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ADDRESSING FOOD AND NUTRITION SECURITY IN INDIA

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Introduction

Ensuring food security and eliminating mass under-nutrition are perhaps India's biggest and most serious development challenges for policy makers. Food is the first among many basic human needs, and it is for this reason that UN Committee on economic, social and cultural rights[1] states "the human right to food is recognised in several instruments under international law." Specifically, Article 11 of the International Covenant on Economic, Social and Cultural Rights recognises "the fundamental right to freedom from hunger and under-nutrition".

While there are a range of estimates based on different data sources and multiple indicators of food and nutrition insecurity, including food intake measures, expenditure indicators and anthropometric outcomes, there is agreement that the scale of food and nutrition insecurity in India is huge. The pre-COVID 19 Report on *State of Food Security and Nutrition in the World, 2019*[2] by the Food and Agriculture Organization of the United Nations, confirms that no country comes close to India in terms of the sheer number of people living in chronic hunger. There were an estimated 822 million under-nourished persons in the world, with India being home to 194 million (24 percent) of them.The aggregate estimate of under-nutrition needs to be supplemented by factoring in systematic variations in its prevalence across states and regions, by age and gender, and other socio-economic factors such as caste and social group, that make certain sections of the population more vulnerable to food insecurity.

The Covid-19 pandemic has undoubtedly magnified these numbers. A study by Hoy and Ortiz-Juarez[3] that used an international poverty line benchmark of 1.90 (purchasing power parity) dollars a day indicates that a 20 per cent contraction in GDP will result in an additional 419 million poor people. An IFPRI study estimated a 20 per cent rise in persons in extreme poverty. The World Food Programme (WFP) has indicated that the number of acutely food insecure, living in 55 countries, would increase from 135 million to 265 million in 2020.

In India, there has been a lockdown since March 24, 2020, as a response to the COVID19 epidemic, and this has resulted in collapse of employment. As the large majority of worker in India are in the informal sector, with no social security or job security, employment and incomes have collapsed on a large scale. The consequent reduction in incomes and rise in poverty will inevitably affect food security. In the US today, "one in eight families does not have enough to eat,"[4] (in India, the ratio will certainly be higher).

Approach to food security

For long, the problem of food security was viewed as a supply-side problem, that is, one of inadequate production of food (particularly food grains comprising cereals and pulses). With the seminal work of Amartya Sen on the entitlement approach to understanding famines, the focus shifted from mere supply and availability to an individual's and household's entitlements or capacity to obtain food. As Sen argues, "it is a combination of economic, social, political and - ultimately - legal arrangements that affect people's entitlement to food[5].

Subsequently, the Food and Agricultural Organisation (FAO) had, by the 1980s, expanded the concept of food security to mean not only adequate supply of food grain, but also its accessibility to the poor and vulnerable. In 1996, in the backdrop of the implementation of structural adjustment policies in large parts of the Third World, the World Food Summit[6] adopted a broad approach to food security, defining it as follows. "Food security at the individual, household, national, regional and global levels is achieved when all people at all times have *physical and economic access* to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active life".

Although the differences of opinion remain, this has been the globally accepted definition of food security. Very recently, the High Level Panel of Experts (HLPE) of the FAO in its 15th report has expanded this concept of food security by adding two features: stability and sustainability[7]. In other words, the provision of food security should be in a manner that is stable and sustainable in the long run. Writing from an economist's perspective, in this article I would like to focus on "physical and economic access" to the right quantity and quality of food. In short, I will discuss issues pertaining to (a) physical availability and (b) income and poverty.

Income poverty

Let me start with the latter, and provide a brief overview of the definition of the poverty line in India. There is a huge body of work on measurement of poverty in India, but in practice, the methodology used to define the poverty line in India remained unchanged for several decades. Based on the consumption basket reported in the Consumer Expenditure Survey of 1972-73, the expenditure required to meet a norm of 2100 Kcal in urban areas and 2400 Kcal in rural areas (based on ICMR recommendations) was taken as the poverty line. In subsequent years, adjustments were made only to prices to get an updated poverty line. In other words, the poverty line was that level of monthly expenditure at which a household's food expenditure was adequate to buy (at the least cost) the required number of calories. There have been several criticisms of this approach to measurement of poverty, some relating to the fact that there was no adjustment for change in preferences or the food basket over almost 40 years, and others to the lack of a norm for non-food expenditure (such as rent, education and medical expenditure), leading to the general conclusion that the poverty line in India as defined up till then was too low.

