Scenario in India

In the last two decades there has been relatively rapid GDP growth, rise in per capita income and reduction in poverty ratio in India. The all India poverty head count ratio (PHCR) was 47.8% in 1990. The goal of 50% reduction in poverty was met in 2012 (Fig. 1) (MoSPI 2015) both in urban and rural areas (Planning Commission 2014). However India is still the home of the largest number of poor persons in the world.

There are substantial interstate differences in terms of prevalence of poverty both in 1990 and in 2012. Major states which have achieved the national level MDG goals for poverty (23.9%) by 2012 and those which did not are shown in (Fig. 2) (Planning Commission 2014). Poverty ratio is lowest in Goa (5.09%) Kerala (7.05%) and is highest in Chhattisgarh (39.93%), Jharkhand (36.96%) and Manipur (36.89%). The populous northern and central Indian

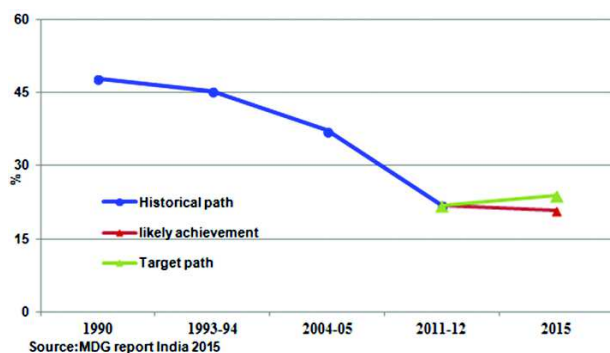


Fig. 1: Reduction in poverty ratio – India. Source: 'Millennium Development Goals India Country Report 2015'

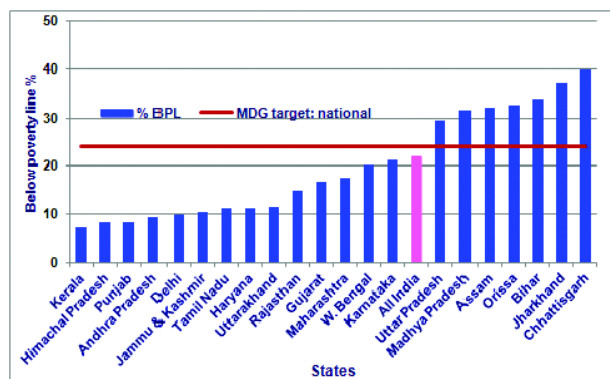


Fig. 2: Inter-state differences in poverty head count ratio 2011-12. Source: Source Planning Commission Report 2014

states will have to invest intensively in improving economic status of the state and the citizens.

Target 2 Halve Between 1990 and 2015, the Proportion of People Who Suffer from Hunger

Global Scenario

Underweight (low weight-for-age) and stunting (low height-for-age) have been used as the indicators assessing the proportion of hungry persons in the world with the assumption that low weight and height are due to low food intake. Globally there has been a near 50% reduction in under-nutrition from 23.3% in 1990-1992 to 12.9% in 2014-2016 (WHO 2015). Rapid progress during the 1990s was followed by a slower decline in under-nutrition in the new millennium. Of the 795 million people who are under-nourished globally, 780 million live in the developing regions (United Nations 2015).

There are large interregional variations both in stunting and underweight rates as well as reduction in these between 1990 and 2015. China accounts for almost 2/3rd of the total reduction in the number of under-nourished people in the developing regions since 1990. In Northern Africa (United Nations 2015) under-nutrition rate is below 5%. South Asia and Sub-Saharan Africa failed to achieve the target for reduction in under-nutrition and this resulted in the world missing this target (WHO 2015). South East Asia has high prevalence of under-nutrition and the largest number (about 281 million) of under-nourished people; despite relatively low prevalence of over-nutrition, populous South East Asia has largest number of over-nourished children (United Nations 2015, WHO 2015).

Scenario in India

Prevalence of under-weight, stunting and wasting [low Body Mass Index-for-age (weight in kg/height in metre²-for-age)] rates in India have been among the highest in the world. Over the years there has been a slow but steady decline in stunting and under-weight rates; but the country failed to bring about a 50% reduction in under-five underweight rates (Fig. 3) (MoSPI 2015, IIPS 1992-93, IIPS 2005-06, IIPS 1998-99, MoWCD 2015). There has been a reduction in stunting approximately by 1% per year (MoSPI 2015, IIPS 1992-93, IIPS 2014). It is a matter of concern

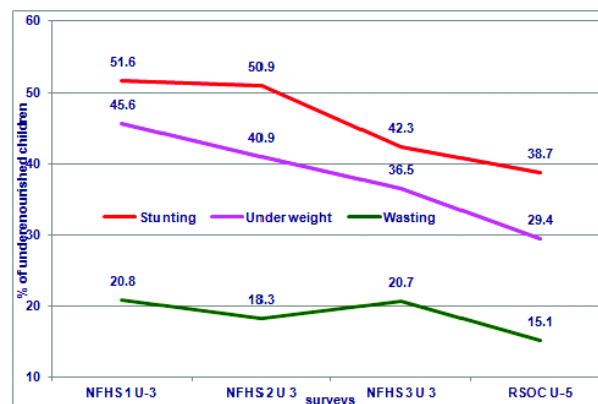


Fig. 3: Time trends in prevalence of undernutrition in India. Source: NFHS1, 2, 3 (IIPS) and RSOC (MWCD GoI). NFHS 1 (1992-93), 2 (1998-99) & 3 (2005-06) under-nutrition (UN) rates for under-three children calculated by authors from raw data using MGRS standards; RSOC (2013-14) undernutrition in under-fives from fact sheets

that over decades there has been very little reduction in the prevalence of wasting (a sign of current energy deficiency) (Fig. 3) (MoSPI 2015, IIPS 1992-93, IIPS 1998-99, MoWCD 2015).

