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Health and Nutrition

Prime Minister Narendra Modi meets Bill Gates

The Co-Chair of the Bill & Melinda Gates Foundation, Mr. Bill Gates calling on the Prime Minister Shri Narendra Modi, in New Delhi on November 18, 2019.

Prime Minister Shri Narendra Modi held a meeting with Mr. Bill Gates, Co-Chair, Bill & Melinda Gates Foundation on 18th November 2019, during the latter's three-day visit to India. The two had last met in September in New York, on the sidelines of the meeting of the United Nations General Assembly.

Mr. Bill Gates reinforced his Foundation's commitment to supporting the Government of India, in its efforts to meet the Sustainable Development Goals (SDG), with a particular focus on health, nutrition, sanitation and agriculture.

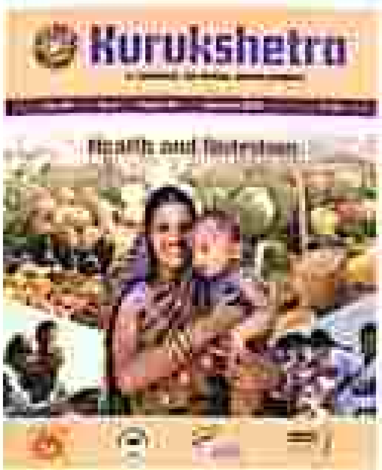
Mr. Gates commended the Prime Minister on prioritizing nutrition as a key focus area, and the efforts being made under the National Nutrition Mission.

He also presented new ideas that can help enhance agricultural productivity and systems performance, with a particular focus on improving access, to enable the upliftment of the poor and the marginalized.

The Prime Minister appreciated the Foundation's efforts and highlighted how the government values the expertise and responsiveness demonstrated by the Foundation. He suggested that data and evidence-based thoughtful interventions and support by development partners can help accelerate the work in the sectors of health, nutrition, agriculture and green energy.

Mr. Bill Gates was joined by the key members of his India leadership team.

(Source: PIB)



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Editorial

The January issue of Kurukshetra is based on the theme "Health and Nutrition". We have chosen this particular subject to enhance the level of awareness among people, especially in rural India, regarding the benefits of adopting and practising a healthy lifestyle while also taking care of proper nutrition in their routine lifestyle.

Proper nutrition levels are a pre-requisite to secure a progressive improvement in the health of any individual. India's flagship initiative, "Poshan Abhiyaan", is aimed at improving nutritional requirement for children, adolescents, pregnant women and lactating mothers by leveraging technology, a targeted approach and convergence.

Our lead article talks about the importance of overcoming the challenges of health and nutrition in order to transform the vision and resolve of a 'clean India - healthy India', 'malnutrition free India' and a 'New India' in to reality. These goals can be achieved with the commitment of the government and active participation as well as strong will of the people.

In this issue, an article on the topic "Appropriate Nutrition for Women and Children" highlights that irrespective of age, gender, class and creed, appropriate nutrition is of utmost importance for everyone for maintenance, growth and well being. This becomes all the more important for children due to their rapid growth and development; and for women since they bear children as well as feed them during their early life. Hence, we need to ensure a regular intake of all the essential nutrients in adequate amounts for maintaining proper physical and mental health of women and children.

The article titled "Nutrition- A Public Health Priority" sheds a light on the comprehensive definition of Nutrition and its various dimensions. The article also provides a clear picture of the status of nutrition in the country.

Our readers can also read thoroughly about the importance of water for better health scenario as the natural elixir is the most precious and essential commodity in the lives of the human beings and every person has the right to have continuous availability of potable water.

Good nutritional status ensures that individual can fight disease-causing agents, stays healthy, be productive to the society and contribute to the overall development. In this issue, we are also highlighting the importance of proper education among the people on the need for intake of proper nutrition. Effective communication strategies for generating awareness and greater community engagement using locally available technologies and resources supported with health policy is the need of the hour. Digital technologies are playing a pervasive role in transforming the healthcare sector in India. The readers will get to know how patients can take their appointments online and also access their medical reports online by just clicking a button. Through this edition, pregnant women, men, lactating mothers and children will get to know how much nutrition is required to maintain good health.

As the saying goes "Health is Wealth", we hope that the issue will surely enlighten people about the importance of Health and Nutrition and accordingly motivate them to change their food habits to improve their nutritional requirements for achieving a healthy lifestyle.

With this issue of Kurukshreta on Health and Nutrition, we would like to wish our readers a very happy and prosperous New Year 2020.

HEALTH AND NUTRITION
PRIME MOVERS OF NATION'S DEVELOPMENT

Narendra Singh Tomar

It is a fact that better health and nutrition not only have a positive impact on individual development, but also contribute significantly to the overall progress of the country. It would not be an exaggeration to call them the wheels of the country's progress. Health and nutrition not only play a vital role in making human life dynamic, capable and prosperous, but it also has the potential to empower, develop and strengthen the nation.

Article 21 of the Constitution of India guarantees every citizen of the country the right to live with dignity and the protection of personal liberty. The Supreme Court has also held that the right to live with human dignity as described in Article 21 of the Constitution is derived from the Directive Principles of State Policy and includes the protection of health. Article 25 of the United Nations Universal Declaration of Human Rights states that everyone has the right to a standard of living adequate for the health and well-being of himself and of his family. This includes food, clothing, housing, medical care and necessary social services.

Recognising health and nutrition as the primary requirement of national development, the new National Health Policy was approved in the Union Cabinet meeting on 15 March 2017. In this, provision has been made to ensure government medical facilities for all the citizens of the country and also insurance of the patients. National Health Policy allows patients to visit a government or private hospital for treatment from specialists. Under this policy, the government aims to provide medical facilities to 80 per cent of the people in a government hospital completely free of cost which includes medicines, diagnostic tests and treatment. However, compliance of this policy has not been made mandatory for the states. New Health Policy has been provided to them as a model and its implementation is left to the discretion of the individual states.

The National Health Policy, 2017 is set to increase its spending on public health to 2.5 per cent of Gross Domestic Product (GDP) in a time-bound manner. As of now, this expenditure is only 1.15 per cent of GDP. It underlies increasing life expectancy from 67.5 years at present to 70 years by 2025. Similarly, there is a plan to reduce the total fertility rate at the national and sub-national levels to 2.1 by 2025. The policy also emphasizes on reduction in the mortality rate of under-five children to 23 per thousand births by 2025, reduce infant mortality rate to 28 by 2019 and reduction of maternal mortality ratio (MMR) to 100 by 2020. It also seeks to reduce neo-natal mortality rate to 16 and the still birth rate to a single digit by 2025.

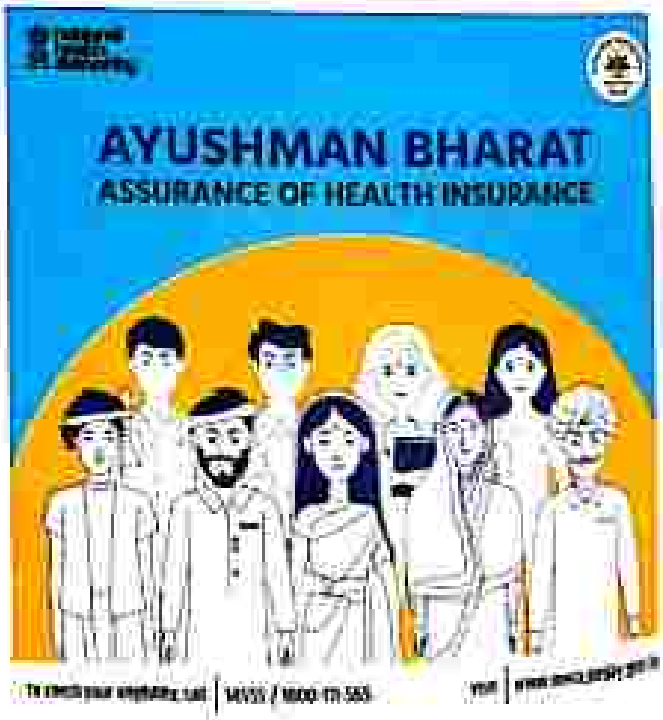
Health policy also aims to achieve the complete elimination of leprosy by 2018, kala-azar by 2017 and lymphatic filariasis by 2017 and maintaining the status quo. A target has been set to reduce the number of blindness cases to 0.25/1000 by the year 2025 and reduce the number of such patients to one-third from current levels. The policy focuses on reducing premature mortality from cardiovascular diseases, cancer, diabetes and respiratory diseases by 25 per cent by 2025 and tackling the emerging challenges of non-communicable diseases. It aims to increase utilization of public health facilities by 50 per

The Union Minister for Agriculture & Farmers Welfare, Rural Development and Panchayati Raj, Shri Narendra Singh Tomar at an event in New Delhi. (Photo Credit: PIB)

cent, full immunization of more than 90 per cent of newborns up to the age of one year and meet the need of family planning above 90 per cent at national and sub-national level by 2025. Similarly, emphasis has been laid on relative reduction in prevalence of current tobacco use by 15 per cent by 2020 and 30 per cent by 2025. Recognizing the fact that many diseases are caused due to non-availability of clean and safe drinking water to the people, target has been set under the "Swachh Bharat Mission" to ensure access to safe water and complete sanitation to all countrymen by the year 2020. In addition, manufacturing of drugs and equipment in appropriate manner, furthering Make in India and extensive reforms in the field of medical education are expected.

It is a fact that better health and nutrition not only have a positive impact on individual development, but also contribute significantly to the overall progress of the country. It would not be an exaggeration to call them the wheels of the country's progress. Health and nutrition not only play a vital role in making human life dynamic, capable and prosperous, but it also has the potential to empower, develop and strengthen the nation. This is the reason why emphasis is being laid on building a solid system of providing health facilities to the citizens of the country, which includes medical facilities at all levels within the realm of health care.

The Government at the Centre is fully committed to universal health coverage under the competent and able leadership of the country's Prime Minister Shri Narendra Modi. To achieve this, two major schemes in the medical sector have been initiated through the health sector's ambitious scheme - "Ayushman Bharat". One of these schemes is related to the opening of health and welfare centres, the other is about the National Health Protection Mission (NHPM). Through this scheme we are taking rapid steps in the direction of addressing the inequalities related to access to health and medical care facilities in hospitals, reduction of the accidental burden of huge medical expenses on families and improving the quality and accessibility of health services in public and private sector. Under "Ayushman Bharat" scheme, more than 21 thousand health and Welfare Centres have started functioning. In the first year of the launch of the scheme "Ayushman Bharat - Pradhan Mantri Jan Arogya Yojana", about 47 lakh people were provided treatment of 75 thousand million in Indian currency. Beneficiary cards have been issued to more than 10 crore 20 lakh people. Under the Pradhan Mantri Jan Arogya Yojana, 19659 hospitals have been empanelled across the country. Out of these 53 per cent hospitals are multi-specialty hospitals in the private sector and 62 per cent treatment facilities are provided in these hospitals. Up to mid-December, 2019, about 72.4 lakh beneficiaries were admitted in the hospitals empanelled with the scheme. Currently 32 states and union territories are implementing this scheme. Health and Wellness Centres of Ayushman Bharat Yojana have checked more than 1.5 crore people for high blood pressure (hypertension) and subsequently treatment of more than 70 lakh patients has been started. Similarly, about 1.30 crore people were screened for diabetes and treatment of more than 31 lakh people suffering from this disease was started. Under this scheme, health insurance cover is being provided to the neediest people of the country. "Ayushman Bharat" is a unique initiative and vision of Hon'ble Prime Minister Shri Narendra Modi to provide health care facilities to the poor and the underprivileged. It is perhaps the world's largest initiative relating to public health care. Health and Welfare Centres have been considered as the foundation of the country's health system in the National Health Policy. It is expected that under this, one and a half lakh Health and Wellness Centres will be opened by December 2022, which will bring adequate health



care facilities to the doorsteps of the common man. Emphasis has been laid on providing holistic health care facilities through them, including treatment of non-communicable diseases, maternal and child health services, free availability of essential medicines and diagnostic services.

"Pradhan Mantri Swasthya Suraksha Yojana" is being implemented with the objective of removing imbalance in the availability of reliable and affordable health care facilities in different parts of the country. Under this, focus is on the spread of medical education, especially in states with no facilities or less facilities of quality medical education. So far 22 new institutes have been announced that are to be established on the lines of All India Institute of Medical Sciences - AIIMS. In the first phase, AIIMS has started functioning in 6 locations- Bhopal, Bhubaneswar, Jodhpur, Patna, Raipur and Rishikesh. Of the other 16 All India Institute of Medical Sciences announced, 15 have been given formal approval and one AIIMS that has to be set up in Bihar is in the process of land allotment. OPD services have been started in AIIMS in Rae Bareli, Mangalagiri and Gorakhpur during the last financial year. Under the second part of the Pradhan Mantri Swasthya Suraksha Yojana, the existing medical colleges and institutions of the state government are being upgraded. Since 2014, a total of 157 new medical colleges have been approved in order to provide medical college level to district / sub-district level hospitals.

In fact, for building a healthy India, adequate and sufficient budget provision is very essential. It is a matter of satisfaction that in the Union Budget 2019-20, there is a complete focus on the health sector. The budget of the Ministry of Health has been increased by 18.67 per cent for the current financial year. Investment in the health sector leads to an increase in welfare and well-being as well as increased productivity and employment generation. Overall, it has a direct and positive impact on the country's economic condition. In the present time, it is very important to have a healthy and educated population to derive maximum benefit of favourable demographic dividend. A rise of 154.87 per cent for both the branches of the ambitious programme of the health sector, Ayushman Bharat - Health and Welfare Centres and the Pradhan Mantri Jan Arogya Yojana, 92.44 per cent for the ASHA benefit package and 8.57 per cent enhancement in the allocation for immunisation, women and child health care clearly indicate that the present government is marching forward with swift pace and in the right direction and also, is on the path of making the country a $ 5 trillion economy by boosting health and well-being of the citizens.

The goal of the government is to control the increase in incidence of diabetes cases by the year 2025. According to a study by the Indian Council of Medical Research (ICMR-INDIAB), Punjab was found to have the highest 8.7 per cent of diabetic patients in terms of rural area and Union Territory of Chandigarh has highest 14.2 per cent of diabetic patients in terms of urban areas. In the case of combined figure of rural and urban areas, Union Territory of Chandigarh tops the list of diabetic patients with 13.6 per cent. Although public health and hospitals are the subjects of the state government, the central government provides assistance in their efforts as and when needed. The Government is running national programmes up to the district level under the National Health Mission for the prevention and control of diseases related to cancer, diabetes, heart disease and stroke. Diabetes treatment is being provided in health centres run by the central and state governments. Poor and needy people are being given treatment in government hospitals free of cost or at affordable rates. Under the 'Jan Aushadhi Yojana', quality generic medicines are being made available at affordable prices to all individuals in collaboration with the state governments. One hundred and sixty-nine Amrit Stores have been opened in hospitals where life saving medicines are being made available at huge discount but at maximum retail prices.

The central government is also committed to the eradication of tuberculosis i.e. TB by the year 2025. To achieve this goal, a national plan has been drafted for the year 2017 to 2025, covering a wide range of activities through various stakeholders. Between 2016 and 2017, a decrease of 1.87 per cent has been registered in tuberculosis cases on a global basis, while during this period tuberculosis cases in India were estimated to decrease by 3.3 per cent. In September 2019, the campaign "TB Harega, Desh Jeetega" was launched along with the "National TB Prevalence Survey". The campaign emphasized community involvement with various stakeholders. In order to fulfil the commitment of TB eradication, the focus has been to establish

patient forums in more than 95 per cent districts in the first 100 days. Through these forums, tuberculosis patients can be easily detected and appropriate treatment would be made available to get them rid of the disease. The new tuberculosis control campaign incorporates three strong pillars- clinical approach, public health component and active community participation. The government is committed to ensuring that high quality TB treatment and care facilities are provided free of cost to all patients at the desired location. It also includes the private sector. There have been several policy initiatives during the last few years, which have resulted in an increase in the number of cases reported to the government. In 2018, 21.5 lakh TB cases were reported to the government, as compared to 18 lakh in 2017. In the year 2018, the government detected 21.50 lakh cases of TB while in the year 2017 only 18 lakh cases were reported. The Government of India has also partnered with the Global Fund to launch JEET (Joint Effort for Elimination of TB). It has been launched in 45 cities of the country in collaboration with the private sector. In the last year, with its domestic resources, the Government of India, through the National Health Mission, has also approved to include in the JEET, additional 120 cities across 19 states. Showing concern towards TB patients, the Government in April 2018 launched the Nikshay Poshan Yojana, a Direct Benefit Transfer (DBT) scheme to provide nutritional support to them. Under the scheme, TB patients have been receiving Rs. 500 per month for the entire duration of treatment. Since its inception, a total amount of Rs. 427 crore has been paid to over 26 lakh TB patients through Direct Benefit Transfer to their bank accounts. Keeping in view the vision and determination of Hon'ble Prime Minister regarding Tuberculosis-eradication, there is no doubt that we will be able to achieve the goal of tuberculosis eradication by 2025 in India, half a decade before 2030, the year by which the global goal of tuberculosis eradication is targeted to be achieved.

We are also happy to inform that during the last 5 years of the NDA Government, the services of Central Government Health Scheme - CGHS have been extensively expanded. The wellness centres under this scheme, which provide quality medical care to central government employees and VIPs/distinguished persons of various central institutions, were in only 25 cities till 2014. Now this service has been extended to 71 cities of the country. The government is committed to provide CGHS services in 100 cities of the country by the year 2022. It clearly shows that the process of reforms in every important aspect of the health sector is going on smoothly.

The National Medical Commission Act 2019 passed by both the Houses of Parliament is historic in itself. It is a comprehensive and visionary reform in the medical education sector and will prove to be a milestone in the years to come.