This led to the setting up of an Expert Group to Review the Methodology for Estimation of Poverty[8] (commonly referred to as the Tendulkar Committee) which submitted its report in 2009. The Tendulkar Committee accepted that the rural poverty line was too low, but argued that the urban poverty line was adequate. It therefore equated the rural poverty line to the existing urban poverty line. The justification for this arbitrary "new" poverty line was that, on average, a person with the expenditure at the cut-off level could afford to buy 1800 Kcal per day, the new recommended daily calorie intake as per the WHO/FAO[9]. As an aside, it may be noted that there has been criticism of the use of the new WHO/FAO standard of 1800 Kcal as the "minimum dietary energy requirements" or MDER for a person engaged in sedentary or light activity as the yardstick to calculate the poverty line. As Swaminathan[10] argues, the average poor person is likely to be engaged in moderate or heavy activity, making the recommendation for sedentary activity unsuitable in a definition of the poverty line.

The important point to note is that the link between calorie norms and the official poverty line was broken by the Tendulkar Committee Report. Furthermore, as no data on consumer expenditure have been released to the public since 2011-12, we do not have any official picture of the levels of poverty in the last decade. There was a Consumer Expenditure Survey in 2017-18, but the data was not in public domain; the leaked findings of the survey indicated a fall in monthly per capita expenditure as compared to the figures in the previous survey.

The food-share approach

A useful alternative way of defining poverty, with a direct link to food security, is the food share approach. Household budget studies for over a century have shown that, as the income of a household increases, the share of expenditure on food decreases. This constitutes the reasoning for using the food share (or inverse food share) as a measure of poverty: the higher the food share, higher the poverty[11].The United States Food Stamps programme, the biggest food security programme in the world, calculates the poverty line as thrice the estimated food expenditure, since about one-third of the expenditure of poor families was found to be on food. In other words, a poor family is identified as one that spends more than one-third of its family budget on food expenditure. In China, a food share of 60 per cent was used to identify the poor.

What does the evidence show for India? In Table 1, I have reported food shares by fractile of monthly per capita

Table 1 *Food expenditure as a share of total household monthly expenditure, by MPCE fractile groups, rural and urban India, 2001-12* in per cent

MPCE fractile	Rural	Urban
0-5	62.4	59.3
05-Oct	61	57.4
Oct-20	60.3	55.4
20-30	59.2	53.2
30-40	57.8	50.7
40-50	56.5	48.3
50-60	54.6	46.1
60-70	53.5	43.5
70-80	51.3	40.9
80-90	47.3	36.8
90-95	43.4	31.4
95-100	28.1	20.9
ALL	48.6	38.5

Note: MPCE is monthly per capita expenditure calculated using the URP or uniform reference period method of 30 days. Source: NSSO (2013).

expenditure for rural and urban areas separately for 2011-12, the latest year for which data are available. In rural India, the poorest five per cent of households (in terms of monthly per capita expenditure) spent 62 per cent of total monthly expenditure on food; the corresponding proportion was 28 per cent for the richest 5 per cent of households[12]. If the US criterion for food stamp eligibility is taken to be the criterion for identifying a food insecure household in India, about 95% of rural and 90% of the urban population of India would be classified as poor. If a less stringent criterion say a food share of 50 per cent is taken to identify the poor, then 80 per cent of the rural and 40 per cent of the urban population or a total of 68 per cent of the national population would be classified as poor. This derives from 40% of the urban population (31% of total population) and 80% of the rural population (comprising 69% of the total population) having a food share of more than 50%.The extent of poverty, based on a criterion directly linked to food expenditure, thus shows a much higher level of poverty than the standard poverty line definition does. This approach has influenced the National Food Security Act (NFSA) that was enacted in September 2013 in order to provide a legal entitlement to adequate quantity and quality of food at affordable prices. The NFSA divided the population into two categories: priority and general, with priority households accounting for up to 75% of the rural population and 50% of the urban population.