Prevalence of under-nutrition is lower in urban as compared to rural and tribal population. There are large interstate differences in the prevalence of underweight, stunting and wasting rates (Fig. 4) (MoWCD 2015). Data from Rapid Survey of Children (RSOC) showed that while some states have achieved national goals under MDG for underweight by 2013, the large populous states have not been able to do so.

Data from all the national surveys indicate that prevalence of stunting and under-weight rates are high even in the high-income group children, suggesting that in India these may not be due to food insecurity. Poor infant and young child feeding practices and poor access to health care have been reported as factors responsible for high under-nutrition rates in children in India. Early detection and correction of wrong infant feeding practices and treatment of infection are possible with current infrastructure and manpower. Use of the Mother Child Protection Card will enable tracking growth to identify growth faltering; correction at this stage will prevent under-nutrition.

In 2006-07 WHO provided the standards for Body Mass Index (BMI)-for-age in children which can be used to detect both under and over-nutrition especially in short children. Under-nutrition rates as assessed by BMI-for-age in India are far lower than stunting and underweight rates (Fig. 3). Identification of wasting in children and providing them with food supplements and treatment for infections can result in rapid reversal of wasting. Reduction in wasting will

hasten reduction in stunting. By following this strategy it might be possible to hasten the reduction in stunting, underweight and wasting in under-five children.

Goal 4 Reduce Child Mortality

Target 5 Reduce by 2/3rd Between 1990 and 2015 Under-five Mortality Rate

Indicators: Infant mortality, under-five mortality and proportion of one year old children immunised against measles

Global Scenario

Under-five Mortality

The dramatic decline in preventable child deaths over the past quarter of a century is one of the most significant achievements in human history. Global under-five mortality rate has declined, from 90/1000 to 43/1000 live births between 1990 and 2015 (WHO 2015). The under-five mortality rate has fallen by 50% or more in every region except Oceania. However, the impressive improvements in most regions were not sufficient to meet the MDG global target, because Sub-Saharan Africa and populous South Asia did not achieve the MDG target for reducing under-five mortality. At current rate of progress, 2/3rd reduction in U-5 MR will be achieved only in 2025 (WHO 2015).

There are substantial differences between regions in the under-five mortality rates in 1990 and also in 2015. Children in developing countries are eight times more likely to die before they reach five years. Nearly half the U5 deaths in the world (3 million) occur in Sub-Saharan Africa. Though Sub-Saharan Africa has the world's highest child mortality rate, under-five mortality rate has fallen from 179/1,000 live births in 1990 to 86/1000 in 2015. It is the only region where both the number of live births and the under-five population are expected to rise substantially over the next decades. Southern Asia continues to have unacceptably high under-five mortality rate, at 50/1,000 live births in 2015 accounting for 1.8 million under-five deaths. Although there is a link between a country's level of income and its child mortality, the rapid reductions in under-five mortality rates in low-income countries such as, Bangladesh, Cambodia, and Nepal prove that low income is not a barrier to reduction in U5MR (United Nations 2015, WHO

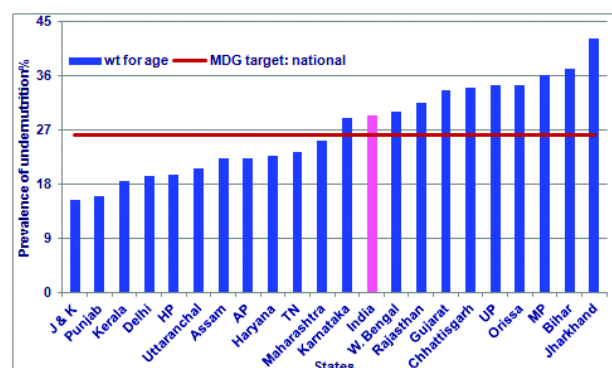


Fig. 4: Inter-state differences in prevalence of under-nutrition. Source: RSOC (MWCD GoI)

2015). There is an urgent need to ensure effective implementation of the child health programmes so that there is rapid reduction the under-five mortality rate in these two regions.

Neonatal and Infant Mortality Rates

The first day, week and month of life are the most critical for the survival of children. Between 1990 and 2015, the worldwide neonatal mortality rate (mortality within 28 days after birth) has fallen from 33/1000 to 19/1,000 live births. As the decline in neonatal mortality has been slower than the decline in mortality for children aged 1-59 months, every region of the world is experiencing an increase in the proportion of under-five deaths that occur in the neonatal period. Of the almost 6 million children who die before their fifth birthday in 2015, about 1 million die on the first day, another 1 million die in the first week, and 2.8 million die during the neonatal period (WHO 2015). There is an urgent need to improve perinatal care to prevent these deaths.

Proportion of One Year Old Children Immunised Against Measles

Global Scenario

Between 2000 and 2009, global coverage with the first dose of measles vaccine (MCV1) increased from 73% to 83%, but it stagnated at 83% from 2010 to 2013. The most impressive progress was made in Sub-Saharan Africa, where coverage increased from 53% in 2000 to 74% in 2013. Between 2000 and 2013, the number of countries providing a second dose of the vaccine (MCV2) increased from 96 to 148, and global coverage of MCV2 increased from 15% to 53% (WHO 2015).

Between 2000 and 2013 measles vaccination programme had averted nearly 15.6 million deaths. Over 93% of global measles deaths in 2013 occurred in Sub-Saharan Africa (96,000) and Southern Asia (39,800) (WHO 2015). These data clearly emphasise the need to ensure that routine immunisation coverage receives due attention in countries of these two regions.