Providing nutritious diet to children and women is very important to address the complex problem of malnutrition and smash the intergenerational cycle of malnutrition. Their diet should have adequate quantity of calcium, folic acid, protein and iron. As per the fourth National Family Health Survey 2015–16, 35.7 per cent children below five years were found to be underweight, about 38 per cent stunted and about 21 per cent, suffering from high malnutrition, were found to be both underweight as well as stunted. About 22.1 per cent of the women were also found to be underweight. Anaemia was found in about 48.4 per cent of children and 53 per cent of women. On the contrary, the problem of overweight or obesity in children, adolescents and adults is also increasing rapidly. This condition increases manifold the chances of non-infectious diseases like heart disease, cancer, diabetes and asthma. The government has taken several concrete steps to tackle the problem of malnutrition and constant efforts are being made in this direction. Efforts are being made to reduce the mortality rate of unborn and newborns through the India Newborn Action Plan (INAP). Under Mission Indradhanush, children up to the age of 2 years have been brought under immunization programme to protect against 7 types of diseases: diphtheria, whooping cough, tetanus, tuberculosis, polio, hepatitis-B and measles. Pregnant women are also vaccinated against tetanus. Revolving Funds up to Rs. 50 lakh have been set up in 13 Central Government Hospitals/Institutes for the treatment of patients below poverty line under the Rashtriya Arogya Nidhi (RAN). Several important steps have been taken under the "National Nutrition Policy" to address the problem of malnutrition. Rashtriya Poshan Abhiyaan (National Nutrition Mission) was

launched in March 2018 to improve nutritional status, check prevalence of anaemia among children, adolescent girls, women (especially pregnant women), reduction in low birth weight babies and stunting growth in children up to 6 years by 2020. Beti Bachao, Beti Padhao, Mid-Day Meal Scheme, Janani Shishu Suraksha Karyakram, Rashtriya Bal Swasthya Karyakram (National Child Health Program), Balika Samriddhi Yojana and 26 weeks maternity leave scheme for pregnant women are contributing significantly in addressing problems associated with health and nutrition.

It is heartening to note that the "Pradhan Mantri Matru Vandana Yojana" for pregnant women and lactating mothers has also reached more than one crore beneficiaries. Under this scheme more than Rs. 4,000 crore has been distributed to the beneficiaries by September, 2019. Under the Pradhan Mantri Matru Vandana Yojana based on Direct Benefit Transfer, cash benefits are provided to pregnant women directly in their bank accounts. The scheme aims to meet enhanced nutritional needs and partially compensate for wage loss during pregnancy. Under the scheme, implemented from 1st January 2017, pregnant women and lactating mothers (PW&LM) receive a cash benefit of Rs. 5,000 in three instalments on fulfilling the respective conditionality, viz. early registration of pregnancy, ante-natal check-up and registration of the birth of the child and completion of first cycle of vaccination for the first living child of the family. The eligible beneficiaries also receive cash incentive under Janani Suraksha Yojana (JSY). Thus, on an average, a woman gets Rs. 6,000. The government has doubled the budget provision under this scheme.

The government has given adequate importance to nutrition, health and education in the budget of 2019–20. In the year 2018–19, the budget provision for the nutrition campaign was Rs. 23 thousand 88 crore which was increased to Rs. 27 thousand 584 crore in 2019–20. It is evident from this that the present government is moving forward to provide more and better services and facilities in the field of health and nutrition so that public health and nutrition related facilities reach the last mile and every citizen.

It is very important to overcome the challenges of health and nutrition in order to transform the vision and resolve of a 'clean India - healthy India', 'malnutrition free India' and a 'New India' in to a reality. We will achieve these goals with the commitment of the government and active participation as well as strong will of the people.

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HEALTH AND NUTRITION
OVERVIEW AND THE WAY FORWARD

Chandrakant Lahariya

Nutrition is an essential part of better health and the ancient systems of medicines followed that principle. Health and Nutrition contribute to human capital formation, and the growth and development of a nation. It is time to consider new approaches to tackle double burden of Malnutrition (DBM), under nutrition and obesity at the same time. The focused attention and tailor-made strategies for specifically vulnerable population groups such as women in reproductive age group, children and all rural residents are needed.

The inter-linkage between health and nutrition has been recognized since ages. Good nutritional status ensures that individual can fight disease-causing agents, stays healthy, be productive to the society and contribute to overall development. Under-nutrition in children, especially in fetus during pregnancy and up to 2 years of age, can take away up to 15 IQ points. A study by the World Bank has estimated that annual cost of malnutrition in India is at least US$ 10 billion and is driven by loss of productivity, illness and premature deaths. Alongside, illnesses in an otherwise 'normal weight' person can lead to under-nutrition, which can spiral into a vicious cycle. Clearly, the challenge of nutrition is multi-layered. It is not the under-nutrition only, the over-nutrition (obesity), 'protein hunger' and 'hidden hunger' (or micronutrient deficiencies) in otherwise normal weight persons are the other dimensions. The terminology of malnutrition is commonly used to capture the under and over nutrition and the related challenges. However, in a particular setting, burden was predominately of one type of malnutrition. It is being recognized that in many settings and countries, both under and over-nutrition are increasing as an emerging challenge, described as 'Double Burden of Malnutrition' (DBM). The DBM co-exist in many settings and affects the health outcomes and survival of population. While under-nutrition continues to be major and pressing challenge in India, the issue of over-nutrition is also real. Therefore, it is time that India also shifts attention on holistic approach of targeting malnutrition with focus and appropriate strategies to tackle DBM.

Under Nutrition as Persistent Challenge

India had poor health and nutritional indicators at the time of independence in 1947. Around 1950s, the life expectancy in India was 32 years (which has increased to 68 years in 2017). The infant mortality rate (IMR) was nearly 200 per 1,000 live births and maternal mortality ratio (MMR) around 2,000 per 100,000 live births. The IMR in India in 2017 was 33/1,000 live births and MMR was 130 per 100,000 LB during the period of 2014-16. Over these years, through targeted interventions, the proportion of population living below poverty line has declined and even the food production and availability has drastically increased. However, nutritional status of population has not witnessed the commensurate decline. India has had high rate of under-nourished population, with marginal improvement in situation in last 25 years (Table 1). The prevalence of underweight, stunted and wasted is higher in rural than urban populations. The progress on other parameters of the nutritional status such as level of anemia in population groups and birth-weight of newborns is also slow. Recognizing the challenge, India had a series of initiatives and programmes since independence which focused on improving nutritional status of the population (Box 1).

Table 1: Stunting, Wasting and Underweight in India in last 3 decades (figures in percentage)

	NFHS-1 (1992-93)	NFHS-2 (1998-99)	NFHS-3 (2005-06)	NFHS-4 (2015-16)
Underweight				
Rural	55.9	49.6	46	38.4
Urban	45.2	38.4	33	29.1
Total	53.4	47	42.5	35.8
Stunted				
Rural	54.1	48.5	51	41.2
Urban	44.8	35.6	40	31
Total	52	45.5	48	38.4
Wasted				
Rural	18	16.2	21	21.5
Urban	15.9	16.2	17	20
Total	17.5	15.5	19.8	21

Footnotes:

- NFHS: National Family Health Survey
- The latest round of NFHS-5 has been completed in 2018-19 and data is awaited.
- Comprehensive National Nutrition Survey (CNNS) was conducted from 2016-18 and is another source of data on nutritional status of population in India
- Underweight: below a weight considered normal or desirable.
- Stunted: below the height considered normal or desirable.
- Wasted: low weight-for-height where a child is thin for his/her height but not necessarily short

Box 1: Key Govt. Initiatives, Policies and Programmes to Tackle Nutrition Challenges

1951	India's Five-year plans were the major vehicles to improve health and nutrition in India. The first one was launched in 1951. Since then till 12th five-year plan of India (2012-17). The five year plans were key policy instruments to tackle under nutrition.
1952	Community Development Program (CDP) had important component of improving nutritional status of population at block level and with engagement of local self-government.
1974	Minimum Needs Programme (MNP) was introduced in the first year of the Fifth Five Year Plan (1974–78). The MNP was aimed to provide certain basic minimum needs and improve the living standards of people including health and nutrition services.
1975	The Integrated Child Development Services (ICDS) was launched on 2 Oct 1975 to improve health and nutritional status of women and children in India.
1986	A separate Dept. of Women and Child Development (DoWCD) was established Ministry of Human Resource Development (HRD) under Govt of India. This department was responsible for ICDS and other nutrition services for pregnant women and children.
1993	National Nutrition Policy was released
1995	The Government of India initiated the National Programme of Nutritional Support to Primary Education (NP-NSPE) on 15 August 1995. This was based upon learning and extension of Mid-Day Meal (MDM) scheme launched by Govt. of Tamil Nadu in early 1960s and adopted by a number of states since then.
2006	Full-fledged Ministry of Women & Child Development (MoWCD) was established
2017	Pradhan Mantri Matru Vandan Yojana (which was announced on 31 Dec 2016) was officially implemented from the year 2017 onwards and provides financial support to identified groups of pregnant women for their first pregnancy.
2017	'National Nutrition Strategy' released by NITI Aayog, Govt of India
2018	POSHAN Abhiyaan

Diseases Linked to Under-nutrition

The nutritional status of an individual affects his/her health status and outcomes. A poorly nourished person has weak immunity and immune defence system. An undernourished individual, including those with micronutrient deficiency, are at higher risk of majority of infectious diseases including tuberculosis, viral and all other infections. An underweight and under-nourished child is at higher risk of diarrhoea and pneumonia. The chances of recovery in such children are slower. They are more likely to become under-nourished after such disease spell. While the poor nutrition affects the health outcomes in all population sub-groups, it is the women in reproductive age and newborn and children, who are most commonly and adversely affected. The public health science has generated evidence that it is vicious cycle of under-nutrition which starts at the time of pregnancy (in mother's womb) and continues to affect the newborn for the rest of the life and for many generations. Understandably, the initiatives to tackle under-nutrition are targeted/focused/prioritized for women in reproductive age groups, children and adolescent girls. There are emerging evidence that under-nourished and under-weight children are at higher risk of non-communicable diseases such as cardio vascular strokes and diabetes in adult age.

Nutrition is an essential part of better health and the ancient systems of medicines followed that principle. Health, nutrition and hygiene were considered more interlinked nearly half a century ago; though, true even today, these three are often considered in isolation, for unknown reasons. It is also true that the disease burden and deaths due to poor nutrition or under-nutrition have decreased over the years in India; however, studies have found that under-nutrition continue to be a leading risk factor for deaths and diseases amongst under-five children in India and health loss for people in all age groups. According to the findings of India state level disease burden initiative, under-nutrition contributed to more than two-third of under-five deaths in India. The facts are overwhelming. Nearly four of every 10 under five children in India fails to meet their full potential because of chronic under-nutrition or stunting.

Over-nutrition is an emerging phenomenon which is resulting in increased burden of non-communicable diseases. A range of diet related chronic diseases- diabetes, cancers, cardiovascular diseases and liver diseases are rising rapidly. This is adversely affecting the health and productivity of adult population in India. The chronic diseases affect all populations—male, female, rural-urban and rich and poor. However, poor and rural populations are often worst affected. They cannot afford dietary nutritious food and the access to healthcare for them is limited and challenge.

Initiatives to Improve Nutritional Status

The efforts to tackle under-nutrition in India have been partially successful so far and recent and new attempts are being made to accelerate the progress. The Govt of India had launched National Nutrition Strategy in Aug 2017 and then National Nutrition Mission (NNM) in March 2018. NNM aimed at 2-3 per cent annual reduction in the rate of low birth-weight, stunting, undernourishment and anaemia amongst women. NNM is now being implemented as POSHAN Abhiyaan, under Ministry of Women and Child Development, aiming for *Kuposhan Mukt Bharat* (Malnutrition free India) by year 2022. The programme aims at reducing levels of underweight, stunted, low birth-weight and anaemia in population. As part of this POSHAN Abhiyaan, nutrition is proposed to be a *Jan Aandolan* or mass movement and the month of September has been designated as POSHAN Maah.

In addition, Pradhan Mantri Matru Vandan Yojana (also known as Maternity Benefit Scheme) was announced in late 2016 and launched in 2017, aims to provide financial assistance to pregnant

women for the first pregnancy and ensure good nutritional status. There is renewed attention on reducing prevalence of anaemia through Anaemia Mukt Bharat. There are a number of complimentary initiatives under different ministries to focus on improved nutritional status though approaches such as Eat Healthy and Fit India initiative. The Aspirational District programme also has nutritional status as a performance indicator.

Discussion

Health and nutrition (and education) contribute to human capital formation, and the growth and development of a nation. The malnutrition results in making people prone to various adverse health outcomes, as described in earlier section. Specially, the first 1000 days of children (Nutritional status in 270 days of nine months in pregnancy and 730 days of first two years of a child's life are very crucial for health and childhood development related outcomes for rest of life). Much of the development of brain happens either in pregnancy or first two years of life. Therefore, the poor nutrition affects the newborn for rest of life and not only physical but brain development and other social milestones as well. This is increasingly being understood and realised and a compelling reason for taking urgent actions.

The inter generational effects of malnutrition can be devastating not only for affected families, but also the national productivity, growth and development. Poor maternal nutrition in pregnancy results in low birth weight, which in turn results in risk of poor growth, infections and low educational outcomes and development deficit and more prone to cardiovascular diseases and diabetes in adulthood. The adverse effect of pregnant woman's (mother's) nutritional status carries with the child for rest of the life but on the next generations as well through epigenetic effects. This situation clearly demands that interventions to tackle under-nutrition in India are implemented in life cycle approach from nutritional status of women in reproductive age, pregnant women, breast feeding and complementary feeding. In this process, the societal dimension of nutrition i.e., maternal literacy, women empowerment & prevention of child marriage etc. also need to be given due attention and interventions.

The need for sustaining the multi-sectoral engagement for better health & nutritional outcomes are being recognized. The nutritional status is inter-play of at least three broad factors: dietary intake contributes to 45–50 per cent, poor maternal health results in low birth-weight which accounts for another 25 per cent and illnesses amongst children such as diarrhoea for another 25–30 per cent of under-nutrition. Thus, there is a need for targeted interventions for reducing the proportion of low birth weight babies, which constituent nearly 30 per cent of total newborns in India.

Overweight and obesity are other and increasingly recognized spectrum of malnutrition. These were earlier reported from affluent and urban population and are now slowly extending to poor and rural counterparts as well. There are nutritional deficiencies in people who otherwise overweight as their diet may be rich in calorie but deficient in specific micronutrients. Even in 'normal body weight' people, there are high level of body fat and reduced muscle mass indicating a nutritional imbalance that place such individuals at increased risk of obesity related diseases. No wonder we see many faces of malnutrition in our population.

Under-nutrition is not only cause but effect as well. Enteric infections such as diarrhoea and typhoid are more common in children who are under-nourished. As well as a healthy child who gets such infections can become under-nourished afterwards. Therefore, to tackle under-nutrition, there is a need to improve water and sanitation. Similarly, problem of stunting cannot be solved by increased access to nutritious food, it requires better housing and improved water and sanitation.

India is world's second largest producer of rice (more than 100 million tonnes) and wheat (nearly 90 million tonnes) and the largest producer of pulses (23 million tonnes), yet country is home to large number of under-nourished children and adults. There is high level of protein deficiency. Though the country produces large quantity of pulses, per capita protein availability in India has been falling in last 3 decades from 65 grams in 1985 to 55 grams in 2005 and 50 grams in 2015. Clearly, the solution to under-nutrition is much beyond

simple increased production and availability of food grains.

The Way Forward:

There has been some progress on improving nutritional status of population in India. However, India of 2020 needs to do more than what has been done in the past. A few suggestions are as follows, not necessarily in same order:

- Integrated health and nutrition initiatives with closer collaboration of health, Women and child development and education departments. This has already started to happen through three As of AWW, ASHA and ANM (Anganwadi workers; Accredited Social Health Activists and Auxiliary Nurse Midwife) as of now but require improved performance of these mechanisms. The nutrition programme run under ICDS and school mid-day meal scheme of education department and care of mothers and children under health departments need to be interlinked with better collaboration and coordination. It will be important to share the data, have joint analysis and action plans.
- Diversification of supply of food under government programmes including more nutritious items such as millets, eggs, milk, soybean and nutrient rich fresh foods. Mass fortification of rice, wheat, salt, edible oils and salts, with essential minerals and vitamins like iodine, iron, zinc and vitamin A and D should be optimally used. The inclusion of pulses and edible oil in Public Distribution System (PDS) as well as National Food Security Act (NFSA) has been proposed by many experts. Similarly, there is need to increase protein and micronutrient content in mid-day meal and ICDS food.
- Regular monitoring on real time basis: Comprehensive National Nutrition survey (CNNS 2016-18) is the most recent survey on nutritional status of Indian population. The NFHS-5 data collection has been completed and analysed report is expected to be available soon. It will be imperative that analyzed data is made available and used to inform policy decision making. The delay in the availability of analyzed data, delay the interventions. There is a felt need for improved real time data recording and reporting system with data flow in two directions is needed. This is possible with use of digital technology.
- Promote 'Nutrition Garden' concept: Ministry of Human Resource Development has brought the concept of school 'nutrition garden' encouraging eco-club of students to help them identify fruits and vegetables best suited for topography, soil and climate. These gardens are intended to give students lifelong skills to identify fruits and vegetables for their plates. This clearly has the potential to improve nutritional status of population.
- Focus on 'behavioural change' for improved nutrition: The major challenge in bringing the sustained behavioural changes are related to a continuum of 4A of awareness, assessment, analysis and action. The awareness is raised through AAAM: ASHA, AWW, ANM and Mothers. However, a balanced approach of going beyond awareness and focus on analysis of information and actions needs to be strengthened.
- Attention on 'dietary diversification' and focus on healthy diet: The dietary diversity with balanced nutrients is the key to growth and good health across the life course. The skewed agricultural priorities due to production of cash crops, marketing tactics, food processing has resulted in the sacrifice of nutrient rich balanced diet by many people. With diet diversification in the spotlight, *My Plate for the day' publication of* The National Institute of Nutrition (NIN), India has highlighted that the fruits and vegetables should share nearly 50 per cent of an individual's food plate. The Expert Committee of the Indian Council of Medical Research (ICMR), New Delhi

has recommended that every adult should consume at least 500 g of vegetables in a day, which should include 100 grams of green leafy vegetables, 200g each of other vegetables and the roots and tubers. In addition, everyday per person 100 gram of fresh fruits should be consumed regularly. These guidelines should be widely promoted.