An affordable diet

While a lot of effort was put into defining poverty, less attention has been paid to the cost of a nutritious diet. An important contribution in this area has come from the latest *Report on State of Food Security and Nutrition in the World 2020*[13] which has attempted to estimate the cost of ensuring a nutritious diet. The Report discusses three types of diets: (i) a **basic energy-sufficient diet**, in which the required calories (taking the norm of 2329 Kcal for a 30 year old woman) are met by the cheapest cereals; (ii) a **nutrient-adequate diet**, where the required calories are met in addition to the requirements for macro and micro-nutrients; and (iii) a **healthy diet** that meets the requirements of the previous diet but with intake of items from several food groups, that is, allowing for dietary diversity. The Report finds that the basic energy diet costs 80% a day in south Asia, a nutrient-adequate diet costs $2.12/day and a healthy diet costs $4.07 day. All calculations are in terms of an international purchasing power parity (approximately one PPP $ equals Rs 25). The main finding relevant to us from this Report is that % of the Indian population cannot afford a nutritionally-adequate diet and 78% cannot afford a healthy diet. It is an interesting coincidence that the food share approach showed that 78% of the Indian population were food insecure in that they spent more than 50% per cent of their expenditure on food. To put it differently, two alternative approaches, that of food-shares and of affordable diets suggest that 78% of the population can be termed as being food and nutrition insecure. In this context, it is important for data from the survey of 2017-18 to be released and a new post-COVID 19 consumer expenditure survey to be conducted.

Physical access to food and the Public Distribution System

Let us now turn to the second issue of physical access or availability. The oldest food-based programme in India, in which access is provided directly, is the Public Distribution System or PDS. Other programmes are the School Mid-day meals programme, ICDS supplementary nutrition at Anganwadi centres. Started by the British as a war-time rationing method, the Public Distribution System grew over the years and was made a universal programme in the mid-1960s, after which it continued to expand through the 1970s and 1980s. In the 1990s, following policies of economic liberalization, and with the goal of reducing food subsidy, the Targeted PDS was introduced, which distinguished between two groups: below poverty line or BPL households and above poverty line or APL households, with differential benefits for the two groups. The size of the BPL group was based on official estimates of poverty. There was also an Antyodaya or poorest of the poor group. There is substantial international literature on the costs and benefits of targeted schemes versus universal schemes. The main benefit of targeting is to curtail fiscal expenditure (and subsidy) and the main cost is that targeting errors lead to exclusion of genuinely poor households. A decade after the Targeted PDS was introduced, the scale of targeting errors was widely recognised. An evaluation by the Planning Commission[14] stated that only about 57% of BPL households were actually being covered by the TPDS. According to the same Report, "transition from universal PDS to TPDS has neither led to a reduction of budgetary food subsidies, nor has it been able to benefit the large majority of the food insecure households in the desired manner" Analysis of data from the 61st round of the National Sample Survey[15] showed that targeting had led, in rural India, to high rates of exclusion of needy households from the system and a clear deterioration of coverage in States like Kerala where the universal PDS was most effective[16].

To illustrate, excluding the States of the North East, the proportion of households with 'no card' was highest in Orissa - where 33% of rural households did not possess any type of ration card. Thus, in a State characterized as 'severely food insecure'[17] one-third of rural households were outside the purview of the PDS. In another 10 States, more than 20% of rural households did not

possess a ration card. In the overwhelming majority of States, 60% or more of the population either had no ration card or APL card, and were thus effectively excluded from the PDS. This includes the BIMARU States, the relatively backward States of Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh. It is important to understand the implication of this large-scale exclusion of households from the PDS by identifying characteristics of households that are excluded from the PDS. It has been noted, for instance, that exclusion is very high among agricultural labour households[16]. There were only four States (Tamil Nadu excluded) in which two-thirds or more of agricultural labour households held Antyodaya or BPL cards. These States were Andhra Pradesh, Karnataka, Jammu and Kashmir and Tripura. The all-India average indicates that 18.5% of agricultural labour households had no card and another 33.6% had an APL card. Using the official poverty line as the cut off[16], it was found that the error of wrong exclusion was 28.3% while the error of wrong inclusion (of the so-called non-poor) was 12.3%. Targeting has come at a high cost - high exclusion of households living below the official poverty line.