Indian Scenario

Data from Sample Registration System (SRS) showed that U5MR was 125/1000 live births in 1990 and 49/

1000 in 2013. Despite an overall reduction in U5MR of nearly 60% during 1990 to 2013, India will be missing the MDG target of 42/1000 live births narrowly (Fig. 5) (MoSPI 2015). Infant mortality showed a similar trend (Fig. 5) (MoSPI 2015). Data on U5 MR in relation to sex is shown in Fig. 6 (MoSPI 2015); U5MR is higher for females than males both in rural and urban areas. At all the time points U5MR in urban areas are lower than in rural areas, perhaps due to better access to health care in urban areas.

There are substantial inter-State differences in U5MR and IMR. The states which have reached the national MDG goals and those which did not are shown in Fig. 7 (MoSPI 2015). Even relatively better developed states like Gujarat and Haryana have missed the target. Currently there are major efforts

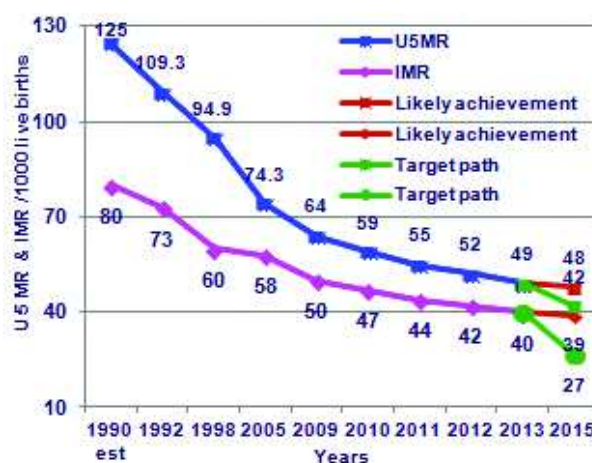


Fig. 5: Time trends in Under-five MR and IMR in India. Source: 'Millennium Development Goals India Country Report 2015'

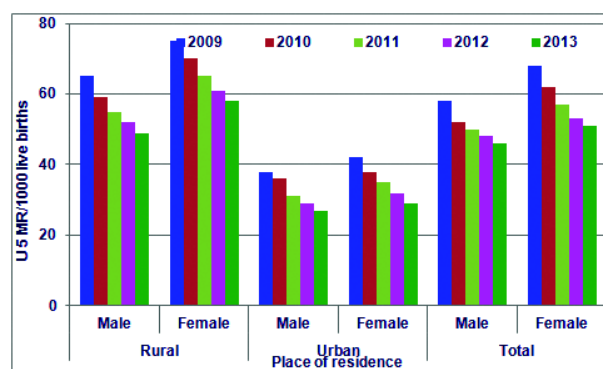


Fig. 6: Urban rural and gender differences in U5MR in India. Source: 'Millennium Development Goals India Country Report 2015'

to improve coverage, content and quality of child health services in these states in order to accelerate the decline in IMR and under 5 MR.

Goal 5 Improve Maternal Health

Targets 6 Reduce the Maternal Mortality Ratio (MMR) by Three Quarters, Between 1990 and 2015

Indicators: Maternal Mortality Ratio and Proportion of Births Attended by Skilled Health Personnel

Global Scenario

Reduce the Maternal Mortality Ratio

Deaths among pregnant women, children and adolescents account for more than one-third of the global burden of premature mortality; vast majority of these deaths are preventable. There were an estimated 289,000 maternal deaths in the world in 2013; 303,000 women have died in 2015. Maternal mortality ratio is about 14 times higher in developing as compared to the developed regions. Since 1990, the maternal mortality ratio (maternal deaths/100,000 live births) has declined by 45% worldwide (WHO 2015). Most of the reduction has occurred since 2000. In Southern Asia, the maternal mortality ratio declined by 64% between 1990 and 2013, and in Sub-Saharan Africa it fell by 49% (WHO 2015). Early detection and management of obstetric problems through antenatal care and skilled care during delivery can save maternal lives.

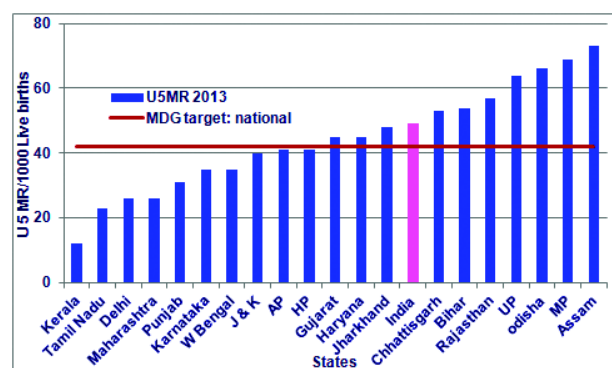


Fig. 7: Interstate differences in under-five mortality rates. Source: 'Millennium Development Goals India Country Report 2015'

Target 5 B Achieve by 2015 Universal Access to Reproductive Health Services

Globally skilled assistance during delivery increased from 59% in 1990 to 71% in 2014. Despite massive efforts to improve access to needed maternal care, inequities across countries, urban rural and economic groups persist; women needing the care desperately are often the ones who do not get the needed services. In developing regions, only 56% of births in rural areas are attended by skilled health personnel, compared with 87% in urban areas. Only half of pregnant women in the developing regions received four antenatal care visits (WHO 2015). Providing good quality antenatal and intrapartum care in primary health care settings holds the key for achieving rapid reduction in maternal deaths.

Indian Scenario

Maternal Mortality

In 1990 the estimated MMR was 437/100,000 live births. MMR is likely to reach 140/100,000 live births by 2015 (Fig. 8) (MoSPI 2015). In the last few years there has been sharper decline of MMR; however it will not be possible for the country as a whole to achieve the MDG target of 109/100,000 live births by 2015 (MoSPI 2015).