- Establish more cold chain storage capacity for food items across the country: It has been recognized that while India produces a lot of fresh fruits and vegetables, significant amount is wasted during sorting/ grading, transport, storage in go downs or processing units, or with wholesalers and retailers. Therefore, establishing more cold chain stores especially in rural India can contribute to less wastage and improved availability and thus improved nutrition for Indian population.
- Promote local production of fruits and vegetables in rural India: Contrary to common belief, the cost of fruits and vegetables in rural areas is higher than urban as the transportation cost is also factored in. Therefore, the production and consumption of locally available all kinds of vegetables, fruits including seasonal fruits in rural areas need to be promoted. As most of the government organizations in India such as Anganwadi centres, government primary and high schools and panchayat office have space around their buildings, the area can be utilized to grow locally consumed green leafy vegetables, roots & tubers and locally available fruits.
- Educate people on health benefits of consumption of fruits and vegetables along with training on community or kitchen gardening or terrace gardening. The school and college teachers and student should be involved in the process. Training and a capacity building of both teachers and students on healthy diets should be prioritised. The younger generation should be trained in healthy diets. Junk the 'junk food' should be promoted to school students and ban on unhealthy food in school and college canteens should be actively promoted.
- Link the overall nutrition and healthier lifestyle: The schools could be suitable platforms to call parents of children and educate them about healthy nutrition and life style. The awareness about nutrition should be linked to healthy life style to prevent non-communicable disease risk factors and adopt physical activity, healthy diet, no smoking and moderate or no use of alcohol. School/ college should regularly invite nutritionists and health experts to deliver talks to parents and family members of students.
- Engage elected representatives and civil society members in making healthy India: The nutritional outcomes of society will be dependent upon how political leaders, elected representatives contribute in making nutrition 'Jan Andolan' and improved nutritional outcomes in India.

Conclusion

The Double Burden of Malnutrition (DBM) is a new 'nutritional reality' for many countries including India. The period of 2016-25 is United Nation's (UN) decade of nutrition, and only six years are left. The target for sustainable development goals is 2030, which has nearly a decade to achieve. Only three years are left to achieve the targets set up under National Nutrition Mission (NNM) of India. Clearly, there has to be an urgency to accelerate interventions. While till now efforts and initiatives have been focused on priority challenge of under-nutrition, the policy makers and programme managers in India, both at national and state level, need to be mindful of new nutritional reality. It is time to consider new approaches to reduce under-nutrition and obesity at the same time. The focused attention and tailor-made strategies for specifically vulnerable population groups such as women in reproductive age group, children and all rural residents would be needed. It would also require stronger collaboration and coordination between multiple departments, improved data collection and analysis for action and sustaining the political commitment and public attention on tackling nutrition challenges in India.

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HEALTH SYSTEM: TOWARDS A NEW INDIA

Alok Kumar and Urvashi Prasad

In its Three-Year Action Agenda, NITI Aayog called for a new wave of institution building with a strong and a pro-active stewardship role by the government to overcome the persistent challenges while also leveraging the potential of a mixed health system. The government has launched several reform initiatives over the last few years which need to be rigorously implemented. Additionally, the key enablers of health system reform such as financing, organisation and provision of service delivery as well as digital health need to be strengthened.

India has made noteworthy strides on health and nutrition over the last two decades. Polio, guinea worm disease, yaws as well as maternal and neonatal tetanus have been eliminated. The Total Fertility Rate has reduced sharply from 2.7 in 2005–06 to 2.2 in 2015–16 and for the first time the birth cohort has fallen below 25 million. Contrary to expectations, we were able to achieve the Millennium Development Goals in respect of the Maternal Mortality Ratio (MMR level of 130 against a target of 139) as well the Under-5 child mortality target (U5 MR level of 43 against a target of 42). Infant Mortality Rate has also reduced from 57 per 1000 live births in 2005–06 (National Family Health Survey-3) to 41 per 1000 live births in 2015–2016 (NFHS-4). Given the size, complexity and diversity of our country, the importance of these improvements in the health and nutrition status of the population cannot be underestimated.

Having said that, India's health system is still facing multiple challenges. There are significant inter and intra-state disparities in outcomes and socio-economically disadvantaged groups are especially vulnerable to gaps in healthcare access. Additionally, while the burden of non-communicable diseases is rising, there is also a substantial unfinished agenda with respect to communicable diseases as well as maternal and child health.

The health system is fragmented at multiple levels: payers and modes of financing, providers of healthcare services and the digital backbone. Currently the government (Union and States combined) spends approximately 1.13 per cent of GDP on health. As a consequence, households finance 62 per cent of the healthcare spending through out-of-pocket expenditure at the point of care. Risk pooling is low, with less than 35 per cent of the population participating in any risk pooling scheme and less than 10 per cent being covered by a functioning risk-pooling mechanism which provides effective protection against catastrophic health events.

Delivery of health services is also fragmented into small sub-scale entities with 95 per cent of the care being delivered by providers employing less than 10 workers each, adversely affecting the quality and efficiency of service delivery. The digital systems used in these health care entities, if at all used, are also siloed in the absence of mandatory adherence to any data standard. The result is that the patient health records lie buried in manual systems or disparate IT systems with little standardization and almost no possibility of interoperability. This limits the availability of information that could potentially guide policy making.

While there is no doubt that building a well-functioning system is a work of decades, the government has initiated systematic efforts over the last few years by taking a comprehensive view of the health system and impacting its multiple determinants.

Public and Primary Health

Over 2.55 crore children and 70 lakh pregnant women were immunized over a period of two years under Mission Indradhanush. The programme has emerged as a global best practice in public health. Further, Rotavirus and Pneumonia vaccines were introduced in an effort to counter pneumonia and diarrhoea in children less than 2 years of age.

For the first time, a comprehensive effort is being made for incorporating traditional medicine within the overall framework for promoting health and well-being through the National AYUSH Mission. In 2017, the first-ever All India Institute of Ayurveda

was launched along the lines of AIIMS, New Delhi, for creating synergies between the traditional wisdom of Ayurveda and modern technologies.

Cleanliness is crucial for preventing diseases. Following the implementation of the Swachh Bharat Abhiyan, nearly 100 per cent of households in rural India now have access to a toilet, compared to merely 29.1 per cent in 2005–06.

The battle against Tuberculosis (TB) has also been escalated through the launch of a new National Strategic Plan in 2017. The thrice weekly treatment regimen has been changed to a daily fixed-dose drug regimen and a sum of Rs. 600 crore has been allocated for providing nutritional support to TB patients in the Union Budget 2018–19.

Going forward, the establishment of dedicated public health cadres by States needs to be prioritised with training imparted on critical skills such as the ability to integrate health with its social determinants, carry out community surveillance, analyse data and enable public participation, disseminate health promotion information and effect behaviour change.

To build a robust primary healthcare system, the government has announced the setting up of 150,000 Health and Wellness Centres (HWCs) between 2018 and 2022 under the Ayushman Bharat initiative. Currently, over 27,000 HWCs are operational across the country. Historically, only a selective package of services has been provided at the primary care level in India, however, the HWCs will deliver a comprehensive package of diagnostic, curative, rehabilitative and palliative services for communicable as well as non-communicable diseases. Moreover, the Centres will provide diagnostics and drugs free of cost which will have a direct impact on controlling out-of-pocket expenditures. Currently, over 55 per cent of India's out-of-pocket expenditure is on outpatient care, of which drugs constitute the biggest component.

Secondary and Tertiary Healthcare

The second pillar of Ayushman Bharat is the Pradhan Mantri Jan Arogya Yojana (PM-JAY) which will provide 10 crore of the poorest and most vulnerable families in the country an annual cover of Rs. 5 lakh per annum for hospitalisation-related expenses. By consolidating multiple health insurance schemes under PM-JAY, the government is taking a major step towards 'One Nation One Scheme' which will ultimately ensure that all citizens can access a common package of secondary and tertiary health services regardless of the State in which they reside. Thus far, 19,524 hospitals have been empanelled under PM-JAY and over 70 lakh patients have been admitted.

Figure 1: A Model Health & Wellness Centre

Modular, solar energy powered, rain harvesting, low maintenance, local architecture, adaptable, inspirational design, disaster & earthquake proof, flood resistant, swachh, telemedicine enabled.

(Source: School of Planning and Architecture, Delhi)

Human Resources for Health

We cannot build a world-class health system without first investing in a world-class medical education system. Earlier this year, the government enacted the landmark National Medical Council Act 2019 for overhauling medical education in India. Central and State government medical colleges are being upgraded to add 10,000 undergraduate and 8,058 postgraduate seats by 2020–21, ensuring the presence of at least one medical college for every 3–5 Parliamentary Constituencies and at least one in every State. Similar efforts are also underway for producing the requisite number of skilled nursing professionals through the setting up of 112 Auxiliary Nursing and Midwifery schools and 136 General Nursing Midwifery schools in under-served districts of the country. Further, minimum qualifications for teachers in medical institutions have been rationalized for the Diplomate of National Board. This is expected to expand the pool of candidates eligible for appointment as faculty by 3700 a year.

Medicines and Devices

More than 5,500 Jan Aushadhi stores have been opened for providing quality drugs at affordable prices and the government plans to expand the number of stores to 7,500 by 2020. It is estimated that these stores serve between 10–15 lakh people across India on a daily basis. To make medicines affordable for all citizens, the government has also fixed the ceiling prices of nearly 850 drugs. Further, the prices of Drug Releasing Stents which are used for treating blocked arteries were also lowered from INR 30,180 to INR 27,890. This is a significant step because an estimated 5 lakh patients undergo the stent procedure every year.

Recognizing the vital role played by medical devices in ensuring a well-functioning health system, the Medical Devices Rules were notified by the government in 2017. Previously, only 15 categories of devices had been subject to regulation, that too under the umbrella of drugs. India also finalised its first National Essential Diagnostics List earlier this year to guide decision making with respect to the different kinds of diagnostic tests required by healthcare facilities across the country. Moreover, to boost indigenous production the government is supporting the establishment of medical device parks in India.

Health Technology and Data Systems

Tools such as telehealth, mobile health and Artificial Intelligence (AI) are helping to lower barriers between hospitals and patients, thereby improving access to care, especially in Tier-2 and Tier-3 cities. India has made considerable progress in leveraging Information Communication Technology (ICT) for enhancing the coverage and quality of maternal and child health services. For example, the Auxiliary Nurse Midwives Online or ANMOL application has been developed to equip public health workers to register pregnant women, encourage institutional birthing and monitor immunisation programmes for newborns.

In the area of digital health, the National Health Stack proposed by NITI Aayog in 2018 is an important step. It is designed to offer a suite of advanced technologies which can be incorporated into overall digital health implementation in India. The availability of these "plug-in" modules will simplify and accelerate progress in implementing digital health in facilities and for health payers. It will also facilitate collection of comprehensive healthcare data across the country. The focus of this work will allow policymakers to experiment with policies, detect fraud in health insurance, measure outcomes and move towards smart policy making.

In 2019, the National Digital Health Blueprint was released by the government. The key features of the blueprint include a Federated Architecture, a set of architectural principles, a 5-layered system of architectural building blocks, Unique Health ID (UHID), privacy and consent management, national portability and Electronic Health Records (EHRs) among others. Operationalizing EHRs for every citizen will be the key to optimizing health information systems. A system-wide EHR will enable monitoring of diseases, expenditures and performance to deliver financial and health outcomes.

AI solutions can provide doctors with an unbiased second opinion on diagnosis, treatment options, potential risks and predicted outcomes. For doctors working under considerable time pressure, AI can prove to be an important supportive tool

by collating test reports of patients, studying their medical records and suggesting treatments. Crucially, AI can enable healthcare personnel to detect the dormant signs of diseases, thereby ensuring prevention or treatment at an early stage. Cancer screening and treatment is one area where AI provides tremendous scope for targeted large-scale interventions. India witnesses an incidence of more than 1 million new cases of cancer every year, a number that is likely to increase given the ageing Indian population and lifestyle changes. NITI Aayog is in advanced stages of launching a programme to develop a national repository of annotated and curated pathology images for cancer screening and treatment.

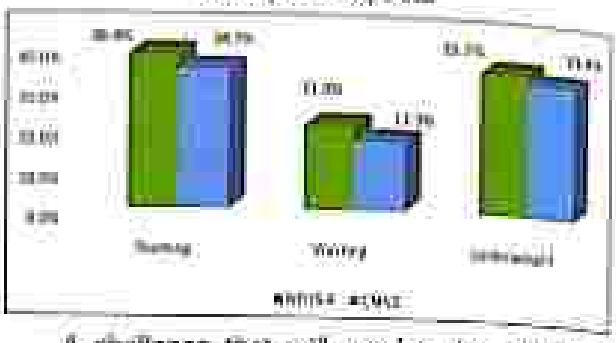
Nutrition

A critical determinant of ill health is malnutrition. Even though governments have launched multiple schemes over the years, a robust convergence mechanism has been absent, resulting in persistent high levels of malnutrition in the country. To tackle this challenge comprehensively, the POSHAN Abhiyaan was launched to provide an appropriate governance structure reflecting the many overlapping factors like access to sanitation and health services that affect the nutritional status of an individual or household. The Abhiyaan is targeting a reduction in stunting, under-nutrition, anaemia and low birth weight by at least 2 per cent, 2 per cent, 3 per cent and 2 per cent per annum respectively.

The POSHAN Abhiyaan focuses on engaging all stakeholders to make nutrition a Jan Andolan. Rashtriya POSHAN Maah has been celebrated in the month of September for the last two years. In 2018, it reached out to over 25 crore people with messages on crucial practices like antenatal care, optimal breastfeeding, anaemia, growth monitoring, delaying age at marriage for girls and hygiene, among others. Rashtriya POSHAN Maah, 2019 focused on creating awareness about essential health and nutrition interventions during the first 1000 days of a child's life, prevention of diarrhoea, Anaemia Mukt Bharat, complementary feeding practices as well as the importance of clean water, sanitation and hygiene.

The results of the recent Comprehensive National Nutrition Survey (2016-18) indicate that we are moving in the right direction. It shows an accelerated decline in stunting at the rate of 1.8 per cent per annum, almost double to that of the previous decade.

Figure 2: Encouraging Trends from CNNS (2016-18) Data



A challenge that will need to be addressed going forward is the prevalence of Overweight-Obesity which is one of the most important risk factors for non-communicable diseases. While it currently affects the affluent sections of society disproportionately, the transition of the risk factor will progressively impact all population groups including poorer households. For addressing the Overweight-Obesity burden in the country, a lifecycle approach that focuses on ensuring the availability and consumption of adequate quantities of nutritionally balanced food at every stage of life is required. Surveillance mechanisms for monitoring overweight-obesity prevalence in the population must be established and scaled up. Physical and wellness activities like Yoga also need to be promoted in every age group.

In its Three-Year Action Agenda, NITI Aayog called for a new wave of institution building with a strong and a pro-active stewardship role by the government to overcome the persistent challenges while also leveraging the potential of a mixed health system. The government has launched several reform initiatives over the last few years which need to be rigorously implemented. Additionally, the key enablers of health system reform such as financing, organisation and provision of service delivery as well as digital health need to be strengthened as highlighted in the book *Health System for a New India: Building Blocks* released by NITI Aayog earlier this year.

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NUTRITION: A PUBLIC HEALTH PRIORITY

Manisha Verma and Pooja Pasi

Nutrition is certainly a policy issue going beyond women and children alone, as the country has moved away from the selective emphasis of the MDGs to the more comprehensive SDGs. The increasing burden of communicable diseases as well as over-nutrition, are leading to complex policy challenges. Hence, while government policies and programmes are converging and taking steps to manage malnutrition, the most important factor affecting positive change will be behaviour change of the population, where individuals and communities make informed choices regarding their nutrition needs and the food they eat, and also changing to a healthy lifestyle which strongly compounds the benefits of healthy eating.

In the month of September, one would have heard and read a lot about 'POSHAN Maah' and nutrition. The aim of this article is to enhance the understanding of 'nutrition' and learn its importance, while also discussing some related aspects of nutrition and healthy eating.

What is Nutrition?

What do we know about nutrition? The definition given by the British Nutrition Foundation is: 'the study of nutrients in food, how the body uses nutrients and the relationship between diet, health and disease.' The other more comprehensive definition is –'nutrition is the intake of food, considered in relation to the body's dietary needs.' The important aspect to note here is the 'intake of food in relation to the body's dietary needs'. This implies that as the body's needs change, so should the diet i.e. a lifecycle approach should ideally cater to dietary needs of each stage. For example, nutrition needs of a child vary from that of an adolescent and those of an adult working person may vary from that of a geriatric individual. Good nutrition, an adequate, well balanced diet combined with regular physical activity, is considered to be a cornerstone of good health. Poor nutrition can lead to reduced immunity, increased susceptibility to disease, impaired physical and mental development, and reduced productivity.

This brings us to the next set of words which are results of improper nutrition, and termed as malnutrition. Malnutrition comprises both under-nutrition and over-nutrition and they both lead to their own set of disease conditions. In the realm of public health, we consider three terms which are the standards to measure under-nutrition i.e. stunting, wasting and under-weight; while over-nutrition is measured by incidence of overweight, obesity, and diet-related Non-Communicable Diseases (NCDs) comprising of heart disease, stroke, diabetes and cancer.

A stunted child is one whose height is lower than the standard height for the given age of child. Stunting is the result of long-term nutritional deprivation and often results in delayed mental development, poor school performance and reduced intellectual capacity. Also, women of short stature are at greater risk for obstetric complications because of a smaller pelvis. Further, small women are at greater risk of delivering an infant with low birth weight, contributing to the inter-generational cycle of malnutrition, as infants of low birth weight or retarded intra-uterine growth tend be smaller as adults.

Wasting is defined as a condition where the weight of the child is lower than the standard weight for the given height. Wasting in children is a symptom of acute under-nutrition, usually as a consequence of insufficient food intake or a high incidence of infectious diseases, especially diarrhoea. Wasting in turn impairs the functioning of the immune system and can lead to increased severity, duration of and susceptibility to infectious diseases and an increased risk for death.

On the other hand, underweight is a condition where the weight is lower than the standard weight for the given age of the child. Evidence has shown that children who are even mildly underweight have an increased risk of mortality and severely underweight children are at a greater risk of the same.

A child is considered to be over-weight when the weight is higher than the standard weight for the given age of the child. Childhood obesity is

associated with a higher probability of obesity in adulthood, which can lead to a variety of disabilities and diseases, such as diabetes and cardiovascular diseases. The risks for most NCDs resulting from obesity depend partly on the age of onset and the duration of obesity. Obese children and adolescents are likely to suffer from both short-term and long-term health consequences, the most significant being, cardiovascular diseases (mainly heart disease and stroke), diabetes, musculoskeletal disorders (especially osteoarthritis) and cancers of the endometrium, breast and colon.

Child growth is internationally recognized as an important indicator of the nutritional status and health in populations; the above-mentioned indicators are a direct measure of the same and subsequently, essential for our discussion here.

