ASSESSMENT

Role of Health Services in Nutrition

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In the dual nutrition and health burden era, assessment of nutritional status is an important component of both public health interventions and care of individuals seeking health care. Ideally, nutritional assessment should be carried out periodically in all individuals and more often in vulnerable segments of the population such as children, adolescents, pregnant and lactating women and elderly citizens. Neither nutrition and health services nor our population, are geared for such routine periodic assessment for early detection, appropriate counseling and effective management of nutritional deficiencies and excesses before clinical problems arise

When India became independent, the country faced two major nutritional problems: a threat of famine and the resultant acute starvation due to low food production and the lack of an appropriate food distribution system. The other was chronic under-nutrition due to poverty, food insecurity and inadequate food intake. Famine and starvation hit the headlines because they were acute, localised, caused profound suffering and fatalities. But chronic low food intake was a widespread silent problem leading to under-nutrition, ill health and many more deaths than starvation. Mutually reinfor cing adverse consequences of under-nutrition and ill health resulted in high morbidity and mortality in all age groups and the longevity at birth was only 35 years. Recognising that optimal health and nutrition were essential for human development and human resources were the engines driving national development, Article 47 of the Constitution of India states "the State shall regard raising the level of nutrition and standard of living of its people and improvement in public health among its primary duties". The country adopted multi-sectoral, multi-pronged strategies to improve the nutritional and health status of the population. Successive Five-Year Plans documented the policies, strategies and intervention programmes, provided the needed funds and laid down targets to be achieved in the defined time frame. Progress was monitored through the national surveys.

All the national nutrition and health surveys carried out over the last four decades have documented that there have been steady but a slow decline in under-nutrition and micro-nutrient deficiencies, morbidity and mortality due to severe infections. Because of the synergistic interactions between nutrition and health, some health interventions resulted in improving both health and nutritional status and vice versa. In the last two decades, there has been a slow but steady increase in the prevalence of over-nutrition and non-communicable diseases (NCD). The population is not fully aware of the adverse health consequences of over-nutrition and tends to ignore obesity. NCDs are asymptomatic in the initial phase; only after symptoms due to complications arise do patients seek health care. It is essential to improve awareness regarding health consequences of adiposity and initiate programmes for prevention and management of adiposity. Simultaneously interventions for regaining normal nutritional status in those with NCD will have to be initiated as a part of the management of NCD. This article will briefly review the role of health services in addressing

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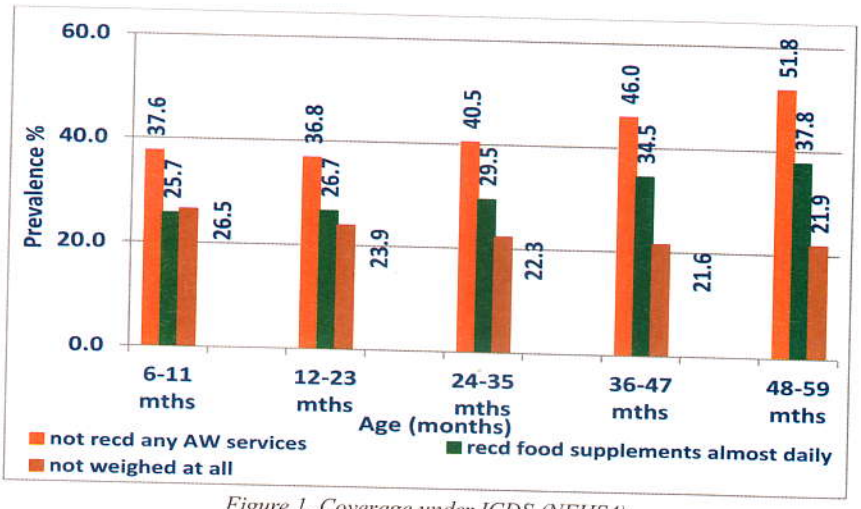

Figure 1. Coverage under ICDS (NFHS4)

the nutrition challenges in the dual nutrition burden era.