There are substantial interregional and interstate differences in the MMR. If the national goal of 109/1,00,000 live births by 2015 is used as the yardstick, Kerala, Tamil Nadu, Andhra Pradesh and Maharashtra

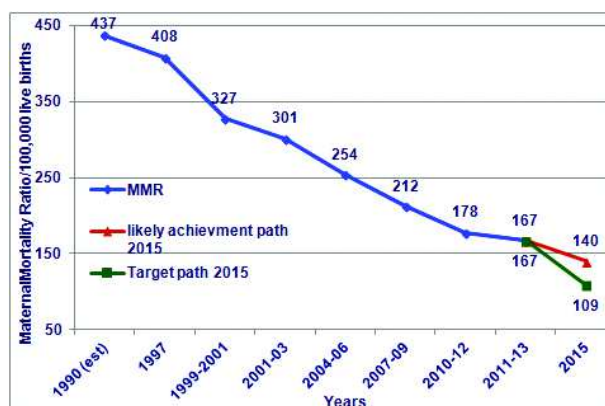


Fig. 8: Time trends in maternal mortality ratio in India. Source: 'Millennium Development Goals India Country Report 2015'

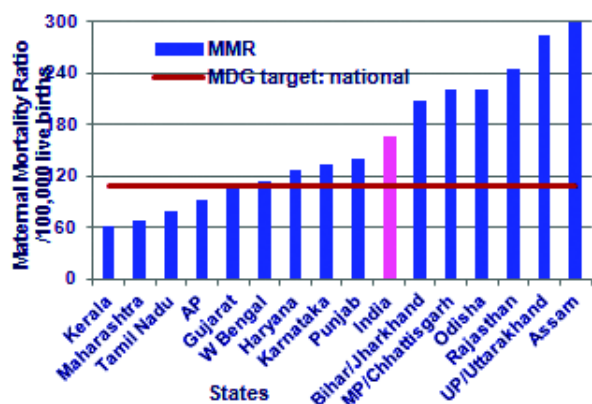


Fig. 9: Inter-state differences in maternal mortality ratio.
Source: 'Millennium Development Goals India Country Report 2015'

have already achieved the national MDG target in 2013 (Fig. 9) (MoSPI 2015).

Proportion of Births Attended by Skilled Health Personnel

With the implementation of the “Janani Suraksha Yojana”, there has been steep increase in institutional deliveries. Coverage Evaluation Survey conducted by Government of India and UNICEF in 2009 shows that 76.2% of births were attended by skilled health personnel (Fig. 10) (MoSPI 2015) in 2009. Sample Registration System (SRS) 2013 showed that 87% of live births were attended by skilled health personnel. India has missed the MDG target of universal antenatal care and institutional delivery even though several states have already achieved near-universal institutional delivery.



Fig. 10: Time trends in skilled attendance at birth in India.
Source: 'Millennium Development Goals India Country Report 2015'

In India antenatal care is often the very first time that the women had a medical check-up. Antenatal care is therefore the most important mechanism for detection of both systemic health problems and obstetric problems and providing the needed care. Improvement in access to primary health care right at the village level with the institutionalisation of the Village Health and Nutrition days, emphasis on early registration, four antenatal visits and institutional delivery has resulted in substantial improvement in antenatal and natal care. The conditional cash transfer for antenatal care in some states and for institutional delivery in all states has ensured that finances are no longer a major barrier to antenatal care or institutional delivery. While coverage has increased massively, there are concerns about content and quality of care in many settings. Quality of care is often very poor in those areas where effective care is urgently needed.

Goal 6: Combat HIV/AIDS, Malaria, and Other Infectious Diseases

Target 7: Halt by 2015 and Begin to Reverse the Spread of HIV/AIDS

Target 8: Halt by 2015 and Begin to Reverse the Spread of Malaria and Other Infectious Diseases

Global Scenario

MDG 6, Targets 7 and 8 have been met for the major infectious diseases such as HIV, malaria and tuberculosis. As compared to 2000 there has been a decline in incidence, prevalence and mortality in HIV infection, malaria and TB; there has been substantial increase in coverage of key interventions for these three infectious diseases (WHO 2015).

HIV Infection

Globally new HIV infections fell by approximately 40% between 2000 and 2013, from an estimated 3.5 million cases to 2.1 million. Among countries with sufficient data, 10 countries had a decline of more than 75% in new HIV infections between 2000 and 2013, and another 27 countries had a decline of more than 50%. However the large differences in the prevalence and incidence of HIV infection between different regions of the world persist. The estimated new cases of HIV infections in the developed

countries are small, but there has been a small increase in the new cases. In 2014, 14.9 million people living with HIV were receiving Anti-Retroviral Therapy (ART), up from 690,000 in 2000. ART averted 7.6 million deaths from AIDS between 1995 and 2013 (WHO 2015).

Malaria

The global malaria incidence rate has fallen by an estimated 37% and the mortality rate by 58%. Coverage of malaria interventions increased rapidly. More than 900 million insecticide-treated mosquito nets (ITN) were delivered to malaria-endemic countries in Sub-Saharan Africa between 2004 and 2014. In Sub-Saharan Africa an estimated 68% of children under-five were sleeping under an ITN in 2015, compared to less than 2% in 2000. Over 6.2 million malaria deaths (primarily of children under five years of age) in Sub-Saharan Africa, have been averted between 2000 and 2015 (WHO 2015).

Tuberculosis

Tuberculosis (TB) incidence rate was 18% lower in 2013 as compared to 2000. TB case detection rates increased from 38% to 63%, high levels of treatment success (85% or higher) have been maintained since 2007. Between 2000 and 2013, tuberculosis prevention, diagnosis and treatment interventions saved an estimated 37 million lives. The tuberculosis mortality rate fell by 45% and the prevalence rate by 41 % between 1990 and 2013 (WHO 2015).