Nutrition Status

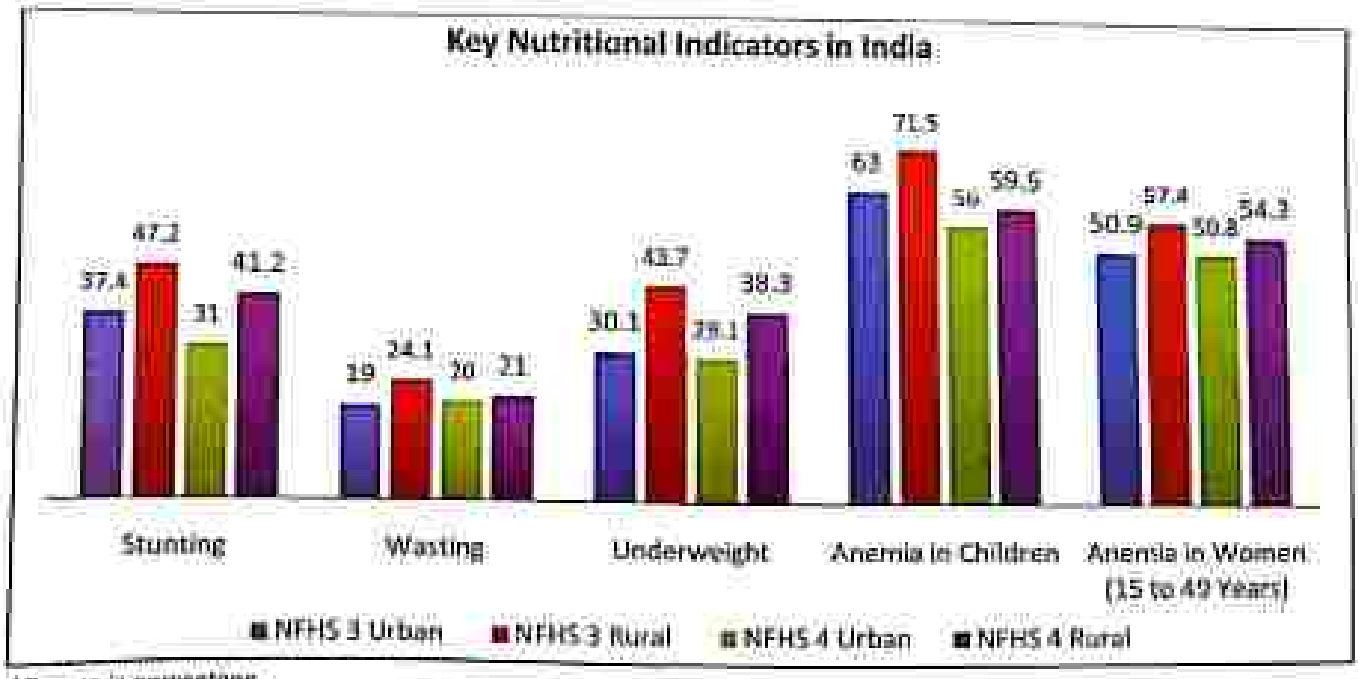
With a fairly clear understanding of the basics of nutrition terminology, let us glance at the global status of these indicators and more importantly, where does our country stand in comparison. Globally, 15.08 crore children under five years are stunted and 5.05 crore are wasted, as stated by the Global Nutrition Report 2018. In India, 4.66 crore children are stunted, and 2.55 crore are wasted. Also, India figures among the set of countries that have more than 10 lakh overweight children. Overall, of the 141 countries analysed in the report, 88 per cent (124 countries) experience more than one form of malnutrition. The developmental, economic, social and medical impacts of the global burden of malnutrition are serious and lasting, for individuals, their families, communities and for the countries that suffer from loss of productivity and therefore lower growth.

To understand the malnutrition status in India, let us look at the figure below, which gives a succinct snapshot of the same.

The critical issue that can be deducted from the figure is that even though little improvement can be observed from National Family Health Survey (NFHS)-3 to NFHS-4, the improvement is not on course to meet all nine global nutrition targets. Another important fact that comes through, is that more than 50 per cent of our children and adolescent women are anemic.

Initiatives by Government

As has been mentioned above, minor improvements have been observed between NFHS-3 and NFHS-4, which implies that the policies and initiatives of the Government are in the right direction and making an impact. The determinants of health comprise various factors across the socio-economic, cultural and behavioural realms. In the past few years, significant work has been done on several key



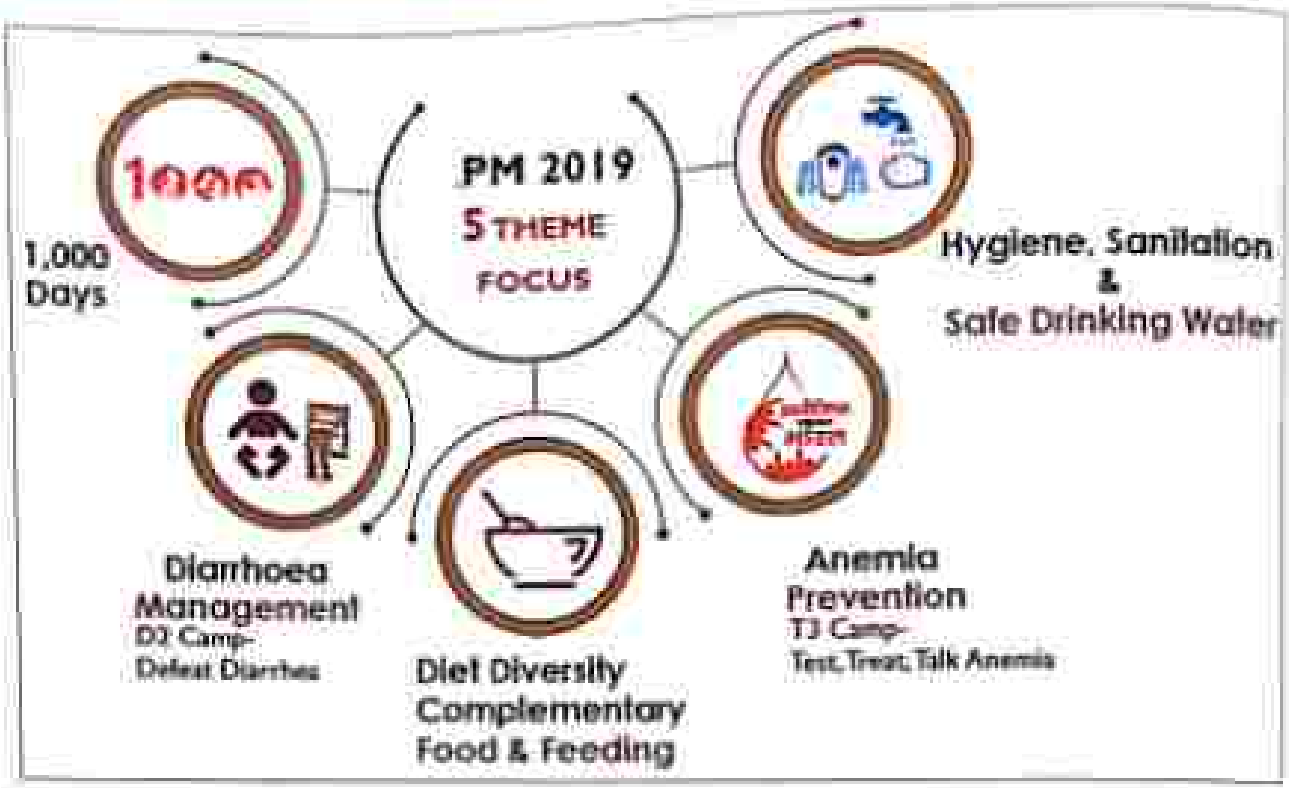
*figures in percentage

determinants of nutrition. The Swachh Bharat Mission focuses on creating Open Defecation Free (ODF) communities; this has significantly contributed to reduced incidences of diarrhoea and gut infections amongst children. The Pradhan Mantri Matru Vandana Yojana provides support to the pregnant women and lactating mothers and also encourages health seeking behaviour and immunisation. Mission Indradhanush, which targets the left out and missed out children and pregnant women for immunisation, is aimed on increasing the rates of complete immunisation of women and children. Mothers Absolute Affection (MAA), the exclusive breastfeeding initiative, is focused on increasing rates of exclusive breast feeding to reduce infection amongst children up to the age of 6 months. For children, adolescents and pregnant women, to manage nutrition issues, MoHFW also implements the Intensified Diarrhoea Control Fortnight (ICDF) programme, National Deworming Day (NDD) programme and the Pradhan Mantri Surakshit Matritva Abhiyaan (PMSMA). In September 2017, the cost norms for providing supplementary nutrition through anganwadis to pregnant women and lactating mothers, children and adolescent girls were revised and linked with the food price index. However, these are all individual and independent programmes run by separate Ministries and work has been carried out in silos. International experience has shown that converging initiatives such as these, with focus on areas with high malnourishment, accelerates the rate of reduction of malnourishment; and this was the genesis of the National Nutrition Mission (NNM). On the occasion of International Women's Day 2018, Prime Minister Shri Narendra Modi launched the NNM.

The NNM has been set up with a three-year budget of Rs. 9046.17 crore commencing from 2017–18. The NNM, since been renamed as POSHAN Abhiyaan, is a comprehensive approach towards raising nutrition level in the country on a war footing. POSHAN Abhiyaan targets to reduce stunting, under-nutrition, anaemia (among young children, women and adolescent girls) and low birth weight by 2 per cent, 2 per cent, 3 per cent and 2 per cent per annum respectively. Although the target to reduce stunting is at least 2 per cent per annum, POSHAN Abhiyaan would strive to achieve reduction in stunting from 38.4 per cent (NFHS-4) to 25 per cent by 2022 ("Mission 25" by 2022). More than 10 crore people will be benefitted by this programme. All states and districts will be covered in a phased manner i.e. 315 districts in 2017–18, 235 districts in 2018–19 and remaining districts in 2019–20.

The POSHAN Abhiyaan comprises mapping of various schemes contributing towards addressing malnutrition, including a very robust convergence mechanism, ICT-based real time monitoring system, incentivizing States/UTs for meeting the targets, incentivizing Anganwadi Workers (AWWs) for using IT-based tools for recording data/indicators, eliminating registers used by AWWs, introducing measurement of height of children at the Anganwadi Centres (AWCs), social audits, setting-up Nutrition Resource Centres (NRCs), involving masses through 'Jan Andolan' for their participation on nutrition through various activities, among others.

Community mobilisation and bringing about social behaviour change on nutrition is one of the biggest strategic components of POSHAN Abhiyaan. The community-based events are envisaged to improve linkage between community and front-line workers and by wide public participation these events can convert this into Jan Andolan to make "New India" as "Suposhit Bharat". In order to ensure awareness of health and nutritional behaviour among beneficiaries, the month of September (since 2018) has been celebrated as 'POSHAN Maah' (nutrition month) comprising a wide range of activities focussing on antenatal care, anaemia, growth and diet monitoring, education for girls, right age of marriage, hygiene and sanitation, and healthy eating etc. Last year, the entire range of themes were exhibited and showcased in the form of food melas, rallies, school level campaigns, anaemia test and treat camps, recipe demonstration, radio and TV talk shows, seminars, etc., across the country. As per reports, 23 lakh activities across the country were recorded on Jan Andolan Dashboard wherein approximately 27 crore people were made aware in a nationwide exercise, out of which one third were men. The themes of POSHAN Maah 2019 can be seen in the figure below:



As can be observed, the POSHAN Abhiyaan activities draw heavily on the services of the Frontline Health Workers (FLWs), the ASHAs (Accredited Social Health Activists) and ANMs (Auxiliary Nurse Midwives) as part of 1000 days care, diarrhoea management, anaemia testing etc., as they all involve the FLWs to reach the doorsteps of beneficiaries. Also, the programmes/activities of POSHAN Maah have components overlapping with the efforts of the Health Ministry. For these reasons, the two major Ministries made in-charge of the POSHAN Abhiyaan are the Ministry of Women & Child Development (WCD) and the Ministry of Health & Family Welfare (MoHFW). As part of POSHAN Abhiyaan, in addition to its existing programmes to manage malnutrition [Iron and Folic Acid (IFA) supplementation for all age groups, treatment protocol for facility-based management of anaemia, National Deworming Day (NDD), etc.], MoHFW also started the Anaemia Mukt Bharat (AMB) campaign. The AMB strategy focuses on testing and treatment of anaemia in school going adolescents and pregnant women using newer technologies, establishing institutional mechanisms for advanced research in anaemia, promoting consumption of fortified foods, and a comprehensive communication strategy including mass/mid media communication material. Anaemia Mukt Bharat strategy is focused on benefitting six target beneficiary groups, through six interventions and six institutional mechanisms to achieve the envisaged target of anaemia reduction under the POSHAN Abhiyaan. The operational guidelines of the strategy were released by the Prime Minister on 14 April, 2018 in Chhattisgarh.

Following is the snapshot (see on top of the next page) of the 6X6X6 AMB strategy:

The strategy includes:

- Provision of supervised biweekly iron folic acid (IFA) supplementation by the ASHA for all under-five children;
- Weekly IFA supplementation for 5–10 years old children;
- Annual/biannual deworming (children and adolescents);
- Point of care testing (POCT) and treatment for in-school adolescents and pregnant women using newer technologies;
- Establishing institutional mechanisms for advanced research in anaemia;
- Addressing non-nutritional causes of anaemia; and
- Setting a comprehensive communication

strategy including mass/mid media/social media communication material (radio and TV spots, posters, job-aids, inter-personal communication (IPC) material, etc).

During the POSHAN Maah (Sep 2018), 1,00,000 participants in the anaemia T3 (test, treat and talk) camps were recorded and during POSHAN Pakhwada (March 2019), 1.65 crore footfall was reported at the anaemia T3 camps and 48.14 lakh children were reached via Home Based Newborn Care (HBNC), pan India. As part of AMB success, 87.2 per cent pregnant women have been given 180 Iron and Folic Acid (IFA) tablets. To get information on this and other related indicators, as well as to monitor the progress under the AMB programme, the Ministry of Health & Family Welfare (MoHFW) has developed an online dashboard which can be accessed at https://anemiamuktbharat.info.

Conclusion

Nutrition is certainly a policy issue going beyond women and children alone, as the country has moved away from the selective emphasis of the MDGs to the more comprehensive SDGs. The increasing burden of communicable diseases as well as over-nutrition, are leading to complex policy challenges: for example, diabetes and hypertension prevalence are higher among men than women, although more women are overweight/obese. Recent surveys are showing that our country is facing the growing problem of the 'double burden' of under-nutrition and over-nutrition. The Government is trying to provide solution to this issue by increasing focus on preventive health i.e. provision of NCD screening services through the Ayushman Bharat - Health & Wellness Centres (AB-HWCs). The focus is on enhancing awareness around nutrition and healthy eating practices, and to make a shift to a healthy lifestyle too. Hence, while government policies and programmes are converging and taking steps to manage malnutrition, the most important factor affecting positive change will be behaviour change of the population, where individuals and communities make informed choices regarding their nutrition needs and the food they eat, and also changing to a healthy lifestyle which strongly compounds the benefits of healthy eating. As the tagline of POSHAN Abhiyaan states: Sahi Poshan Desh Roshan—a healthy population is the foundation rock of a healthy and productive nation.

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APPROPRIATE NUTRITION FOR WOMEN AND CHILDREN

Santosh Jain Pasi

Appropriate nutrition and good health are important contributors to human resource development. Long-term malnutrition leads to stunting, wasting, non-communicable diseases (NCDs), increased morbidity and mortality as well as reduced work capacity; all these are responsible for causing huge economic losses to the country. Since widespread malnutrition is largely due to dietary inadequacies, household dietary patterns need to be improved—both in terms of quantity and quality—by incorporating a variety of foods. Thus, an appropriately well balanced diet comprising a variety of foods needs to be advocated to the masses.

Irrespective of age, gender, class and creed, appropriate nutrition is of utmost importance for everyone for maintenance, growth and well being. This becomes all the more important for children due to their rapid growth and development; and for women since they bear children as well as feed them during their early life. Hence, we need to ensure a regular intake of all the essential nutrients in adequate amounts for maintaining proper physical and mental health of women and children.

Our nutrient needs are affected by age, gender, physical activity, body composition, growth rate, physiological stress, pathological conditions and many other factors.

Indian Council of Medical Research (ICMR, 2010) has laid down the recommended dietary allowances for various nutrients for Indians of all age and gender groups which have been listed in table-1.

In general, we often see that men in the household are given a greater preference in terms of quality and quantity of food; and the nutrition of women is usually neglected even though their nutritional needs are not very different as evident from Table 1 (ICMR, 2010). Though energy needs of women are a little lower (about 80 per cent as compared to men because of the difference in their body weight and body composition—men being taller and heavier); their protein and various micro-nutrient needs (except for thiamine, riboflavin and niacin, where the needs depend on energy requirements, and for zinc) are either more or less equal to, or in some cases even higher (like iron) than that of the men. For a better understanding, comparison of the nutrient requirements of moderately active adult men and women has been depicted in the bar graph (see Fig. 1).

This clearly highlights that the diets of women also need to be nutritionally adequate which further attains a greater significance in view of their reproductive role. Periods of pregnancy and lactation, being associated with increased nutrient needs of women, drain their body's nutrient stores to a great extent leading to numerous nutritional deficiencies. Since the mother's nutritional status, both prior to and during pregnancy, impacts foetal growth and development; it is important for the mother to be nutritionally, physically and emotionally sound. Numerous researches have indicated that the developmental failures of a foetus or an infant or a child, more so that of the girl child, are perpetuated for generations. Therefore, to break the inter-generational cycle of malnutrition, it is of prime importance to provide appropriate nutrition to the girl child as well as the women, particularly so during pregnancy and lactation.

Small and undernourished baby girls grow up to become small mothers who often deliver low birth weight infants with developmental deficits. The main cause being mothers' poor nutrition and health status, particularly during pregnancy. The effect of under-nutrition on cell numbers (hyperplasia that takes place early in pregnancy) is permanent while that on the cell size (hypertrophy) is reversible.