Based on such analyses, in a context where the target group is very large and the majority of the population (as, say indicated by the data on food shares), the concern has to be on reaching the poor and not on excluding a small minority. In other words, the priority should be reducing exclusion errors (wrongly excluding the poor) and not inclusion errors (wrongly including the rich). A universal PDS will be more effective than a targeted PDS in this goal of reducing exclusion errors and the additional expenditure can be recouped through other means such as progressive taxation. This observation has found some recognition in the NFSA, as mentioned earlier, as the priority group of households includes 75% of rural households and 50% of urban households, or a total of two-thirds of all Indian households, and is thus bigger than the earlier classification of BPL households. Not surprisingly, in States where the targeted PDS was functioning very poorly, such as States of eastern India (Bihar, Odisha, Jharkhand), there was an expansion of coverage after NFSA, as a higher proportion of the population is categorised as priority as compared to the AAY and BPL categories earlier.

What needs to be done?

Nutritional outcomes depend on many factors, ranging from hygiene, food intake, dietary diversity and physical activity which in turn, are influenced by many other factors including income, prices, information, education and health care. This paper puts forward the argument that in the current circumstances in India, physical and economic access to the right quantity and quality of food is a critical factor in nutritional outcomes. Thus action is needed both to ensure physical availability and to raise incomes. If incomes are inadequate, no amount of exhortation can improve dietary practices. Today, in the midst of the COVID 19 pandemic, it is essential to provide sizeable short-term income transfers to the large majority of households in the country. In the longer-run, of course, we need more and better paid employment. In terms of physical availability, existing schemes can be expanded in more imaginative ways. For example, a more diverse food basket can be made available through the PDS (by including pulses, oil, millets where possible, etc). After the lockdown, the Government of Kerala has issued, in addition to the regular rations, over eight million grocery kits, comprising 17-items including dal, oil, sugar, spices and soap. The mid-day school meal needs to be re-started (even if schools remain closed) and the quality of the mid-day meal can be improved (milk and eggs can be made essential, for example), and so on. This is an area for nutritionists to intervene. Here too, there are longer-run concerns that need to be addressed such as raising the production of pulses and millets in the country.

In the post-liberalisation era, many economists argued for cash transfers to replace the PDS on the grounds that the management of food procurement, stocks and distribution was more burdensome on the exchequer than direct cash transfers. For cash transfers to work better than direct food transfers, however, the very minimal assumptions are that there are no supply-side problems, and that only a small target population has to be reached on account of relatively high levels of attainment in the indicator of concern. These minimal conditions are not met in India, and therefore introducing cash transfers in such a situation is very dangerous policy. An essential difference between cash transfers and food transfers is that there is no direct public control over availability, quality or price of goods and services when transfers are made in cash. Many of the economists who favoured cash transfers have completely changed their views in the context of the pandemic. The fact that India has not dismantled the PDS was literally a life-saver, as it provided a network of lakhs of ration shops across the country that could be used to distribute basic food commodities when all other supply chains collapsed. To conclude, a multi-pronged approach is needed to address the problem of food and nutrition security in India. Important elements of this approach are ensuring economic and physical access to nutritious diets by means of both income transfers *and* distribution in kind.

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EVOLVING COVID 19 PANDEMIC: LESSONS LEARNT

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Introduction

It is nine months since we came to know that a novel virus, subsequently named SARS CoV2, was causing a major respiratory epidemic in China and six months since COVID 19 was declared a Pandemic on the basis of the speed and scale of transmission. During this period the world has traversed four distinct phases of the pandemic. Initially, the focus was on attempts to reduce transmission of the infection to the unaffected countries by quarantining, screening those coming from other countries and, later, banning international travel. By April 2020 many countries began reporting infections in persons without a travel history or known contact with an infected person.

In an attempt to delay and slow down the spread within the country, almost all countries imposed lockdowns. Lockdowns did to some extent delay the transmission but had major adverse impact on economy livelihoods, and food security. The delay in rapid transmission of infection due to lockdown, enabled countries to reorganize the health system. Laboratories were strengthened for screening unprecedented large number of persons for SARS CoV 2 infection. Personnel in primary health care system were trained for following up infected persons and their families in home isolation and undertake contact tracing and screening. Hospitals were reorganized and strengthened to provide needed health care for persons with moderate and severe COVID 19 infection or persons with COVID 19 infection and comorbidities. Standard operating procedures for management of moderate or severe COVID 19 infections were evolved, tested and modified based on the clinical experience. Massive health education efforts through all media were under taken to make the population aware of simple feasible methods for reducing transmission of SARS CoV 2 infection such as physical distancing, wearing masks, observing respiratory etiquette and hand washing. The COVID 19 tracking system showed that these efforts did slow down the transmission during lockdown, but in the last three months there has been progressive increase in the number of infected persons. Efforts of the health system had succeeded in keeping the mortality rates associated with the infection at a low level.