Scenario in India

HIV Infection

India has the unique distinction of having initiated sero-surveillance for HIV infection before AIDS cases were reported in the country. The National AIDS Control Programme was initiated on the basis of findings from India's sero-surveillance for HIV infection. Contrary to the initial predictions by experts, prevalence of HIV infection continued to be low and showed a steady decline in all high and low-risk groups (Fig. 11 (MoSPI 2015), Fig. 12 (NACO 2013-14)). There has been a steep reduction in HIV prevalence and near-elimination of blood-borne and mother-to-child HIV infection.

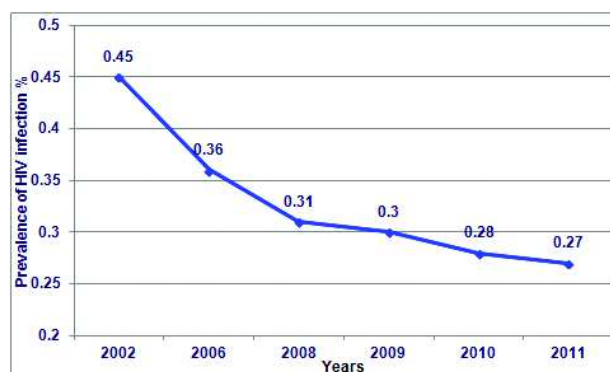


Fig. 11: Time trends in prevalence of HIV infection in India.
Source: 'Millennium Development Goals India Country Report 2015'

In India, the adult HIV incidence at national level has steadily declined from 0.41% in 2001 to 0.27% in 2011 (Fig. 11) (MoSPI 2015). There has been a reduction of 57% in estimated annual new HIV infections (among adult population) during the last decade from 2.74 lakhs in 2000 to 1.16 lakhs in 2011. All states including the high prevalence states have reported fall in adult HIV prevalence. Number of persons living with HIV/AIDS (PLHA) has declined, from 24 lakhs in 2009 to 20.9 lakh in 2011. Sentinel surveillance has shown that there was a fall in sero-prevalence of HIV infection in high risk groups [intravenous drug users (IVDU), female sex workers (FSW), men who had sex with men (MSM)] and pregnant women (ANC) representing general population (Fig. 12) (NACO 2013-14). In India antiretroviral therapy (ART) is provided totally free of cost; there has been a huge increase in PLHA who are receiving ART; in 2014, over 8 lakh PLHA have been on ART. It is estimated that about 1.48 lakh people died of AIDS related causes in 2011 in India. Deaths among HIV infected children account for 7% of all AIDS-related deaths (NACO 2013-14).

India has played an important role in scaling up of ART in India and globally by making generic ART drugs available at an affordable cost, thereby contributing to achievement of target 7 of goal 6 of MDG across the world. ART has led to 29% reduction in estimated annual AIDS-related deaths in the country between 2007-2011 (Fig. 13) (NACO 2013-14). It is estimated that the scale up of free ART since 2004 has saved cumulatively over 1.5 lakh lives in the country till 2011. With the current scale up of ART services, it is estimated to avert around 50,000-

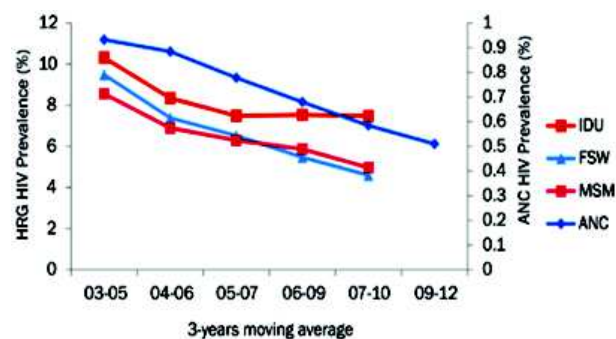


Fig. 12: Time trends in prevalence of HIV infection in India from sentinel surveillance. Source: NACO Annual Report 2013-14

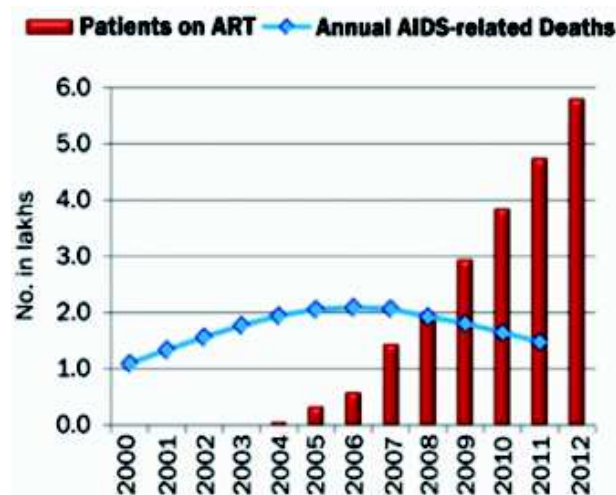


Fig. 13: Time trends in ART use and AIDS related deaths in India. Source: NACO Annual Report 2013-14

60,000 deaths annually in the next five years. It is noteworthy that India has successfully provided treatment for HIV infected persons without any adverse impact on treatment of other ailments in the country and that AIDS epidemic had no impact on rate of reduction in under-nutrition or mortality rates in India.

Malaria

Malaria continues to pose a major public health threat in different parts of the country. About 95% population in the country resides in malaria-endemic areas; however 80% of malaria is reported in the tribal, hilly, difficult and inaccessible areas of the country where 20% of population reside. There has been massive improvement in the availability of rapid diagnostic tests

for malaria at village level. The involvement of ANM and of ASHA in addition to the malaria worker has improved access to treatment at the village level. Coverage under classical chloroquin for vivax malaria and artemisinin combination therapy (ACT) for the treatment of falciparum malaria has improved. Increased access to ITN has helped in reducing the incidence of malaria (Fig. 14) (MoSPI 2015).