When a well-nourished woman (prior to or at the time of conception) enters pregnancy with good nutrient reserves, she is better able to meet nutritional needs of the growing foetus, particularly

Table 1 : Recommended Dietary allowances of various Nutrients for Indians

Group (gender/ activity)	Body Weight* (kg)	Energy (kcal/d)	Protein (g/d)	Vitamin A/d (µg/d)	Calcium (mg/d)	Iron (mg/d)	Zinc (mg/d)
MEN							
Sedentary workers	60	2320	60	25	600	17	12
Moderate workers	60	2730	60	30	600	17	12
Heavy workers	60	3490	60	40	600	17	12
WOMEN							
Sedentary workers	55	1900	55	20	600	21	10
Moderate workers	55	2230	55	25	600	21	10
Heavy workers	55	2850	55	30	600	21	10
Pregnant Woman	**	+ 350	78	30	1200	35	12
Nursing Mothers (0 – 6 m)	**	+ 600	74	30	1200	21	12
Nursing Mothers (6 – 12 m)	**	+ 520	68	30	1200	21	12
INFANTS							
0 -6 month (Boys/ Girls)	5.4	92 kcal/ kg	1.16 g/ kg	-	500	40 mcg/ kg	–
6 -12 month (Boys/ Girls)	8.4	80kcal/ kg	1.69 g/ kg	19	500	05	–
CHILDREN							
1–3 year olds (Boys/ Girls)	12.9	1060	16.7	27	600	09	5
4–6 year olds (Boys/ Girls)	18.0	1350	20.1	25	600	13	7
7 – 9 year olds (Boys/ Girls)	25.1	1690	29.5	30	600	16	8

** 55 kg pre-pregnancy body weight

during the first trimester. Thereafter, her diet should be modified to meet the enhanced nutrient needs. During pregnancy, an adequate gestational weight gain is important to support proper growth and development of the foetus for which again appropriate nutrition of the woman is an important factor. Poor maternal weight gain during the 2nd and/or 3rd trimester increases the risk for intra-uterine growth retardation (IUGR). Fundal height and abdominal girth are other indicators of intra-uterine growth of the foetus. Further, short inter-pregnancy intervals greatly influence preparedness of the mother's body for the next pregnancy as well as impact the pregnancy outcome.

Teenage pregnancy among adolescent girls poses double burden—the nutritional burden of adolescence along with that of the pregnancy—and it often results in dire consequences.

Due to pubertal growth spurt and the accompanying changes, nutrient requirements of adolescents are greatly enhanced. Next to infancy, adolescence (10-19 years) is the only period in life cycle when growth rate is rather rapid.

Iron Deficiency Anaemia, which is most widespread among pregnant women and nursing mothers, poses severe consequences such as maternal mortality, pre-term deliveries

Men, Women, Infants and Children *(ICMR, 2010)*

Magnesium (mg/d)	Vitamin A (µg/d)		Thiamine (mg/d)	Riboflavin (mg/d)	Niacin (mg/d)	Pyridoxin (mg/d)	Folic acid (µg/d)	Cyanocobalamine (µg/d)	Vitamin C (mg/d)
	Retinol	β-carotene							
340	600	4800	1.2	1.4	16	2.0	200	1.0	40
340	600	4800	1.4	1.6	18	2.0	200	1.0	40
340	600	4800	1.7	2.1	21	2.0	200	1.0	40
310	600	4800	1.0	1.1	12	2.0	200	1.0	40
310	600	4800	1.1	1.3	14	2.0	200	1.0	40
310	600	4800	1.4	1.7	16	2.0	200	1.0	40
310	800	6400	+ 0.2	+ 0.3	+2	2.5	500	1.2	50
310	950	7600	+ 0.3	+ 0.4	+ 4	2.5	300	1.5	80
310	950	7600	+ 0.2	+ 0.3	+ 3	2.5	300	1.5	80
30	350	-	0.2	0.3	710mcg/kg	0.1	25	0.2	25
45	350	2800	0.3	0.4	650mcg/kg	0.4	25	0.2	25
50	400	3200	0.5	0.6	8	0.9	80	0.2 to 1.0	40
70	400	3200	0.7	0.8	11	0.9	100	0.2 to 1.0	40
100	600	4800	0.8	1.0	13	1.6	120	0.2 to 1.0	40

Source: Indian Council of Medical Research (ICMR), 2010.

and infant mortality. Similarly folic acid deficiency is associated with spontaneous abortions and obstetric complications (like preterm/LBW deliveries). In early pregnancy, folic acid deficiency is associated with an increased incidence of congenital malformations leading to neural tube defects (NTDs) like Spina Bifida, Hydrocephaly and Anencephaly. Hence, all women of child-bearing ages should increase their folic acid intake much before conception.

On the contrary, well-nourished women not only give birth to healthier babies with fewer complications, but also build up ample stores for meeting the enormously high nutrient needs of lactation as well as that for their next pregnancy/pregnancies.

Like pregnant women, adequate nutrition for nursing mothers is also vital. As per the National Guidelines on Infant and Young Child Feeding (2006), all infants should be exclusively breastfed for the first six months of life (180 days); and thereafter, along with complementary feeding, breastfeeding should be continued at least up to two years or beyond. Therefore, these mothers need extra nutrients for adequate breast milk production so as to meet the baby's requirements. Any inadequacies in maternal diet influence both the quantity and quality of breast milk. Well-nourished mothers, on an average, may secrete nearly 850 ml of breast

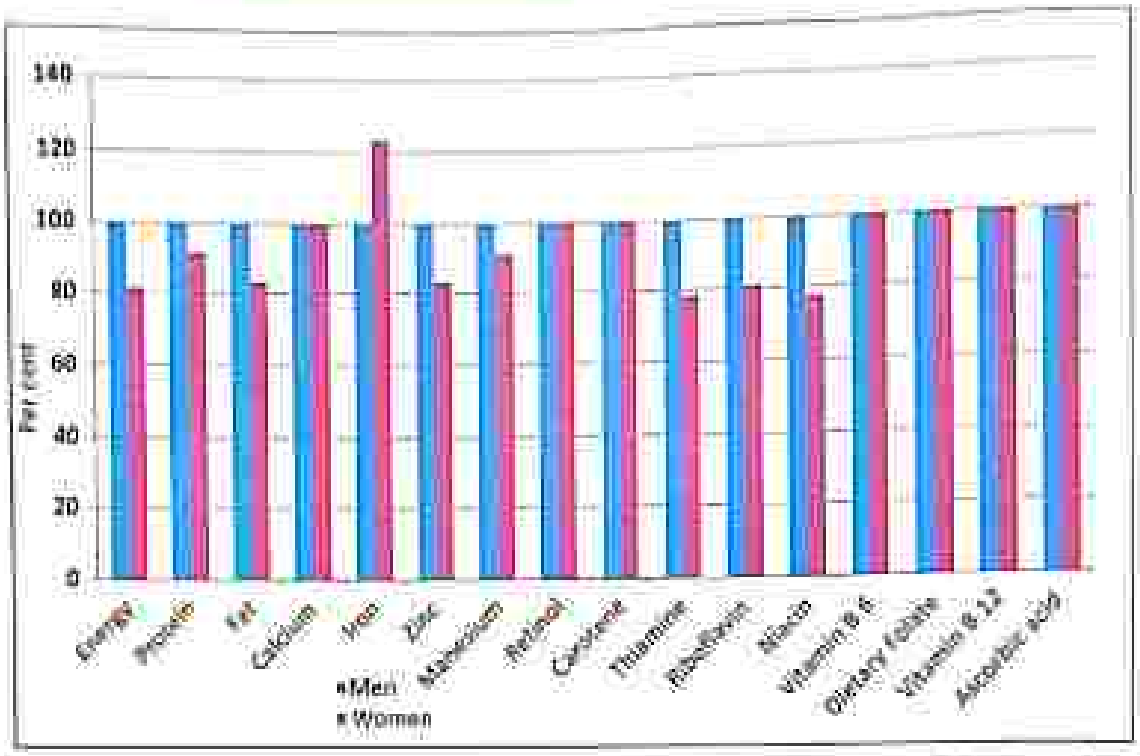

Fig. 1: Percent Difference in the Nutrient Needs of Moderately Active Adult Men and Women (Taking the requirements of adult men as 100 percent)

milk/day; while in severely malnourished ones, the level may go down to as low as 400ml/ day. With respect to quality, the mother has an excellent ability to successfully breastfeed her baby, even when the diet is inadequate to meet her own needs. In such cases, the mothers draw on their body's nutrient reserves to meet the demands of lactation at the cost of their own health. However, the dietary deficiency of water soluble vitamins (ascorbic acid and B-group vitamins) leads to lowered levels of these vitamins in the breast milk. Thus for promoting lactation, the importance of good nutrition for the nursing mother cannot be over emphasised.

The mother's milk is a complete food and is uniquely adapted to meet the metabolic requirements of the new born(s). Breastfeeding is, thus, the natural way of providing nourishment to the baby, which also helps him/ her to adapt to the drastic change from a fully dependent-cum-secure intra-uterine environment to the independent and hostile extra-uterine life.

Breast milk is not only easy to digest but it is highly nutritious and provides immunity to the infant protecting him/ her against various infections and diseases. Breast (human) milk contains substantial amounts of n-3 and n-6 essential fatty acids which are needed for neural growth and brain development, leading to cognitive development during early months of life.

Thus, compared to the formula fed, breastfed infants have a better visual acuity, finer motor skills and cognition, including earlier language development.

Dietary adequacy for women is of immense importance; and this needs to be taken care of not only after marriage but even during adolescence and rather childhood. Therefore, a girl child's nutrition and care, right from birth onwards, should attain top priority so that the inter-generational cycle of malnutrition can be disrupted.

However, the nursing mothers —particularly the new mothers, need to be advised regarding the correct method of breastfeeding.

In India, the women's diet is given the lowest priority and they being the care takers of the family, eat last and very often the least. Hence, nutrition of women should be accorded, if not greater, at least an equal importance; and this needs to be taken care of by the rest of the family members. Women themselves, particularly

during pregnancy and lactation, need to be educated to take care of their diets—both in terms of quantity and quality—not only for themselves but for the child yet to be born (the growing foetus) and the young child who is totally dependent on the mother particularly during his/her early life.

In the case of infants, the mucous membrane of gastrointestinal tract (the protective barrier) is immature; and hence they are at a far greater risk of acquiring infections.

Similarly, as early infancy is a delicate period of growth and development, optimal nutrition is crucial during this phase for laying the foundation for lifelong health and well being of the individual. A full-term baby has the ability to digest simple proteins/carbohydrates and emulsified fats. However, after the age of six months, the infant acquires an ability to produce various enzymes to digest food as well as the antibodies to provide him/her protection against infections. Although, because of rather high proportion of body water, conditions like diarrhoea and vomiting make an infant rather prone to dehydration; and in severe cases, it may even prove fatal. The fact that the breast milk is tailor made as per the infant's ability to digest highlights the importance of exclusive breastfeeding right from birth till six months postpartum.

During the first 5–6 months after birth, there is a rapid increase in the number of brain cells (neurons) which continues till the second year of life—though at a slower rate. Thus during this period, any kind of malnutrition/ under-nutrition, particularly that of the micronutrients like iron, iodine, zinc and others; can affect his/her brain development leading to mental retardation and poor cognition. That is why the nutrition of children under two years of age has attained a higher priority, and currently the prime most emphasis is on the first 1,000 critical days (from conception till 2 years of age; ~270 days prenatal + 730 days post natal life). Proper care and attention coupled with targeted interventions during this period can have a profound impact on the child's growth and development as well as it can help in breaking the inter-generational cycle of malnutrition. Thus, this period is of great significance for laying a healthy foundation for the child's proper growth and development.

Currently, there is profound emphasis on the first 1,000 critical days for laying healthy foundation for the child's proper growth and development.

Further, complementary feeding must be started in time and it should be ensured that the complementary foods provide sufficient energy, protein and various micronutrients to meet the growing child's nutritional needs. The infants are highly vulnerable during this transition phase (from exclusive breastfeeding to the introduction of complementary foods), thus, maintenance of proper hygiene/sanitation needs to be given a top priority. The complementary foods should be prepared, stored and fed hygienically (bottles/teats prohibited).Optimal breastfeeding and complementary feeding practices together can significantly reduce the under-five mortality rates (U5MR) from various infections like diarrhoea and pneumonia.

Since 1992, India has been celebrating the World Breastfeeding Week (WBW) from 1–7 August every year. Similarly, since 1982, Nutrition Week (1–7 September) and now Nutrition Month (1–30 September) are being celebrated every year for drawing everybody's attention to the important aspects relating to these areas of prime significance.

It is extremely important to provide optimal nutrition to infants and children but regular growth monitoring is also necessary since it indicates whether the child's growth and development is proper or not. It also highlights the potential nutrition/health related problems much earlier than their manifestation.

On the basis of unit body weight, nutrient needs of the infants and young children are the highest compared to any other age/gender group (see Fig. 2). This needs to be reinforced again and again in the minds of the mothers, fathers and the other child care takers who generally ignore their growing needs. It is commonly believed that the children are small and so are their nutrient needs; hence the young infant/child is not fed optimally. This often causes malnutrition leading to poor physical growth and compromised mental development, invariably

Fig. 3: Nutrient Needs of Men, Women, Infants and Children

with irreversible changes. Hence, infant and young child nutrition should be given utmost importance and the appropriate IYCF (Infant and Young Child Feeding) practices should be followed.

For proper growth and development, adequate nutrition is important during childhood too. Since the rate of growth is not as rapid as that during infancy or even adolescence, their nutrient needs expressed on the basis of per kg body weight, particularly the energy needs, are comparatively lower than the infants (see Fig. 2). During this period, many of the food habits, likes and dislikes, are established which influence their food behaviours and eating pattern, some of which may even become the problem issues in their later life. With careful understanding and meticulously dealing, healthy eating habits can be promoted among this age group. Addressing the

nutritional needs of children involved in sports is extremely important for their optimal growth and development.

It is extremely important to inculcate healthy eating habits during childhood itself which can then be sustained during adulthood. Adoption of healthy eating habits will help children to follow healthy lifestyle not only during childhood, but lifelong. The dual burden of malnutrition (under-nutrition as well as overweight/obesity) needs to be addressed right during childhood itself.

During infancy and childhood, in view of their small stomach capacity and comparatively high nutrient/energy needs, emphasis should be laid on energy dense and nutritious foods without increasing the bulk. The practice of giving them finger foods should be promoted and they should be fed small amounts at frequent intervals.

Long-term malnutrition leads to stunting, wasting, non-communicable diseases (NCDs), increased morbidity and mortality as well as reduced work capacity; all these are responsible for causing huge economic losses to the country.

Since widespread malnutrition is largely due to dietary inadequacies, household dietary patterns need to be improved—both in terms of quantity and quality—by incorporating a variety of foods; in other words Dietary Diversity needs to be boosted. Increasing the variety of foods helps to ensure adequate intake of essential nutrients for promoting good health. Thus, an appropriately well balanced diet comprising a variety of foods needs to be advocated to the masses. Appropriate nutrition coupled with adequate physical activity is the best recipe for maintaining good health and fitness!!

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Ministries of Health and WCD Identify Areas of Convergence for Enhancing Nutrition, and Health of Women and Children

Dr. Harsh Vardhan, Union Minister of Health and Family Welfare and Smt. Smriti Zubin Irani, Union Minister for Women & Child Development and Textiles identified areas of enhanced convergence and collaboration for meeting goals for nutrition and health of women and children to achieve the global goal for health and nutrition, in a recently held at Nirman Bhawan in New Delhi.

Laying out the context of the meeting, Dr. Harsh Vardhan said, "We are committed to Universal Health Coverage. Our policies and programmes are directed towards making sure that every mother, every child and every adolescent survives and thrives". He added that under-nutrition and other social determinants are closely associated with maternal-child survival and development and since these issues are also a concern for WCD, this is a pertinent area of enhanced collaboration for the two Ministries.

After the extensive meeting, the Union Health Minister stated that the two Ministers have jointly agreed that both Ministries need to work on developing common and standard IEC material and joint campaigns, including in vernacular languages, on several schemes which have similar goals. The aim is to help the beneficiaries with the details of the schemes, and where and how to avail of these. Using common channels of dissemination through the frontline health workers of the Health Ministry and the anganwadi workers of WCD was also discussed, as they are the best ambassadors working very closely within the communities. In addition, a joint working group to identify the areas of collaboration, define how common activities will be taken up at the ground level, develop standard communication package, define benchmarks which both Ministries have to achieve together, identify areas of research was discussed. The Union WCD Minister Smt. Smriti Zubin Irani also proposed that WCD would support Department of Biotechnology (DBT) of the Ministry of Science and Technology, to establish 10 chairs in National Institutes to celebrate women in STEM (Science, Technology, Engineering, and Mathematics). Similar support from Ministry of WCD for supporting and encouraging women in the field of innovation and medical research was also discussed.

(Source: PIB)

EDUCATING MASSES ON HEALTH AND NUTRITION

Akanksha Jain

Changing foods habits with reduced physical activity is a growing phenomenon around the world. People are consuming more foods high in energy, saturated fats, trans fats, free sugars, salt/sodium; and less of fruits, vegetables and dietary fibre such as whole grains/pulses. Nutritious food is a vital cornerstone of health. Health/nutrition awareness needs to be imparted to provide knowledge and skills regarding relationship between good diet, physical activity, and health.

There is a consistent rise in the problems of undernutrition, micronutrient deficiencies, obesity and diet-related chronic diseases across the globe. Energy/nutrient imbalance may result in poor physical and cognitive development, morbidity and mortality as well as multitudinous loss of human potential, thus, affecting social/economic development. Many developing nations including India are presently dealing with severe health concerns at both ends of the nutrition spectrum bearing dual burden of malnutrition. Malnutrition, according to the World Health Organization (WHO), refers to deficiencies, excesses, or imbalances in a person's intake of energy and/or nutrients. While hundreds of millions suffer from chronic degenerative diseases caused by excessive or unbalanced diets, countries are still struggling to feed the population as well as facing the costs of preventing obesity and treating diet-related non-communicable diseases (NCDs).

Article 47 of the Constitution states that it is the "duty of the state to raise the level of nutrition and the standard of living and to improve public health."

Socio-economic/industrial development coupled with lifestyle changes have led to a drastic shift in disease pattern from communicable to non-communicable diseases. In addition, disparity in social justice/equity adds to the existing concerns. Due to several factors, the curative treatment of these diseases remains inaccessible to the masses and its prognosis is often lacking. In the current scenario, a paradigm shift from curative to preventive approach to disease is a prerequisite at individual as well as mass level. To address the health determinants of NCDs, a healthy diet/environment needs to be created for all the sectors; and is the most effective way for meeting the challenges. Further, health promotion approach is envisaged to empower the population to take well informed and rational health-related choices. Effective communication strategies for generating awareness and greater community engagement using locally available resources/technology supported with healthy policies is need of the hour. Health promotion and nutrition interventions have been proven by researches to be highly effective in addressing various social, economic and environmental determinants of health. Mass media and other modes of media need to be widely used to disseminate knowledge and create awareness for influencing the nutrition/health related behaviour of populations.