Winter associated rise in respiratory infection will start soon in the populous north India and we will have to learn to live and cope with rising number of SARS CoV2 infection in the coming months. This article reviews lessons learnt in the last nine months on:

- epidemiology of COVID 19 pandemic,
- evolving strategies for:
  - screening for SARSCoV2 infection, contact tracing, home isolation,
  - home based management of asymptomatic and mildly symptomatic persons,
  - hospital based management of COVID 19 cases and
- vaccines for prevention of COVID 19 infection.

Epidemiology of SARS CoV2 infection

Globally there has been progressive increase in the confirmed cases over the last nine months. As of 30.9.2020, globally there are over 34 million confirmed COVID 19 cases; over one million deaths have been reported. India has reported 6.2 million cases and 97,552 death. There are however two silver linings to this dark cloud. Across the world there has been decline in the case fatality rates (COVID 19 deaths/confirmed COVID 19 cases). Large scale sero-prevalence studies across the world have shown that about 20% of the population surveyed had SARS CoV2 infection prior to the survey. Most of the persons who were seropositive never had any symptoms and did not undergo testing for SARS CoV2 The computed infection fatality rates (Number of COVID 19 deaths/computed number of infected persons as assessed from sero-surveys) is 1/1000 or less. These data suggest that though SARSCoV2 infection resembles the 1918 Spanish flu epidemic in terms of magnitude of transmission of infection, infection fatality rates are quite low.

The global figures are compiled from the reports from countries. There are delays or inconsistencies in country reports. For instance China still reports cumulative cases below 100,000. These problems have to be taken into account while drawing inferences on country-specific caseloads from the global report. At country level, the U.S. has reported the highest number of confirmed cases and India the second highest. The high confirmed cases in USA is mainly due to high testing rates .In India the large population size has to be taken into account. When caseload per million population is considered India has far lower caseload as compared to USA and many other countries. Currently positivity rate among persons tested with accurate test ranges between 7 and 10% in most countries.

India has recorded a steep increase both in the number of persons tested and the number of new cases detected in the last few weeks. Currently nearly a million persons are being tested daily and about 80 to 90,000 confirmed cases are being reported. In India the positivity rate has remained around 7% for the past three months. Therefore the increase in the number of confirmed cases in India/day or week are essentially due increase in the number tested and the fear that infection rates are rising is unwarranted.

A third factor - the test used for confirming the SARS CoV2 infection - has to be considered while assessing interstate differences in reported cases. Earlier only the accurate (but time consuming) RT-PCR test was used but in the last two months Antigen Detection tests are increasingly used by some states such as UP and Bihar. It has been estimated that upto 50% of the infected persons will be missed if the antigen test alone is used for screening.

Sero surveillance for SARS-CoV2

It is now well recognized that SARS CoV2 infection is a very contagious respiratory infection. Past exposure to infection with SARS CoV2 can be detected by testing for IgG antibodies. Currently many countries are undertaking sero surveillance for SARS CoV2 to assess the magnitude of the infection in different regions and states. Many countries report that about 20% of the population are seropositive. The available meagre data on time trends in sero-positivity rates suggest that in all countries there is a progressive increase in the proportion of infected persons over time.

In India there are substantial interstate differences in sero-positivity rates. Sero-positivity rates are lower in rural areas as compared to urban areas. Sero-positivity rates in persons living in crowded ill ventilated tenements in urban areas are high (60% seropositive in Dharavi, Mumbai), while the rates in middle-income residential colonies are substantially lower. Data from Delhi indicate that between July and August the sero positivity in the local population increased from 23% to 30%. The reported sero-positivity rates are several folds higher than the reported current infection rates (8% confirmed cases) as reported by RT-PCR testing.