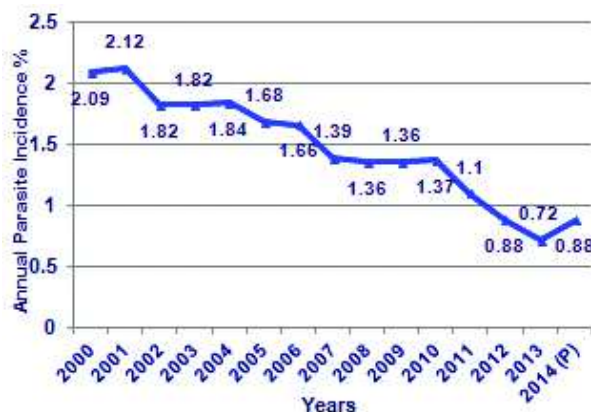


Fig. 14: Time trends in annual (malarial) parasite incidence in India. Source: "Millennium Development Goals India Country Report 2015"

Increasing insecticide resistance among mosquitoes and drug resistance in parasites are two major problems that may come in the way of continued reduction in malaria cases in the country.

Tuberculosis

The last two decades witnessed major efforts to improve case detection. The directly observed treatment: short course (DOTS) for TB, ensured improvement in treatment completion rates. As a result of these there has been substantial reduction in the incidence, prevalence and mortality due to TB. Between 1990 and 2013 TB prevalence (number of cases at a given time point/100,000 population) has been reduced from 465 to 211; TB incidence/100,000 population from 216 to 171 and TB mortality/100,000 population from 38 to 19 (MoSPI 2015). These reductions have occurred despite the ongoing HIV epidemic which increases the incidence and prevalence of HIV-TB co infections. Without HIV, the lifetime risk of developing TB in TB-infected people is 10%. In PLHA at least 50% are co-infected with TB (MoSPI 2015). HIV is also the most powerful

risk factor for progression from TB infection to TB disease. TB in turn accelerates the progression of HIV to AIDS and shortens the survival of patients with HIV infection (MoSPI 2015). Both at the global and at the country level, HIV-TB co-infections, the increasing of multi-drug resistant and extremely multi-drug resistant tuberculosis pose major threat to the expected continued decline in TB incidence, prevalence and mortality.

Transition from MDGs to SDGs

In September 2015, the UN General Assembly adopted the Sustainable Development Goals to be achieved by 2030 as the post MDG development agenda (UNDP 2015). SDGs are integrated and indivisible plan of action for people, planet and prosperity, balancing the three dimensions of

sustainable development: the economic, social and environmental. All countries and all stakeholders are expected to be acting in collaborative partnership, and taking the responsibility of implementing this plan of action. SDGs may become the bold and transformative steps urgently needed to shift the world on to a sustainable and resilient path, where all life can thrive and all people are free of poverty, hunger, disease and want. As with MDGs poverty reduction remains the first of the 17 SDGs. Goal 2 is to promote sustainable agriculture, end hunger, achieve food security and improve nutrition. Goal 3 is to ensure healthy lives and promote well-being for all, at all ages. In addition to prioritising improvement in the nutritional and health status of the global citizens as the 2nd and 3rd goal, all the subsequent SDGs have targets which can directly or indirectly result in improvement in health and nutritional status.

Table 1:

MDGs: concerns/unfinished agenda MDGs were drafted by a small team of technical experts at UN headquarters Clear feasible targets were set and monitoring mechanism set up	SDGs building on MDG experience SDGs were drafted over two years by an inter-governmental Open Working Group (OWG) that comprised representatives of seventy countries Targets and monitoring mechanisms are being set up
Focused primarily on poverty, nutrition and health	SDGs try to address in addition to poverty, health and nutrition, the environment, equity, human rights, gender equality, and other developmental issues
Sociologists consider that the MDGs “failed to consider the root causes of poverty, or gender inequality, or the holistic nature of development”	
Environmental concerns were not addressed by MDGs.	
MDG had 8 goals, 21 targets and 60 indicators	SDG have 17 goals and 169 targets
Nutrition and health were the focus of 4 out of the 8 MDGs	Nutrition and health are goals 2 and 3. While continuing MDG targets of under-nutrition reduction, SDGs will focus on achieving optimal nutrition. In addition to the completion of unfinished agenda under MDGs for maternal and child health and communicable disease control, SDGs focus on control of non-communicable diseases and promoting healthy lives and well-being
MDGs were primarily targets for poor countries to work toward, with financing from wealthy countries. Efforts were made to mobilise and focus overseas developmental assistance so that these countries move rapidly. They did progress rapidly but most funding for programmes came from the countries themselves	SDGs demand action from all countries and are to be financed mainly by the countries themselves. Each country has the opportunity of prioritising the interventions and setting achievable targets taking into account the current status and resources available
MDG targets were set taking 1990 performance levels and achieving proportional improvement by 2015. These could be readily applied to all countries in various stages of development.	SDGs provide universally applicable goals for all countries eg: End all form of malnutrition, Reduce NNMR to 12 and U5 MR to 25/1000 live births and Reduce MMR to 70/100,000 live births. While there are several countries who have already achieved these, there are many countries for which this might be a difficult target. There is a need for more detailed technical discussions at country level to draw up country specific targets to be achieved by 2030 taking into account priorities, feasibility and resources available.

The summary above shows how SDGs seek to build on the experience gained and lessons learnt while striving to reach MDGs and complete what MDGs did not achieve.

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India and the SDGs

Goal 1 End Poverty in all its Forms Everywhere

As in MDGs poverty reduction remains the first goal in SDG. However instead of the MDG target of a modest 50% reduction in income poverty, SDG targets end of poverty in all its forms (not income poverty alone as in MDG). Both globally and in India MDG poverty reduction targets has been achieved earlier than 2015. Currently India is the fastest growing economy in the world and poverty ratio is declining. India's economic growth is likely to continue in the next 15 years and the country is likely to achieve significant reduction in poverty. However ending poverty in all forms might not be possible.