The Goal of 'Health & Nutrition for All' is attainment of the highest possible level of good health/well being and good nutrition through population based approach of integrated health. Nutrition is a science involving the interaction of nutrients and other compounds present in food like

anthocyanins, tannins, antioxidants, phytonutrients, etc., in relation to growth, maintenance, reproduction, health and disease condition of an individual. Good nutrition implies consumption of appropriate amount of nutrients from healthy foods in the right combinations. Regular physical activity is also essential for maintaining health and preventing diseases.

Nutrition constitutes the very foundation of human development by imparting immunity and, thus, reducing morbidity, mortality and disability. In addition, it promotes lifelong learning capacities and enhanced productivity. Economic development has a very petite effect on curbing childhood malnutrition and, therefore, specifically recommended investments and actions including, health/nutrition education, awareness campaigns on child feeding practices (including breastfeeding), balanced diets, proper health, hygiene, dietary diversification, micronutrient supplementation, biofortification and disease prevention need to be regularly organized. Nutrition is a double-edged sword – both under and over nutrition being harmful. Hence, optimum nutrition coupled with regular physical activity is the cornerstone of good health!!

India has been in the forefront for developing food and nutrition databases including the Indian Food Composition Tables, 2017 and undertaking research studies/surveys detailing agriculture, food and nutrition transitions. Our country has also been investing in numerous nutrition intervention programmes to improve food and nutrition security of the masses, thereby meeting the nutrient gap among vulnerable sections of the society. Consistent efforts are vested for improving the ongoing nutrition interventions, converging existing schemes/ programmes, launching newer ones—all aiming at prevention, early detection, and effective management of addressing malnutrition in the nation. Numerous programmes and schemes have been implemented for improving health/ nutrition as well as combating malnutrition by the Government of India.

Nutrition and health education has been recognised as an important tool for nutrition promotion and perhaps the most cost-effective tool for improving the quality of life and development of the community and the nation. Realising the importance of integrated approach to health/ nutrition education, government organises training of grassroots level functionaries belonging to concerned sectors like agriculture, health, women & child development, education, rural development, etc. at village/block level.

POSHAN Abhiyaan (National Nutrition Mission) is India's flagship programme, launched in March 2018 for improving nutritional status of children up to 6 years, adolescent girls, pregnant women and lactating mothers to achieve specific targets for reducing low birth weight babies, stunting, undernutrition and anaemia over next three years.

POSHAN Abhiyaan is a Jan Andolan and Bhagidaari, implying "People's Movement". To give momentum to POSHAN Abhiyaan, on July 24, 2018 National Council on India's Nutrition Challenges decided to celebrate September as Rashtriya Poshan Maah. During this month, activities related to nutrition awareness are carried out by all the states/UTs up to the grassroots level. POSHAN Abhiyaan intends to increase nutrition awareness among mothers of young children, adolescent girls, pregnant and lactating women, family members (husbands, father, mothers-in-law) and community members, health care providers (ANM, ASHA, Anganwadi workers) about key nutrition behaviours.

Pradhan Mantri Swasthya Suraksha Yojana (PMSSY) was launched in 2003 for improving regional imbalances in the availability of affordable and reliable tertiary healthcare services as well as augmenting facilities for providing quality medical education.

National Health Mission (NHM) encompasses two sub-missions, the National Rural Health Mission (NRHM) and the National Urban Health Mission (NUHM). The main programmatic components include Health System Strengthening, Reproductive-Maternal- Neonatal-Child and Adolescent Health (RMNCH+A), and Communicable and Non-Communicable Diseases. The NHM aims at attaining universal access to equitable, affordable and quality health care services that are accountable and responsive to people's needs.

National Healthcare Innovations Portal is an endeavour to pool-in and showcase innovative programmes, designs, practices, technology solutions and products across public and private healthcare sector of India.

Ayushman Bharat – Health and Wellness Centres attempts to move from a selective approach to health care towards delivering comprehensive range of services including preventive, promotive, curative, rehabilitative and palliative care. It has two components:

- Under its first component, 1.5 lakhs Health & Wellness Centres (HWCs) are being created to deliver Comprehensive Primary Health Care, which is universal and free for users, focusing on wellness and delivery of a wide range of services to the community (care for NCDs, palliative/rehabilitative care, oral, eye and ENT care, mental health and first-level care for emergencies/trauma, free essential drugs and diagnostic services).
- The second component is the Pradhan Mantri Jan Arogya Yojana (PM-JAY) which provides health insurance cover of Rs. 5 lakhs per year to over Rs. 10 crore to poor and vulnerable families for seeking secondary/tertiary health care.

Mera Aspatal (My Hospital) is a Ministry of Health initiative to receive patient feedback for the services received at the hospital through user-friendly multiple channels such as Short Message Service (SMS), Outbound Dialling (OBD) mobile application and web portal. It aims at helping the government to take appropriate decisions for enhancing the quality of healthcare delivery across public facilities, thereby improving the patient's experience.

To further intensify the immunization programme, Prime Minister Shri Narendra Modi ji launched the Intensified Mission Indradhanush (IMI) on October 8, 2017. The programme aims at reaching each and every child up to 2 years and all those pregnant women who have been left uncovered under the routine immunization programme/UIP.

Ministry of Health and Family Welfare (MoHFW) has adopted a strategy of organising Health Melas to provide health education and early diagnosis besides providing health care services completely free of cost. These Health Melas are envisaged to attract citizens desiring to avail quality health care services with essential pathological tests/medicines. The Melas are a potent vehicle in informing people about the various health programmes being carried out by the Central Government, State Government, NGOs, etc., and the different systems of medicine (Allopathy, Homeopathy, Ayurveda and Unani etc).

The 'Eat Right India' movement incorporates mass media, including social media, as part of its outreach to generate public awareness. Eat Right India initiatives includes a logo demonstrating the components of an optimal diet; training for frontline healthcare functionaries; an online retailer promoting healthy diets; and online quizzes to raise awareness regarding appropriate nutrition.

Further, food and nutrition education in the school/college settings can provide children, adolescents, school staff and communities with learning experiences designed to encourage healthy eating habits and other positive health and optimum nutrition-related behaviours. It is important to use a combination of evidence-based and behaviourally focused educational strategies that involve active participation of students, school/college staff and the wider community. Guidance on implementing a health-oriented, food/nutrition curriculum should be established at national level to ensure a defined role for health and nutrition in the national education system. However, schools should be permitted to adapt and prioritize elements of the curriculum as per the local scenario, availability of the resources as

well as the population needs. Health, food and nutrition education can offer myriad benefits. Researchers have widely documented that health education can have positive impacts on the micronutrient status of populations and in the prevention of obesity. According to FAO (2010, 2013), by linking the curriculum to local food cultures and biodiversity, the elements of cultural preservation and environmental sustainability can be effectively incorporated into a more integrated approach. Connecting food and nutrition education to healthy school meals also help students and their families to experience elements of the curriculum, like ways of eating diverse, nutritious foods, incorporating local food practices/cultures and reaping the benefits of using locally grown foods.

School/college/kitchen/community gardens can further help to improve the nutritional status of individuals and their families. Masses need to be educated to grow, harvest and prepare nutritious seasonal produce in their local settings. This will in turn promote the environmental, social, and physical well being of the communities, thereby fostering a deeper understanding of nature's sustainability. Further, links with home gardens may reinforce the concept and pave the way for an exchange of knowledge and experience between schools/colleges and the community as well as learning about healthy eating and lifestyle habits.

Implementing food/nutrition and health education programmes allow students to gain lifelong knowledge and skills which is inter-generational having a reverberating impact. Teachers, school/college staff, students, parents, caterers, food vendors and farmers can be the nutrition-and health behaviour change agents—all having an important role to play in promoting positive health/nutritional behaviour. For this, it is paramount to develop capacity of these change agents and equipping/training them with the appropriate knowledge/skills regarding good health, nutrition, hygiene, sanitation, healthy diets, lifestyle, etc. A positive step that is being taken by several countries and is planning to be implemented in India too is banning the sale or serving of junk food/sugar-sweetened beverages in school/college cafeterias and stores in and around school premises to promote healthy food/drinking water.

Health-oriented/food and nutrition based educational interventions have the potential to directly improve positive behaviours among masses. The interventions should be based on national food-based dietary guidelines, promoting dietary diversity, including the utilization of traditional, neglected, and underutilized foods, incorporating fortified foods/nutrient supplements if the nutrient gap cannot be filled elsewise and enhancing biodiversity conservation and environmental sustainability.

All health and nutrition interventions should be designed for long term sustainability. Stakeholders across all levels needs to be kept well informed and encouraged to participate; creating a support system and interdependence, from the local level to the intermediate levels of government/private sector to government ministries, national/international organizations and partners.

In order to report a progressive improvement in the health/nutrition status of the population, it is essential that people are educated to adopt and practice a healthy lifestyle. Lack of awareness and poor health-seeking behaviour has been found to be the major underlying causes of many chronic diseases, which can be prevented by early diagnosis, providing health-education, timely referral and management. Various studies have clearly suggested that early diagnosis and prevention can have significant positive impact on reducing morbidity and preventable mortality.

There is a dire need for academicians to prioritise educational interventions on optimal dietary practices and cost-effective policies; monitor and evaluate positive health indicators and policy outcomes; engaging with communities, advocacy groups, media, policy makers; and regularly evaluating the ongoing interventions. Health systems, doctors/clinicians need to implement strategies on patient behaviour change; advocate for comprehensive changes in health systems to support these interventions; and engage with local communities. Employers, communities, schools, hospitals, and religious bodies need to implement organisational strategies for healthy eating. Various advocacy groups/NGOs need to join hands with scientists to disseminate best health/nutrition related practices to the masses. Dietary guidelines need to be promoted across the population.

Health/nutrition awareness needs to be imparted to provide knowledge and skills regarding relationship between good diet, physical activity, and health; safe food preparation/consumption; identifying barriers to make healthy food choices and solutions to overcome those barriers; providing media and marketing literacy to the masses, especially regarding misleading food choices.

Changing foods habits with reduced physical activity is a growing phenomenon around the world. People are consuming more foods high in energy, saturated fats, trans fats, free sugars, salt/sodium; and less of fruits, vegetables and dietary fibre such as whole grains/pulses. Nutritious food is a vital cornerstone of health. Therefore, food should supply necessary nutrients in appropriate quantities to meet the body's needs. Nutrition is related to improved infant, child and maternal health, stronger immune system to fight diseases, safer pregnancy and childbirth, lower risk of NCDs (such as diabetes, stroke and cardiovascular disease) and improved longevity. Both excess and deficiency of nutrients are equally harmful and have long lasting adverse effects on individual, family and community health. Thus, it is of utmost importance to address this issue effectively and make the community aware of the importance of good health and optimum nutrition. Good nutrition, regular physical activity and adequate sleep are the essential prerequisites of healthy living. A holistic approach is needed to promote the concept of optimum nutrition in the entire nation. Multi-sectoral innovative approaches are needed to involve all age groups covering all sections of the society, keeping in view cultural diversity in food habits/practices and purchasing power parity to make people cognizant of healthy nutrition. Appropriate initiatives need to be taken right from childhood in schools, child-care centres and in the families, so that foundation stone of healthy eating habits and good health is laid at the right age and can be transmitted well in future generations too.

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ROLE OF ANGANWADI WORKERS AND ASHAs IN CURBING MALNUTRITION

Sonh Aggarwal

Anganwadi Workers and the ASHA workers are the grassroots level functionaries under the umbrella ICDS Scheme and the National Health Mission respectively. Both these functionaries being closely connected with the rural and urban poor families, play a pivotal role in addressing their nutrition and health related problems/issues.

India persistently faces high levels of maternal and child under-nutrition as well as anaemia, characterized by an inter-generational cycle that is compounded by multiple deprivations caused by poverty, social exclusion and deeply entrenched gender discrimination. Decreasing child mortality and improving maternal health depend on reducing malnutrition which is directly or indirectly responsible for 35 per cent of deaths among children under five.

Malnutrition refers to deficiency, excess or imbalanced intake of energy and/or important nutrients by an individual as compared to his/her needs. The term malnutrition covers "under-nutrition" that includes underweight (low weight for age), stunting (low height for age) and wasting (low weight for height), as well as micronutrient deficiencies/insufficiencies (a lack of important vitamins/minerals) and overweight, obesity and diet-related non-communicable diseases (like heart disease, stroke, diabetes and cancer).

Under-nutrition in infants and children is further categorized as Severe Acute Malnutrition (SAM) and Moderate Acute Malnutrition (MAM).

- **Severe Acute Malnutrition (SAM)** refers to very low weight for height (< 3z scores of the median), visible severe wasting, or the presence of nutritional oedema.
- **Moderate Acute Malnutrition (MAM)** is defined as a weight-for-age between -3 and -2 z-scores below the median. It can be due to a low weight for height (wasting) or a low height-for-age (stunting) or to a combination of both. Similarly, moderate wasting refers to weight-for-height between -3 and -2 z-scores while moderate stunting refers to height-for-age between -3 and -2 z-scores.

Underweight children have lower weight-for-age than their reference growth standards (median). An underweight can be stunted, wasted, or both.

Stunting refers to impaired growth and development of the children due to poor nutrition, repeated infections and inadequate psychosocial stimulation. Children with height-for-age below minus 2 standard deviations (<-2 SD) of the reference values are defined as stunted.

Wasting in children is an indicator of acute under-nutrition, usually as a result of insufficient food intake or a high incidence of infectious diseases, particularly diarrhoea. On the other hand, wasting impairs immune system of the child which may not only lead to increased susceptibility to infections/diseases but the severity and duration of morbidity is also enhanced; and very often an elevated risk of mortality too.

As per the recent National Family Health Survey (NFHS-4, 2015–16), 35.7 per cent children (aged <5 years) were reported to be underweight and 38.4 per cent stunted. The corresponding data from the previous survey (NFHS-3, 2005–06) indicates that 42.5 per cent children were underweight and 48 per cent stunted. This clearly shows that during the last decade there has been some reduction in the incidence of underweight and stunting.

A comparison of the data from Comprehensive National Nutrition Survey (CNNS), NFHS-4 and

NFHS-3 (see Table-1) also indicates that over the years India has registered an improvement in the nutritional indicators of the young children.

Table-1: CNNS, NFHS-4 and NFHS-3 data on nutritional indicators of children (0-59 months)

Indicator	CNNS (2016-18)	NFHS-4 (2015-16)	NFHS-3 (2005-06)
Wasting	17 per cent	21 per cent	25 per cent
Stunting	34.7 per cent	38.4 per cent	48 per cent
Under-nutrition	33.4 per cent	35.7 per cent	42.5 per cent
Anaemia in children (age <5 years)	40.5 per cent	58.6 per cent	69.4 per cent

Causes of Malnutrition: Malnutrition is a complex multi-dimensional issue. It is caused due to a number of generic factors such as poverty, inadequate food consumption (due to poor availability/access), inequitable food distribution, poor maternal nutrition, sub-optimal infant feeding and child care practices, inequity/gender imbalances, poor sanitary and environmental conditions, and restricted access to quality health care, education and social safety-net services/facilities.

Further, various economic, environmental, geographical, agricultural, cultural, health and governance issues complement the general factors in causing under-nutrition in children.

Nutrition/Health Interventions: For eradicating malnutrition in the country, the direct targeted interventions include schemes/programmes like Integrated Child Development Services (ICDS), POSHAN Abhiyaan, National Health Mission (NHM), Mid-Day Meal Scheme and Scheme for Adolescent Girls, Pradhan Mantri Matru Vandana Yojana.

In addition, various indirect multi-sectoral interventions/schemes having potential to address one or the other aspect related to nutrition include Swachh Bharat Mission (Ministry of Drinking Water & Sanitation/DW&S), Public Distribution System/PDS (Ministry of Consumer Affairs, Food & Public Distribution/CAF&PD), Mahatma Gandhi National Rural Employment Guarantee Scheme/MGNREGS (Ministry of Rural Development/ MoRD), Drinking Water & Toilets (Ministry of Panchayati Raj and Ministry of Urban Development via the Urban Local Bodies).

Role of Anganwadi Workers and ASHAs

Anganwadi Workers and the ASHA workers are the grassroots level functionaries under the umbrella ICDS Scheme and the National Health Mission respectively. Both these functionaries being closely connected with the rural and urban poor families, play a pivotal role in addressing their nutrition and health related problems/issues.

Roles and Responsibilities of Anganwadi Workers

Under the ICDS Scheme, Anganwadi Services were launched in 1975 as a pilot project covering 33 blocks in the country; its objectives are:

i. to improve nutritional and health status of children in the age-group 0–6 years;

ii. to lay the foundation for proper psychological, physical and social development of the child;

iii. to reduce the incidence of mortality, morbidity, malnutrition and school dropouts;

iv. to achieve effective co-ordination of policies and implementation strategies among the various departments for promoting child development; and

v. to enhance capability of the mothers to look after the normal health and nutritional needs of their children through proper nutrition and health education.

Inter-sectoral convergence is in-built and integral to the Anganwadi services. The target groups for these services are children below 6 years of age as well as pregnant women and nursing mothers.

Package of services under the ICDS scheme:

1. Supplementary nutrition
2. Pre-school non-formal education
3. Nutrition & health education
4. Immunization
5. Health check-up
6. Referral services

Out of the six, three health related services viz., immunization, health check-up and referral services are provided by NRHM & Public Health

infrastructure. This convergence is facilitated by the grassroot level functionaries i.e. AWWs (Anganwadi Services Scheme) and the ANMs/ASHA Workers (Ministry of Health & Family Welfare) through:

- Observance of monthly Village Health and Nutrition Days (VHND) at AWCs – immunization, ANC/PNC etc.;
- Referral of sick/malnourished children by AWWs to health facilities and the ANMs;
- Biannual rounds of Vitamin A supplementation (in several States);
- Use of Joint Mother Child Protection (MCP) cards by ANM and AWWs;
- Participation at the Village Health Sanitation and Nutrition Committee (VHSNC) meetings;
- Monthly meetings by ANM and AWW at the sub-centre level; and joint trainings conducted by NRHM.