Policy and programme implications

Comparing the estimated burden of infection in India computed by different methods provide some interesting insights .The computed confirmed cases rates/million population is 0.35%; the cumulative positivity rate among those screened is about 8.5%. The sero-positivity rates by Ig G ELISA is about 20%. Clearly persons who have no symptoms (pre symptomatic or asymptomatic) and do not know that they are infected, play a major role in transmission of infection. To reduce the risk of the spread of infection unknowingly from these categories of infected persons, physical distancing, mask wearing and hand washing by all is essential.

There is a need to review the current strategy of testing very large numbers of persons to detect relatively small number of infected persons. If most health personnel are involved in screening, isolating infected persons, undertaking contact tracing and testing, they may face severe time constraints for providing care of the symptomatic SARS CoV2 patients and persons with other health problems. With the expected increase in the number of persons with respiratory symptoms during the coming winter months, testing symptomatic persons

providing appropriate care to those with moderate and severe infection may have to be given high priority so that the mortality rates can be kept low.

Care of confirmed COVID 19 cases

Home isolation and care

Available data indicate that hospitalizing millions of confirmed COVID positive asymptomatic or mildly symptomatic persons is neither feasible nor desirable. Global data has shown that providing anti-viral drugs, chloroquine or other unproven therapeutic interventions does not reduce progression to severe illness. Indian guidelines advise that all asymptomatic or mildly symptomatic persons and their families should be in home isolation for a fortnight. They are to be given counseling on steps to be taken to prevent transmission of infection at home.

Home isolation and care for the confirmed COVID 19 cases and their family members is a feasible option even when nearly 100,000 cases are being detected every day in India. Telephonic follow up by health care workers and provision of telephone help line numbers to contact if there is any deterioration in health status of the person are being implemented across the country. Those who develop mild symptoms are advised to contact the state or National COVID help line. After clinical assessment, mildly symptomatic persons with no potential risk factors for severe disease are advised home care if the family can provide the needed supportive care.

Hospitalisation and care

Respiratory distress due to viral pneumonia and/or pneumonia due to secondary bacterial infection was the most common presentation of COVID 19. Initially almost all patient with respiratory distress were put on ventilators and given positive pressure ventilation. Wider clinical experience suggested that this may aggravate rather than alleviate hypoxia especially in patients with inflammatory cytokine storm. Based on the experience gained in the last few months WHO has drawn up guidelines for management of CIVD 19. WHO and Indian guidelines state that:

- antibiotic use is indicated only in those with bacterial pneumonia
- there are no proven specific drugs or treatment modalities for management of COVID 19 infection;
- anti-influenza drugs or anti-HIV drugs, convalescent plasma do not reduce severity or duration of illness; and
- optimal results are likely to be achieved by providing oxygen through nasal catheter or mask and nursing the persons in prone position to optimize lung expansion.

Some patients respond with high levels of inflammatory cytokines; those with cytokine storm may benefit from administration of dexamethasone. In some others the coagulation pathway gets activated placing them at increased risk for venous and arterial thrombosis of large and small vessels; these person with thrombotic episodes can benefit from heparin. Apart from respiratory problems, severely ill COVID 19 patients may suffer from sepsis and septic shock, cardiomyopathy and arrhythmia, acute kidney injury and complications from prolonged hospitalization, including deep vein thrombosis and pulmonary embolism. One of the major problems in management of severely ill patients is difficulty in diagnosing which of the factors listed above is responsible for the severe symptoms and providing appropriate medication.

Available data indicate that hospitals across the country are equipped to provide essential supportive care to the persons with moderate and severe infections. There are earmarked COVID facilities in cities with high case load. Some states are providing real time digital information on availability of hospital beds to help the persons in accessing care in the near vicinity of their home. There is a need to strengthen all hospitals across the country to cope with the expected increase in respiratory ailments (including COVID19) during winter months.

During the last six months delivery of preventive and promotive health services, services under disease control programmes and maternal and child health, elective procedures had been slowed down substantially. This was due to several factors including prioritization of COVID 19 related care and allocation of personnel for these services, reduced access to services during lockdown, population not accessing health services due to fear of COVID 19 infection. With the phased unlocking underway, this trend has to be halted and later reversed.