Goal 2 End Hunger, Achieve Food Security and Improved Nutrition and Promote Sustainable Agriculture

Target 2.1 By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round.

India has been self-sufficient in food production since 1970 and current projections indicate that the country will remain self sufficient in food production till 2030. In 2013, India became the first country in the world to enact National Food Security Act (GOI 2013) providing subsidised food grains (Rs 3/kg for rice, Rs2/

kg for wheat and Rs 1/kg for millets) as a legal entitlement to over 67% of Indian citizens. Priority households are entitled to 5kg of food grains/person/month. The poorest of the poor (Antyodaya) households are entitled to 35kg/household/month. Realising that food grains alone cannot provide a balanced meal needed for improving nutritional status of the citizens, states like Chattisgarh, Tamil Nadu and Telengana provide pulses at subsidized cost through PDS. Some states have attempted to provide oil, iodised and iron and iodine fortified salt through PDS at subsidized cost. However it will never be possible to provide all the food stuffs at a subsidised cost to all the needy. There is an urgent need for a nutrition awareness campaign with focus on women (who are head of the household for the ration card) on how the money saved because of subsidised cereals and millets (approximately Rs 15-20 per kg and amounting to about Rs 500 per month) can be used for purchasing the other food stuffs such as pulses, vegetables and foods of animal origin, so that the family can have balanced meal.

India has the world's largest food supplementation programmes for school children, under-five children, pregnant and lactating women. Coverage under Integrated Child Development Services (ICDS) is universal; 14.4 lakh anganwadis provide take-home rations or hot cooked food to pre-school children, pregnant and lactating women every day. Midday meal programme for school children provides food to 10.5 crore children every day. With improvement in implementation, it is likely that the country may be able to achieve the SDG of providing sufficient and safe food to all the needy segments of population.

Target 2.2 By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons

The term "mal-nutrition" includes under- and over-nutrition and micro-nutrient deficiencies – these are major problems both in developed and developing countries. NONE OF THE COUNTRIES IN THE WORLD CAN END ALL FORMS OF MALNUTRITION BY 2030. This therefore has to be considered as the inspirational statement of aspirational intent

which will be modulated to achievable realistic targets in the subsequent sections.

The 2012 World Health Assembly endorsed six global nutrition targets for 2025:

- Achieve a 30% reduction in low birth weight (LBW);
- Increase the rate of exclusive breastfeeding (EBF) in the first six months up to at least 50%;
- Achieve a 40% reduction in the number of children under-five who are stunted;
- Reduce and maintain childhood wasting to less than 5%;
- Ensure that there is no increase in childhood overweight;
- Achieve a 50% reduction of anaemia in women of reproductive age.

These are likely to be used as the internationally accepted SDG targets to be achieved by 2030.

One third of Indian infants weigh less than 2.5 Kg at birth. It is unlikely that the country will be able to achieve 30% reduction in LBW. In India exclusive breast-feeding in the first six months is nearly 50% now; India can hopefully persuade more women to exclusively breast-feed in the first six months and continue to stay ahead of rest of the world in this parameter. In India currently over a third of the population are under-nourished, about 1/8th over-nourished and majority of Indians are anaemic. It will not be possible for the country to achieve the WHA targets regarding stunting, and anaemia. However it should be possible to reduce wasting in childhood to less than 5% and prevent rise in childhood overweight.

Stunting, underweight and wasting rates in Indian pre-school children are among the highest in the world. India did not achieve the MDG target in reduction in under-nutrition (under-weight/stunting). High under-weight and stunting rates are responsible for India's low ranking in nutrition and development reports. Data from all the national surveys in India indicate that prevalence of stunting and under-weight rates are high even in the high income group children; stunting and underweight in these households is unlikely to be due to food insecurity. In India nearly one-fourth of the

neonates have low birth length. Birth length is a major determinant of linear growth across ages. The small Indian infant growing along its trajectory of linear growth is not suffering from lack of food. SOFI 2013 (FAO 2013) has acknowledged this dichotomy between food intake and under-nutrition rates in South Asia.

Wasting (a sign of current energy deficiency) rates in India are very high, and has remained unaltered over decades. So far wasting has not received the attention it deserved either globally or in India. This could partly be due to the fact that accurate measurement of height and weight and computation of BMI was not possible in many nutrition and health care settings and partly due to the lack of standards for assessing nutritional status by using BMI-for-age. WHO has developed standards for BMI-for-age (WHO 2006, 2007) to be used for timely/early detection of both wasting and over-nutrition especially in countries with high stunting rates. Currently availability of inexpensive and easily portable stature meters and electronic weighing machines have made it possible to measure height and weight accurately in all settings. The ubiquitous mobile has a calculator which ensures that BMI can be computed easily. With the WHO MGRS and WHO 2007 BMI-for-age charts, detection of wasting and adiposity in children has been made very easy. Identification of wasting in children and providing them with food supplements and treatment for infections can result in rapid reversal of wasting. Reduction in wasting will hasten reduction in stunting. It will be worthwhile to explore whether reduction in wasting could be used as the short or medium term goal for reduction in food insecurity and under-nutrition while reduction in stunting can be used as a long term goal for improvement in nutritional status.

India has entered the dual-nutrition burden era and use of BMI-for-age will enable identification of short but fat children; taking steps to improve healthy eating habits and increasing physical activity in these children may go a long way in ensuring that these children do not grow into fat adults at high risk of developing non-communicable diseases.

ICDS can contribute enormously to improvement of nutritional status of children by:

- Providing nutrition education (behavioral change

communication) on infant and young child feeding using Mother Child Protection Card (MCPC);

- Weighing all children, plotting trajectory of growth in MCPC growth chart to detect growth faltering;
- Identifying under-nourished children and providing them with double rations (take home rations);
- Getting them checked for infections during the Village Health and Nutrition Days and monitoring improvement in nutritional status.