Beneficiary coverage under the Anganwadi Services Scheme: As on 31st March 2019, the Anganwadi Services scheme had a network of 7075 fully operational projects and 13.75 lakh Anganwadi centres (AWCs) all over the country. Currently, the services are being provided to 875.60 lakh beneficiaries, these include 703.74 lakh infants/children (aged below six years) and 171.86 lakh pregnant women/nursing mothers. Further, pre-school education is being provided to 301.92 lakh children (aged 3–6 years) of which 152.36 lakh are boys and 149.56 lakh girls. For providing various services to the community, there are 13,20,858 AWWs in position along with 11,82,201 Anganwadi Helpers (AWHs).

Roles and Responsibilities of Anganwadi Workers

- To elicit community support and participation in running the programme.
- To weigh each child every month and plotting it on the growth card; maintain the child cards (for children below 6 years) to be examined by the visiting medical/para-medical personnel; and using the referral cards for referring mothers/children to the sub-centre/PHC etc.
- To carry out, annually, a quick survey of all the families in their respective area of work with particular attention to the mothers and children.
- To organise non-formal pre-school activities for children aged 3–6 years and to help in designing/making toys out of indigenous resources.
- To organise supplementary nutrition feeding for infants/children (below 6 years) as well as pregnant women and nursing mothers via planning of menu based on locally available food/local recipes.
- To provide health/nutrition education along with counselling on breastfeeding as well as infant/young child feeding practices to the mothers. Further, anganwadi workers being rather close to the local community can motivate the married women for adopting family planning practices/birth control measures.
- To help and coordinate the health centre visits of pregnant women/nursing mothers for registering their child's birth and reporting the same to the village level functionary notified as Registrar of Births.
- To conduct home visits for educating the parents, specially the mothers, for enabling to play an effective role in their child's growth and development with particular emphasis on that of the new born child.
- To assist the PHC staff in effective implementation of the programme's health component viz. immunization, health check-ups and ante-natal/postnatal check-ups etc.
- To assist the ANMs in the administration of IFA tablets (for anaemia control) and vitamin A doses (for preventing VAD) to the beneficiaries.
- To share the health-related information with the ANM.
- To support in organizing Pulse Polio Immunization (PPI) drives.
- To inform the ANM regarding any emergency cases like diarrhoea, cholera etc.
- To guide ASHAs (Accredited Social Health Activists under NRHM) in the delivery of healthcare services and maintaining the records.
- Anganwadi Workers can act as depot holder for RCH Kit/contraceptives and disposable delivery

kits, though the actual responsibility lies with the ANMs or ASHAs except that for over-the-counter drugs.

- To assist in implementing Scheme for Adolescent Girls (SAG) and motivate/educate the adolescent girls, their parents and community as a whole by organizing social awareness programmes/campaigns etc. Also, to assist in implementing the Nutrition Programme for Adolescent Girls (NPAG) and maintaining the records.
- During home visits, to identify disability among children and referring them immediately to the nearest PHC or District Disability Rehabilitation Centre.
- To inform the Supervisors/CDPO regarding any village level developments requiring their attention and intervention, particularly for the coordinating arrangements with different departments.
- To maintain liaison with other institutions (eg. Mahila Mandals) and to involve school teachers (women only) and primary/middle school girl students of the village, where necessary.

Roles and Responsibilities of ASHA Workers

Under the National Health Mission, ASHAs (Accredited Social Health Activists)—the envisaged community health volunteers—are entitled to task/activity-based incentives. At present, there are nearly 10.33 lakh ASHAs across the country (covering both the rural and urban areas) who act as a link between the community and the public health system. Recently, as a routine and recurring incentives ASHAs will get at least Rs. 2000/- per month (as against Rs. 1000 earlier) along with the benefits of PM Jeevan Jyoti Bima Yojana and PM Suraksha BimaYojana.

Every village in the country is to have an ASHA worker, a trained female community health activist, selected from the village itself and accountable to its people for whom she will work as an interface between the community and the public health system.

An ASHA is primarily a literate woman (married/widowed/divorced and aged 25 to 45 years) resident of the village, preferably 10th standard pass who is chosen through a rigorous selection process involving various community groups, self-help groups, Anganwadi Institutions, Block/District Nodal officer, village Health Committee and the Gram Sabha.

Her capacity building process is continuous and she undergoes a series of training episodes to acquire the necessary knowledge, skills and confidence for performing her specified roles. She is given performance-based incentives for promoting universal immunization, referral/escort services for Reproductive & Child Health (RCH) and other healthcare programmes as well as for promoting the construction of household level toilets.

Empowered with knowledge/skills and a drug-kit for first-contact healthcare, every ASHA worker is expected to elicit community participation in public health programmes in the village. She is the first person to be called for any health-related needs of the deprived sections of population, especially women and children, who find it difficult to access healthcare services. ASHAs are the community-level health activist for creating awareness on health and its social determinants as well as for mobilizing the community towards local health planning and increased utilization/accountability of the existing health services.

- They are promoters of good health practices. In addition, they provide a minimum package of appropriate and feasible curative care or arrange for timely referrals.
- They generate community awareness concerning the various determinants of health such as nutrition, basic sanitation &

hygienic practices and healthy living/working conditions, as well as regarding the existing healthcare services and the importance of timely utilisation of health & family welfare services.

- They counsel women on birth preparedness, importance of safe delivery, breastfeeding & complementary feeding, appropriate care of the young child, immunization, contraception and prevention of common infections including reproductive tract infections/sexually transmitted infections (RTIs/STIs).
- They mobilise the community and facilitate their accessing health/health related services such as immunisation, antenatal/postnatal check-ups (ANC/PNC), supplementary nutrition, sanitation and other governmental services available at the anganwadi/sub-centre/primary health centres.
- They act as depot holders for essential provisions like Oral Rehydration Solution (ORS), Iron Folic Acid tablets (IFA), chloroquine, Disposable Delivery Kits (DDK), oral contraceptive pills & condoms; etc.
- Since ASHAs cannot function without adequate institutional support at the village level, women's committees (self-help groups/ women's health committees), village health & sanitation committee (Gram Panchayat), peripheral health workers especially ANMs and Anganwadi workers, and the ASHA trainers (for periodic in-service training) provide them the needed support.
- Recently, Home-Based-Care for Young Children (HBYC) has been initiated to extend the community-based-care by ASHA workers with particular focus on nutrition counselling, improved child rearing practices and breastfeeding promotion etc.

POSHAN Abhiyaan (earlier known as National Nutrition Mission) - PM's Overarching Scheme for holistic nourishment was formally launched on 8th March 2018. Its major goal is to achieve improvement in the nutritional status of children (0-6 years), adolescent girls, pregnant women and nursing mothers in a time bound manner (during the three year period) with fixed targets as below:

Table - 2: Nutrition and Health related Objectives and Targets

S. No	Objective	Target
1.	Prevent and reduce stunting** in children (0-6 years)	by 6 per cent @ 2 per cent p.a.
2.	Prevent and reduce under-nutrition i.e. prevalence of underweight in children (0-6 years)	by 6 per cent @ 2 per cent p.a.
3.	Reduce the prevalence of anaemia among infants and young children (aged 6-59 months)	by 9 per cent @ 3 per cent p.a.
4.	Reduce the prevalence of anaemia among women and adolescent girls (age group: 15-49 years)	by 9 per cent @ 3 per cent p.a.
5.	Reduce low birth weight (LBW) deliveries.	by 6 per cent @ 2 per cent p.a.

** Target is to bring down stunting of the children (aged 0-6 years) from 38.4 per cent to 25 per cent by the year 2022.

POSHAN Abhiyaan endeavours to ensure convergence with various programmes as well as incentivize the States/Union Territories for achieving targeted goals. Information and communication technology enabled integrated Child Development Services-Common Application Software; Community Mobilization & Behaviour Change & Communication, Awareness Advocacy and Information Education

Communication; Jan Andolan by educating people on nutritional aspects; Innovation; strengthening human resource; early detection of stunting and wasting in children below 6 years of age by periodic monitoring of their height and weight; strengthening of Training & Capacity Building etc.

Thus, looking into the job responsibilities and activities of Anganwadi workers and the ASHAs as well as their close connect with the population at large, it is pertinent to say that this dedicated and devoted brigade of grassroot level functionaries play an essential role in curbing malnutrition and hence, improving health and nutritional status of our masses !!!

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SWACCHTA INITIATIVE- CLEAN GANGA MISSION

Massive improvement in the Clean Ganga Mission during the last five years, says Jal Shakti Minister Shri Gajendra Singh Shekhawat

The Union Minister of Jal Shakti, Shri Gajendra Singh Shekhawat has said there has been a massive improvement in the Clean Ganga Mission during the last five years. "Recently, a massive river rafting expedition called 'Ganga Aamantran Abhiyan' was launched from Devprayag on 10th October, 2019. The expedition covered around 2,500 KM length of the Ganga during its 34-day journey till Ganga Sagar in West Bengal. Quality of water in the Ganga has improved tremendously in the last five years. The best parameter of assessing the quality improvement of water is the growth in aquatic wildlife. Five years earlier, only tens of Gangetic dolphins were sighted, but this time they have observed more than 2,000 dolphins and all other aquatic life has improved. They have also observed massive improvement in floating trash," he said, addressing the 4thIndia Water Impact Summit, 2019 on 5th December 2019 in New Delhi.

Shri Shekhawat said the Union Cabinet chaired by the Prime Minister Shri Narendra Modi has given its approval for establishment of the Clean Ganga Fund (CGF). Appealing for liberal contributions, Shri Shekhawat said, "the CGF will have the objective of contributing to the national effort of improving the cleanliness of the river Ganga with the contributions received from the residents and non-residents of the country. The Fund will define specific and measurable objectives to form the basis for planning, funding, and evaluation".

The Jal Shakti Minister said the approach in Namami Ganga for ensuring Aviral Dhara or improving flows is comprehensive. "It includes assessment and notification of environmental flows, catchment area treatment and afforestation, conservation and rejuvenation of wetlands, floodplain protection, springs rejuvenation, improving water use efficiency particularly in agriculture, because agriculture is the biggest consumer of water in the world and in India it is more severe as our waters are considered the lowest productive water in the world".

Shri Shekhawat said the Government launched the "Namami Gange" Mission as an integrated mission for conservation and rejuvenation of Ganga and its tributaries with a comprehensive basin based approach. "In 2016, the National Mission for Clean Ganga has been notified as an authority for carrying out diverse set of interventions for obtaining the twingoals of "Nirmalta" & "Aviralta" of Ganga by ensuring effective abatement of pollution and maintaining required ecological flows. Around 305 projects have been taken up for sewage, industrial effluents etc. This has further been strengthened and accorded due priority under Jal Shakti Abhiyan and an integrated approach to water sector through creation of Ministry for Jal Shakti", he said. "Namami Gange mission also understands the crucial role people can play in conservation of river Ganga and has been taking up several innovative steps for bringing people closer to river Ganga and its tributaries which contribute in one way or the other for their rejuvenation", he added.

(Source: PIB)

WATER AND SANITATION FOR HEALTHY INDIA

Virender Raj Gautam

In India, the provision of clean drinking water has been given priority in the Constitution, with Article 47 conferring the duty of providing clean drinking water and improving public health standards to the State. UN recognized the right of every human being to have access to enough water for personal and domestic uses which must be safe, acceptable and affordable. Water is also in the main agenda items of the Sustainable Development Goals. Sustainable Development Goal 6 specially focuses on this issue "Ensure availability and sustainable management of water and sanitation for all."

Water is the most precious and essential commodity to the lives of the human beings and every human being has the right to have continuous availability of potable water. Continuous availability of potable water is one of the important parameters of human index. To highlight the importance of water, one of the most significant recent milestones has been the recognition in July 2010 by the United Nations General Assembly of the human right to water and sanitation. UN recognized the right of every human being to have access to enough water for personal and domestic uses which must be safe, acceptable and affordable. Emphasis has also been given to the fact that the water costs should not exceed 3 per cent of household income. Moreover, the water source has to be within 1,000 metres of the home and collection time should not exceed 30 minutes. Water is also in the main agenda items of the Sustainable Development Goals (SDG). Sustainable Development Goal 6 specially focuses on this issue: "Ensure availability and sustainable management of water and sanitation for all." Goal 6.1 of the SDGs specifically says that by 2030, countries including India should "achieve universal and equitable access to safe and affordable drinking water for all". According to global reports released by the United Nations, 2.1 billion people live without safe drinking water at home and 80 per cent of those who have to use unsafe and unprotected water sources reside in rural areas. Further, more than 700 children under five years of age die every day from diarrhoea due to unsafe water and poor sanitation. This report also states that in eight out of 10 households, women and girls are responsible for water collection. Nearly two-thirds of the world's population experiences severe water scarcity at least for 1 month per year. The intense impact of water scarcity could displace 700 million people by 2030.

In India, the provision of clean drinking water has been given priority in the Constitution, with Article 47 conferring the duty of providing clean drinking water and improving public health standards to the State. India is facing its worst-ever water crisis, with 600 million people facing acute water shortage and the crisis is "only going to get worse" in the years ahead as per the The NITI Aayog Report, which is based on the data from 24 of India's 29 states. In addition to the availability of water, quality of drinking water is also a crucial issue. According to a recent report based on sample tests done by Bureau of Indian Standards (BIS), tap water in Mumbai is the safest for drinking while Delhi's water is the worst among 21 big cities where the samples were drawn. Of greater concern is the fact that all the samples of tap water taken from 15 out of 21 cities failed to meet one or more safety parameters out of 28 parameters prescribed for drinking water standards of BIS notified in 2012. According to the test findings, only one of the samples in Hyderabad

and Bhubaneswar failed and the two cities were ranked second in the list followed by Ranchi and Raipur. Central Water Commission estimated that only about 1,123 km^3 water (690 km^3 from surface water and 433 km^3 from groundwater) can be used due to topographical constraints and spatio-temporal variations in resources. In India, due to a threefold increase in population during 1951–2010, the per capita availability of water in the country as a whole decreased from 5,177 m^3/year in 1951 to 1,588 m^3/year in 2010.

Water, Sanitation and Hygiene

Contaminated water and a lack of basic sanitation are undermining efforts to end extreme poverty and disease in the world's poorest countries. In 2017, 2 billion people worldwide did not have access to basic sanitation facilities such as toilets or latrines and 673 million people still practised open defecation. According to the WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation, at least 1.2 billion people worldwide are estimated to drink water that is not protected against contamination from faeces. Unclean water and poor sanitation are a leading cause of child mortality. Childhood diarrhoea is closely associated with insufficient water supply, inadequate sanitation, water contaminated with communicable disease agents, and poor hygiene practices. Diarrhoea is estimated to cause 1.5 million child deaths per year, mostly among children under five years of age living in developing countries. The prevalence of stunting in India (38.4 per cent) is among the highest in the world, and diarrhoea is a major killer of children younger than 5 years. The links between lack of water and sanitation access and the development goals are clear, and the solutions to the problem are known and cost-effective. A 2012 WHO study shows that every US $1 invested in improved sanitation translates into an average global economic return of US$5.5. Those benefits are experienced specifically by poor children and in the disadvantaged communities that need them most.

According to WHO and UNICEF, 2.2 billion people lack access to safely managed drinking water services and 4.2 billion people lack safely managed sanitation services. Loss of productivity to water and sanitation-related diseases costs many countries up to 5 per cent of GDP. Universal access to safe drinking water and adequate sanitation and hygiene would reduce the global disease burden by 10 per cent. The impact on child mortality rates is devastating with more than 2,97,000 children under five who die annually from diarrhoeal diseases due to poor sanitation, poor hygiene, or unsafe drinking water. In urban areas, for every US$1 invested in basic drinking water, an average of more than US$ 3 is returned in saved medical costs and increased productivity. For every US$ 1 invested in basic sanitation, the return is US$ 2.5. In rural areas, the return on investment is even higher with every US$ 1 invested in basic drinking water, an average of nearly US$ 7 is returned in saved medical costs and increased productivity. And in the case of basic sanitation in rural areas, every US$ 1 returns on average more than US$ 5 in saved medical costs and increased productivity.

Government Initiatives

Scientific management of water is increasingly recognized as being vital to India's growth and ecosystem sustainability. The Government of India is being proactive about water management and has created the new Ministry of Jal Shakti, in which the erstwhile ministries of Water Resources and

Drinking Water and Sanitation will be merged, to consolidate interrelated functions pertaining to water management. The newly formed Jal Shakti Ministry has launched the Jal Shakti Abhiyan—a campaign for water conservation and water security in 1592 water stressed blocks in 256 districts, to ensure five important water conservation interventions. Interventions will be in the form of water conservation and rainwater harvesting, renovation of traditional and other water bodies/ tanks, reuse, bore well recharge structures, watershed development and intensive afforestation. The Jal Shakti Abhiyan is a time-bound, mission-mode water conservation campaign.

Central and State Governments are actively pursuing the achievement of SDGs, including SDG 6. These initiatives include the Water Framework Law of India 2016, National Rural Drinking Water Program (NRDWP), Accelerated Urban Water Supply Programme (AUWSP), Namami-Ganga (National Mission for Clean Ganga), and National Water Policy. NITI Aayog in 2018 came out with a baseline index of Indian States' performance on various UN Sustainable Development Goals (SDGs) and the States of Himachal Pradesh, Kerala and Tamil Nadu and the Union Territories of Chandigarh and Pondicherry, were among the front-runners. Himachal Pradesh has surged to the top backed by its success in providing clean water and sanitation, in reducing inequalities and in preserving the mountain ecosystem. Central and State Governments are making efforts to increase the coverage of water availability and as on 31 December 2018, 79 per cent of rural habitations has been covered at 40 litres per capita per day (lpcd) but only 47 per cent at 55 lpcd. Till 6 January 2019, 18 per cent of rural households were provided with Piped Water Supply (PWS) household connections. There is also a significant variation in piped water coverage across States. Some States, such as Gujarat, Sikkim and Himachal Pradesh have provided piped water to more than half of the rural households while others such as Uttar Pradesh and Bihar have minimal (less than 5 per cent) piped water coverage. These disparities could be a reflection of State priorities and geography. For instance, the Himachal Pradesh Government has spent the most on water supply and sanitation over the last eight years (in terms of the share of state government spending), according to data from PRS Legislative Research.