Vaccines for prevention of COVID 19

Efforts to develop vaccines for prevention of SARS CoV2 have received extensive global support. Globally and in India several vaccines are in Phase 2/3 clinical trials. It is expected that a safe and effective vaccine may become available early in 2021. Vaccine will have to be given on priority basis to health care workers and other front line workers dealing with COVID 19 cases as personal protection measure. Persons at high risk of developing severe COVID 19 infection should also receive vaccines because this may reduce number of persons developing severe COVID infections and mortality associated with them. However it will neither be feasible nor affordable

to provide vaccine for India's 1.3 billion population, to prevent transmission of COVID 19 infection in the country in the coming year.

Mortality rates in SARS CoV2 infection

Most of the COVID trackers provide data on case fatality rate (CFR) (number of deaths in confirmed COVID 19 persons/total number of confirmed COVID 19 cases). Reported case fatality rates are higher in developed as compared to developing countries and in urban as compared to rural areas in the same country. India has a relatively low case fatality rate (1.6 %) which is half of the global average. There are marked interstate and urban rural differences in case fatality rate in India also. Part of this could be due to under reporting or delays in reporting both cases and deaths. But the fear that when the COVID 19 spreads to rural areas, the health care system may be overwhelmed and case fatality rate in rural areas will be higher than that reported from urban areas has been shown to be unwarranted. Strengthening hospitals across the country is urgently required during winter months so that they could cope with rising number of persons with moderate and severe COVID infection requiring care and keep case fatality rates low.

With the availability of data from sero-surveillance it is possible to compute mortality rates among all infected persons. Assuming an average of 20% sero-positivity in India (the number of infected persons works out to be over 26,00,00,000) and the number of confirmed deaths 97,552, the computed infection fatality rate (IFR) is just 0.04 %. Undoubtedly there is under-reporting of deaths, especially in rural areas, in many of the states, resulting in under-counting of deaths due to COVID 19; but clearly less than 1 in 1000 of COVID 19 infected. Data from other countries have also shown that COVID 19 infection rates (as assessed by sero-surveillance) are high between 20 and 25% and infection fatality rates are one per thousand or lower. These data indicate that though COVID 19 may match Spanish flu in terms of transmission of infection, global efforts have succeeded in keeping the mortality rates relatively low.

Way forward

It is likely that the progressive increase in the cumulative number of infections will continue over the next few months but the country has geared up to provide health care for infected persons and case fatality rates are low. The lockdown had very adverse impact on economy; unemployment has risen but provision of free rations to all since April 2020 has minimized hunger. However there is an urgent need to reduce unemployment, improve industrial production and economic growth. The education sector had faced major problems; while colleges and higher secondary schools have tried to provide e-education, the situation is far from satisfactory in primary schools. Services under national health programmes and elective interventions in health have been curtailed in the last six months and this could have adverse impact on health status of the population. Several mental health problems associated with staying at home for six months have been reported.

Taking all these factors into account India is opening up the lockdown in a phased manner despite increasing trend in the number of confirmed cases. It is essential that in the coming months the population and health services gear up to make up for the lost time and ensure that care for all categories of illnesses, preventive and promotive care and elective procedures are readily available and fully utilized. This will prevent any increase in morbidity and mortality due to illnesses other than COVID 19. There is an urgent need to reinforce the message that these efforts require the cooperation of all the citizens in terms of universal adherence to physical distancing and wearing masks so as to reduce transmission of all respiratory infections, including COVID 19, during the coming months.

The author is Director Nutrition Foundation of India

FOUNDATION NEWS

Dr. C Gopalan Memorial webinar

On 03.10.2020 NFI in collaboration with NAMS and TATA Trust will organise the Dr. C Gopalan Memorial webinar on "Nutrient requirements of Indians".

There will be three presentations:

Dr A V Kurpad: Energy requirements for Indians

Dr Prema Ramachandran: Energy requirements during pregnancy and lactation

Dr Rajan Sankar: Micronutrient requirements for Indians

Obituary

Dr. S. Padmavati, a member of the Governing Body of Nutrition Foundation of India from its very inception, passed away on August 29, 2020. She was Director of the National Heart Institute Delhi for several decades and Founder President of All India Heart Foundation. Not only was she a pioneering woman cardiologist who blazed new trails in her profession but also a very helpful, thoughtful and good human being. She was consistently supportive and helpful in all NFI activities and programmes. NFI will miss her wisdom and guidance. May her soul rest in peace.