MDM and school health services can contribute to improvement in nutritional status of children by undertaking height and weight measurements and computing BMI-for-age

- Identify wasted children (low BMI-for-age)
- Get them checked for infections by school health system,
- Provide them with double helping of MDM,
- Identify over-nourished children and improve their physical activity.

If all these programmes work in an integrated manner and deliver good quality services on national scale, it will be possible for the country to achieve the SDG target for reduction in wasting below 5% and perhaps also prevent rise in over-nutrition rates in children.

In India majority of the population are anaemic. Two major factors responsible for the high prevalence of anaemia are low dietary intake of iron and folic acid rich food stuffs especially vegetables and poor bio-availability of iron from the phytate and fibre rich Indian diets. The importance of blood loss due to malaria and hook worm infestation leading to anaemia has been reduced but not eliminated. In 2013 the National Iron Plus Initiative was rolled out with the following components:

- Prevention of anaemia through dietary diversification, by including iron folate and vitamin C rich vegetables in daily diet
- Use of iron fortified iodised salt, to begin with in

ICDS and MDM programmes and later to be expanded to cover the entire family using PDS system

- Iron folate supplementation to pregnant women, pre-school and school children
- Detection and appropriate management of anaemia in pregnancy

These efforts when implemented on scale can bring down prevalence of anaemia especially in pregnant women and children. But it is unlikely that the country can achieve 50% reduction in prevalence of anaemia in women within the short period of 15 years.

Goal 3 Ensure Healthy Lives and Promote Well-being for All at All Ages

Target 3.1 By 2030 reduce the global maternal mortality ratio to less than 70/100,000/live births

Target 3.2 By 2030 end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12/1,000 live births and under-5 mortality to at least as low as 25/1,000 live births

India had invested over the last four decades in building up nationwide health infrastructure and manpower providing essential maternal child health care. MDGs gave an additional impetus to improving access, content, quality and timeliness of essential antenatal, natal, postnatal, neonatal and child care. These led to substantial decline in U5 MR and MMR; the country narrowly missed MDG targets for mortality reduction by 2015. Given the substantial drop in mortality rates since 1990, and impetus provided by SDGs, it is possible that the country as a whole will achieve the SDG targets, even though some states may not be able to do so.

Target 3.3 By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases

The ongoing national communicable disease control programmes have helped the country to achieve the MDG targets for HIV, TB and malaria. Multi-drug resistance in HIV, and TB and insecticide resistance in malaria can pose threats for the country reaching

SDG targets. SDGs have added targets for tropical diseases, hepatitis, waterborne diseases and other communicable diseases to be achieved by 2030. The improvement likely to be brought about by related SDG targets - eg safe drinking water and environmental sanitation - will contribute towards prevention of water-borne and vector-borne diseases. SDGs emphasis on capacity building of health system to effectively respond to emerging and re-emerging communicable diseases will help India's health system to move in the right direction. But achieving the targets for the newer communicable diseases included in SDGs, will be difficult because the country will have to overcome the challenges of rising drug resistance across microbial infections, lack of specific disease control programme for these infections and the fact that health system at various levels is not fully geared for the prevention, early detection and effective management of these infections.

Target 3.4 By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being

Global and Indian projections on non-communicable diseases (NCDs), show that India is in the rising phase of the epidemic curve and by 2030 India can be expected to become the home of the largest number of persons with NCD. Most of the NCDs are asymptomatic in the initial phase of the disease. There are at present no population based programmes for screening for various non-communicable diseases in India. Most of the NCDs are diagnosed only when the persons seek health care in the advanced stage or for symptoms due of complications of NCD. Most NCDs require life-long life-style modification, medication and periodic medical check-up. India has initiated non-communicable disease control programmes in the last decade, but coverage, content and quality of services, patient compliance with medication and the follow-up are suboptimal. Given this scenario, effective implementation of non-communicable disease control programmes through resurgent health system providing universal health care, can at best enable the country to limit the rise in NCDs. Achieving reduction by one third in the premature mortality from non-communicable diseases might not be possible.

Target 3.8 Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all

It is well recognised that healthy work force is an essential pre-requisite for sustainable development and the effective health care delivery is one of the most cost effective ways of improving quality of life of the citizens. Over the last five decades India had invested heavily in building a national health system aimed at providing essential health care based on need and not on ability to pay. Since 2000 with the impetus provided by MDG, the focus has been mainly on improving delivery of vertical programmes providing care for selected communicable diseases and maternal and child health problems. This led to the relative neglect of building up the health systems holistically to cope with prevention, early detection and effective management of whole spectrum of health problems. SDGs attempt to correct this by emphasising on universal holistic health coverage, addressing the pre-transition, post-transition health problems as well as expected and unexpected emerging diseases. This push towards universal health coverage providing preventive, promotive measures, as well as early diagnosis and effective management of any and every health problems is very timely and may give additional fillip to the country in its efforts to provide sustainable health care to all citizens.

Summary and Conclusions

India's achievement with MDG targets was similar to global achievement in all targets except under-nutrition. It is likely that India's performance in relation to SDG targets will be similar to global except for the targets pertaining to under-nutrition and non-communicable diseases. India can achieve the SDG target for reduction in wasting if there is focused intervention aimed at early detection and effective management of wasting; this will accelerate reduction in stunting; however SDG target for reduction in stunting cannot be achieved in 15 years. It is unlikely that India which is currently facing the rising phase of epidemic curve for non-communicable diseases can bring about 1/3rd reduction in premature mortality due to NCDs. The country can at best succeed in limiting the rise in morbidity and mortality due to NCDs. SDG's

emphasis on universal health coverage can provide the impetus to India's efforts to build up a sustainable health system where all citizens may get rational and

comprehensive package of preventive care, diagnostics, treatment as an entitlement, without having to pay at the point of use.

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