Sanitation is also one of the important components of the quality parameters in the composite human index. The Swachh Bharat Mission (SBM), India's flagship and the world's largest sanitation programme, aims to accelerate universal access to sanitation in rural and urban India. Since its launch in 2014, SBM reports building close to 100 million toilets by way of providing financial incentives to needy families, involving local governments and communities in construction and in monitoring progress, and by conducting mass awareness campaigns. Today, India is at an important juncture, with SBM data showing more than 98 per cent sanitation coverage and sample studies reporting good progress but lower coverage in terms of latrine ownership (71 per cent) and sanitation coverage (93.1 per cent) in rural India.

Need for Better Water Governance

The water crisis in the 21st century has more to do with poor management than scarcity and stress. Water management normally refers to the government making decisions to manage water systems. Water governance includes both internal and external processes through which societies manage their water resources. According to the UN World Water Report (2006), the crisis of water is largely due to the failure of water governance, and for the sustainable development of water resources, water governance should be given due priority. One of the most successful examples of how water governance leads to sustainable water management is the example of the Phnom Penh Water Supply Authority (PPWSA) in Cambodia. In the span of just 15 years, an almost bankrupt poor-performing water utility was transformed into an efficient profitable taxpaying entity, providing 24 hours of uninterrupted water supply to the residents of the Cambodian capital. This was achieved by focusing on different aspects of water governance such as legal and regulatory aspects, human resources, cost recovery, and financial sustainability. The case of PPWSA can be relevant to India, because both India and Cambodia are developing countries located in South and Southeast Asia, respectively. There is a need to improve water governance in India by educating the governance machinery in our rural and urban India managing the supply of water.

Success Stories

India has many successful examples where people with their strong will have demonstrated effective models of water conservation. Rajasthan's Mukhya Mantri Jal Swavlambhan Abhiyan, launched in 2016, is a multi-stakeholder programme which aims to make villages self-sufficient in water through a participatory water management approach. It focuses on converging various schemes to ensure effective implementation of improved water harvesting and conservation initiatives. Use of advanced technologies such as drones to identify water bodies for restoration is one unique feature of the programme. Gram Sabha in villages are responsible for budgeting of water resources for different uses, providing greater power to the community members in decision-making. The programme has benefited more than 88 lac people and 93 lac heads of livestock, covering an area of more than 33.50 lac hectares. After first phase there was 56 per cent reduction of water supply through tankers and an average rise in the groundwater table by 4.66 feet in 21 non-desert districts of the states. In addition, 50,000 ha of additional land has been made fit for cultivation in the districts and 64 per cent of the installed hand-pumps have been rejuvenated.

The Andhra Pradesh Government has launched the Neeru-Chettu Programme as a part of its mission to make Andhra Pradesh a drought-proof state and reduce economic inequalities through better water conversation and management practices. The programme has a strong emphasis on improving irrigation and focuses on ensuring water supply in drought-prone areas and reducing the acute gap through scaled-up adoption of scientific water management practices. Repair, renovation, and maintenance of irrigation assets are key activities and completing such activities before monsoons is a priority under the programme. The state has repaired about 7,000 farm ponds and over 22,000 check dams under the programme. Additionally, 102 lift irrigation schemes have been commissioned or revived by the State. Efforts under the Neeru-Chettu programme have enabled irrigation access to nearly 2,10,000 acres of land in the State. There are number of such initiatives in Uttarakhand, Kerala, Himachal Pradesh, Rajasthan, Gujarat, Maharashtra, Karnataka and other states. The efforts by local communities in India to improve water availability have been lauded in a UN report that highlights the importance of finding nature-based solutions to meet global water challenges.

Missions Ahead

NITI Aayog has identified nine key areas that require significant improvements. Among these, source augmentation and restoration of water bodies, source augmentation (groundwater), and policy and governance assumes great significance. India is still water surplus and receives enough annual rainfall to meet the need of over one billion plus people. According to the Central Water Commission, India needs a maximum of 3,000 billion cubic metres of water a year while it receives 4,000 billion cubic metres of rain. But our problem is that we are not managing our water resources well. We capture only eight per cent of its annual rainfall—among the lowest in the world. The traditional modes of water capturing in ponds have been lost to the demands of rising population and liberal implementation of town planning rules. India has been also poor in treatment and re-use of household wastewater. About 80 per cent of the water reaching households in India is drained out as waste flow through sewage that then pollutes other water bodies including rivers and also land. On the other side of the spectrum is Israel, a country that is located in desert and has learnt to deal with water crisis situation. Israel treats 100 per cent of its used water and recycles 94 per cent of it back to households. More than half of irrigation in Israel is done using reused water. We need to remember the theme of the India Water Week-2019 which emphasized the need for water cooperation to cope with challenges of the 21st century. We need to sensitize the people so that the movement towards water conservation takes place at the grassroots level, starting from primary schools, our office premises and each household.

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DIGITAL TRANSFORMATION IN HEALTHCARE

Ankush Kumar

The present government has played a significant role by making digitization as a catalyst for shaping the healthcare sector through corrective policies and procedures. India has witnessed an annual growth of 5.44 per cent in expenditure on public health from Rs 1,50,029.53 crore during 2016–17 to Rs 1,58,194.92 crore during 2017–18.

Digital technologies are playing a pervasive role in transforming the healthcare sector in India. From booking doctor's appointments to accessing medical reports and even getting consultation, everything is possible at the click of a button. The wave of this transformation has not only impacted the urbanites but it has also digitally enabled the rural hinterland across the country. The present government has played a significant role by making digitization as a catalyst for shaping the healthcare sector through corrective policies and procedures. India has witnessed an annual growth of 5.44 per cent in expenditure on public health from Rs 1,50,029.53 crore during 2016-17 to Rs 1,58,194.92 crore during 2017-18. The top ten states with respect to expenditure on public health were Uttar Pradesh, Maharashtra, Tamil Nadu, Rajasthan, Gujarat, Madhya Pradesh, West Bengal, Andhra Pradesh, Karnataka and Kerala.

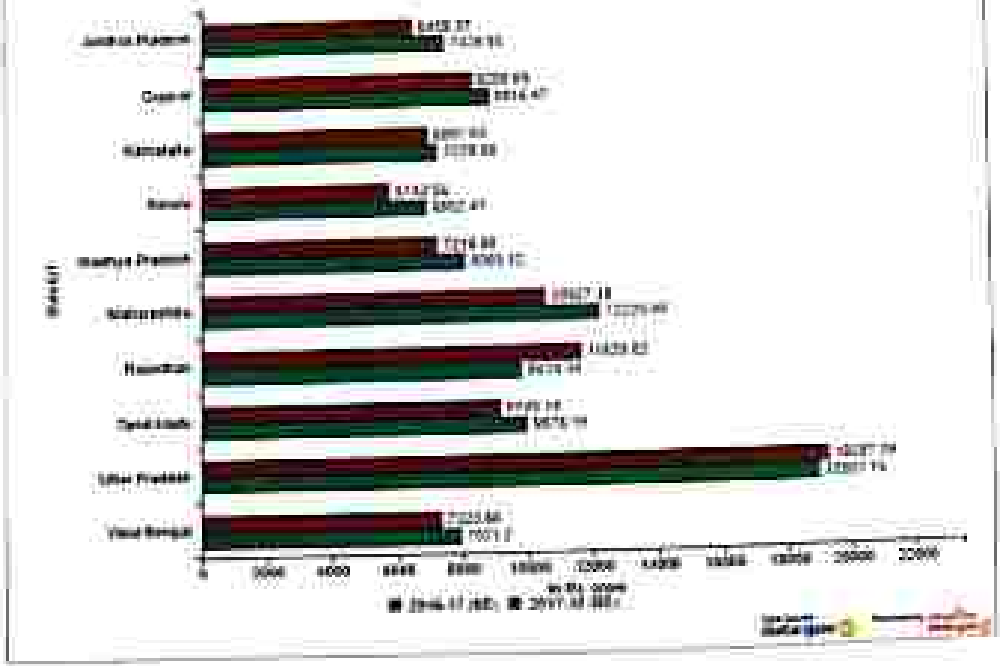
Emphasising its focus on the healthcare sector, the Union Cabinet chaired by Prime Minister Narendra Modi, in a meeting on March 15, 2017, has approved the National Health Policy, 2017 (NHP, 2017). The policy envisages the goal of attainment of the highest level of health and well-being for all at all ages, through increasing access, improving quality and lowering the cost of healthcare delivery. The policy lays strong impetus on leveraging digital technologies for enhancing the efficiency and effectiveness of the delivery of all the healthcare services.

Moving From Physical to Digital

While the efforts of deploying technology for rural healthcare have been consistent and widespread, the benefits to the rural masses are concentrated only in small pockets of the country. Today a citizen can neither access his health records efficiently nor store them conveniently to access it in the future. In the absence of any centralized system, the service providers have to undertake fresh diagnostic tests that again create isolated medical records which increase the burden on the citizen significantly. Health service providers in India do not have an aggregated and complete view of the patient data. This restricts them in providing efficient health services to the citizens.

Nearly 70 per cent of India's population lives in rural areas. India has just around one doctor for 11,000 people - a ratio far below from the World Health Organisation's standards, which recommends one doctor per 1,000 patients. Most

Top 10 States with respect to Public Health Expenditure during 2017-18



of the rural Indians lack access to basic health care facilities. The government spends 4.7 per cent of the country's annual gross domestic product on health, and little of this spending reaches remote rural areas. Lack of infrastructure makes it extremely difficult to retain doctors in villages, as they fear becoming professionally isolated and outdated.

In addition, poor villagers in order to get treatment have to travel to specialty hospitals in the city. With government hospitals already flooded with local patients, these villagers have to wait for their turn which ultimately inflates their overall expense.

A study by Indian Institute of Public Opinion found that 89 per cent of rural Indian patients have to travel about eight kilometers to access basic medical treatment, and the rest have to travel even farther.

This lack of quality healthcare infrastructure in rural India results in people dying due to preventable and curable diseases. It becomes difficult for the government to quickly control situations of epidemic outbreaks. One of the major roadblocks is the lack of adequate health care providers in villages, as the cost of setting and maintaining health care infrastructure is quite huge. In such a situation, introducing "Digital" instead of "Physical" Health Centres could pave the way for quality healthcare at a lower cost.

Earlier this year on the 13th Global Healthcare Summit 2019 the Vice President of India, M. Venkaiah Naidu, urged doctors belonging to the Indian diaspora to give back to the society by adopting their native villages and strengthening Primary Health Centres (PHCs).

Referring to the report of McKinsey Global Institute which has estimated that the implementation of telemedicine technology could save US$ 4-5 billion every year and replace half of in-person outpatient consultations in India, Shri Naidu wanted organizations like AAPI and GAPIO to help remote hospitals in India to acquire latest telemedicine equipment. "Primary Health Centres play a pivotal role in building a robust low cost healthcare system. I urge doctors of the Indian diaspora to adopt their own villages and help in improving the Primary Health Services there," said Shri Naidu.

CSCs Enabling Digital Healthcare

Telemedicine is the form of primary care where the patient walking in at a Common Service Centre (CSC) seeks the doctor's advice about non-emergency medical problems which don't require immediate doctor's location visit. It doesn't

replace face-to-face consultation when it is needed but complements it. CSC-SPV has provided Village Level Entrepreneurs (VLEs) an access to two platforms which are integrated on Digital Seva for providing tele-consultation services to rural masses through which a patient can take consultations in specialties like allopathy, homeopathy, ayurveda, and veterinary.

Villages in less developed states are using telemedicine to get medical consultation from the doctors of big cities through video conferencing. Today, the patients can access specialist doctors over the telemedicine centres almost at their doorsteps. With the mandate of the Ministry of Electronics & IT, CSC-SPV is also implementing the Digi Gaon initiative in rural and remote villages of the country, where citizens can avail various online services such as tele-education, telemedicine, financial services, internet connectivity and others. These Digi Gaons are positioned to be change agents for promoting rural entrepreneurship and building rural capacities and livelihoods through community participation and collective action for engendering social change through a bottom-up approach with key focus on the rural citizen.

CSC works with the objective to develop a platform that can enable the government, private and social sector organizations to align their social and commercial goals for the benefit of the rural population in the remotest corners of the country through a combination of IT-based as well as non-IT-based services.

Central and State Level Digital Projects

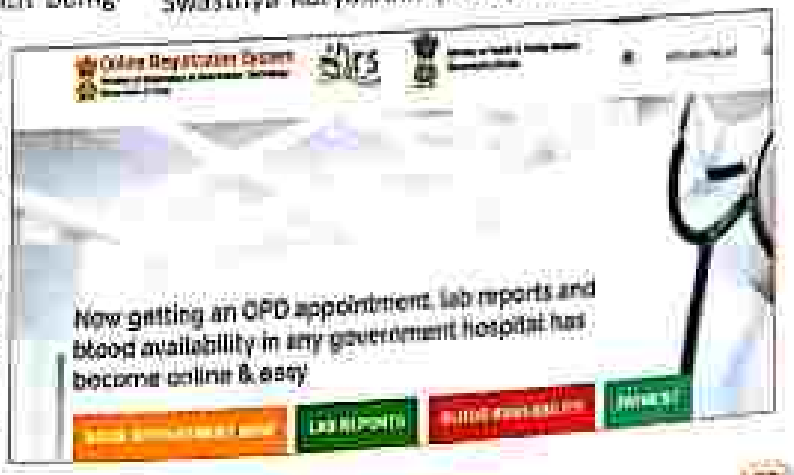
Understanding how much difference digital can make in the healthcare sector, the government has undertaken many substantial projects. A few of the ongoing initiatives in digital health being implemented by the Ministry of Health and Family Welfare (MoHFW) include the following programmes: Reproductive Child Health Care (RCH), Integrated Disease Surveillance Programme (IDSP), e-Hospital, e-Shushrut, Electronic Vaccine Intelligence Network (eVIN), National Health Portal (NHP), National Identification Number (NIN), Online Registration System (ORS), Mera Aspatal (Patient Feedback System) and National Medical College Network (NMCN).

These initiatives are operational at a substantially mature level and are already generating an enormous amount of data in the health sector. Since health is a state subject, states are supported under National Health Mission (NHM) for services like telemedicine, teleradiology, teleoncology, teleophthalmology and Hospital Information System (HIS).

The state of Gujarat has implemented e-Aushadhi project which is primarily a supply chain management application that deals with purchase, inventory management and distribution of various drugs, which deals with the management of stock of various drugs, sutures and surgical items required by different district drug warehouses. The main aim of 'e-Aushadhi' is to ascertain the needs of various district drug warehouses in such a way that all the required materials/drugs are constantly available to be supplied to the user district drug warehouses without delay. This includes classification/ categorization, codification, and quality check of these items as well as issuing drugs to the patients, who are the final consumer in the chain.

Similarly, Rajasthan has initiated Pregnancy, Child Tracking & Health Services Management System which is an online software used as an effective planning and management tool by Medical, Health & Family Welfare Department of Rajasthan. The system maintains online data of more than 13,000 government health institutions in the state. The System facilitates integrated system for HMIS and pregnant woman & child tracking, online tracking of pregnant women, online tracking of infants & children, monitoring of immunization programme, better management of health institutions, etc.

Andhra Pradesh initiated Rashtriya Bal Swasthya Karyakram (RBSK) which was aimed at



screening over 27 crore children from 0 to 18 years for the 4 Ds - Defects at birth, Diseases, Deficiencies and Development Delays including Disabilities. Children diagnosed with illnesses shall receive follow ups including surgeries at tertiary level, free of cost under NRHM. The RBSK programme has been enabled through a cloud-based Tablet PC system, which provides dashboard based reports for various levels of administrators/doctors at all levels. Rule-based access management system has been designed, which helps officers at various levels to check reports as per the hierarchy.

In order to target children from 0–6 years in rural areas and urban slums, in addition to older children up to 18 years of age enrolled in classes 1st to 12th in government and government aided schools, Chhattisgarh Government launched Chirayu Programme. Chirayu's aim is to screen these children for birth defects and various types of nutritional deficiencies, so that any permanent disability can be cured at an early stage. Its aim is to detect and manage the aforementioned 4Ds prevalent in children.

Transforming Rural Healthcare through ASHA

While several state and central institutions played a seminal role in pushing rural healthcare through technology innovation, it is believed that the biggest transformation in the rural healthcare sector of India triggered with the inclusion of Accredited Social Health Activists (ASHAs). It is a group of community health workers responsible to motivate women for institutional deliveries, bring children to immunization clinics, encourage family planning – both terminal and temporary methods, treat basic illness and injury with first aid, keep demographic records and improve village sanitation, among others. Today, nearly 900,000 ASHAs, which are mostly the first point of contact in the health system, play a critical role in the early diagnosis of diseases and their prevention. They were pivotal in bringing down the Infant Mortality Rate (IMR) from over 58 deaths per 1000 live births in 2005—when ASHA was launched under NRHM—to 33 deaths per 1000 live births in 2017. Maternal Mortality Ratio (MMR) was 254 maternal deaths per 1,00, 000 live births during 2004–05 which has declined to 130 maternal deaths per 1,00,000 live births in 2014–16.

As on September 2018, there were 10,31,711 Accredited Social Health Activists (ASHAs) selected in India under the National Health Mission (NHM). The top 5 States/UTs in terms of ASHAs selected under NHM as on September 2018 were Uttar Pradesh, Bihar, Madhya Pradesh, Chhattisgarh and Maharashtra.

Apart from the government, many private institutions are supporting initiatives like ASHA. Founded in 2012 with generous support from the Tata Trusts, the Tata Center has initiated a project that focuses on NCH (Neonatal and Child Health), which is a core function of the ASHA workers. The centre is developing a series of smartphone-enabled apps to empower ASHAs to screen children and infants for multiple conditions, and to collect basic epidemiological health data, such as a baby's height and weight. These mobile apps make use of the smartphone camera combined with computer vision and augmented reality (AR) to extract, collect, and analyze data from the image of the child, and provide the ASHA with relevant feedback about the health of the baby. The end goal is to encapsulate all of the apps into a comprehensive smartphone-enabled mobile toolkit. For deployment and field testing of the technology, Tata Centre has partnered with the Public Health Foundation of India (PHFI), which implements much of the training for ASHA workers.

Technology has changed the way these ASHA workers perform their duties. They can now digitally track pregnant women and infants' health and schedule home visits. They are given a digital checklist which enables them to analyse health issues and provide notifications on stock levels of drugs, vaccines and other consumables. Many experts believe that the real transformation would come when these ASHA workers are empowered with better skill sets to handle even complex cases and perform tasks during the unavailability of doctors.

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