A decline of under-nutrition

Pre-school children were recognized as the vulnerable group prone to under-nutrition and ill health. Under-nutrition in pre-school children renders them susceptible to infections; infections aggravate under-nutrition and micro-nutrient deficiencies. Severe or repeated infections in under-nourished children if left untreated could result in death. Therefore high priority was accorded to reducing under-nutrition in pre-school children. The Integrated Child Development Services (ICDS) was aimed at providing food supplements to children from poor and marginalized sections to bridge the gap between requirement and actual dietary intake. Another component of ICDS programme was weighing children for early detection of growth faltering and under-nutrition and initiating appropriate management of under-nourished children. Though initiated in the seventies, ICDS was universalised only in the first decade of the new century. Over decades there has been an improvement in the coverage under both components of ICDS but data from the National Family Health Survey (NFHS)-4 showed that even in 2015 coverage under both the components still remains suboptimal (Figure 1). Data from surveys carried out by the National Nutrition Monitoring Bureau (NNMB) indicated that despite poor coverage under ICDS, there has been a slow but steady reduction in the prevalence of under-nutrition in pre-school children (Figure 2). Data from NFHS 2, 3, and 4 showed similar trends between 1990 and 2015 (Figure 3). During this period there was sustained a reduction in infant mortality rate (IMR) and under-five mortality rate (U5MR) (Figure 4). Infections were the major causes of U5MR; the steady decline in U5MR between 1970 and 2015 was due to substantial improvement in access to health services for immunization and treatment of infections in under-five children. Prevention and treatment of infections reduced energy loss due to infection and prevented deterioration in nutritional status. Thus, improved access to healthcare played an important role in achieving a steady reduction in the under-nutrition rates in pre-school children in the last four decades.

Optimal nutrition in childhood

Indian children are short and underweight right from birth. As birth weight is a major determinant of growth, low birth weight children grow along a lower trajectory of growth during infancy, childhood and adolescence. As a result, nearly half of the children are classified as stunted and underweight. Height, weight and BMI are three parameters widely used for assessing nutritional status. Of the three, BMI Body Mass Index which is the indicator of current energy adequacy has long been accepted as the indicator for

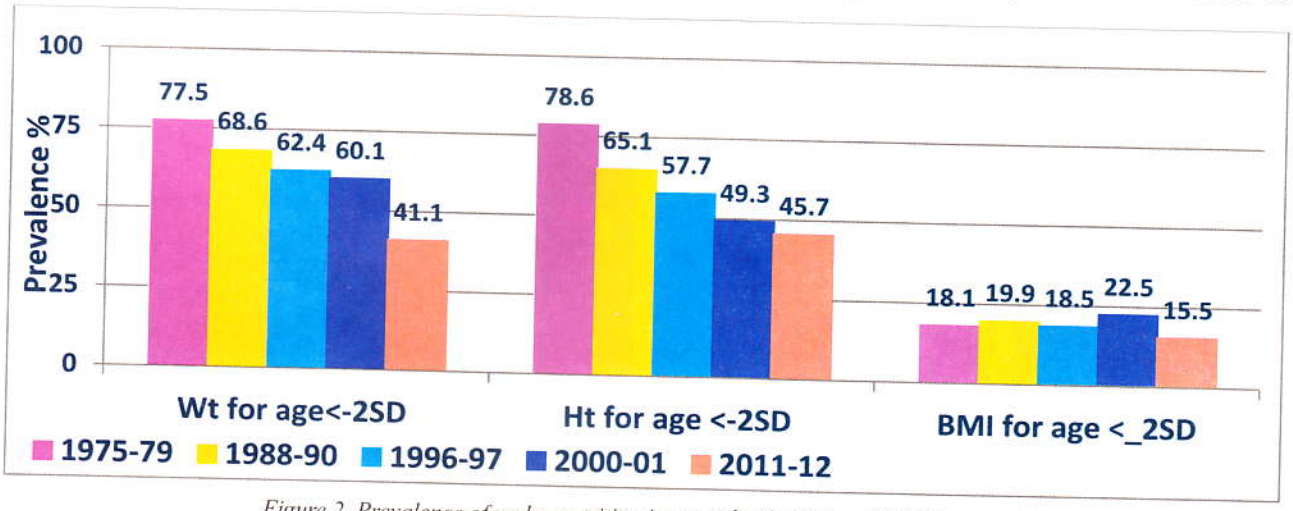

Figure 2. Prevalence of under-nutrition in pre-school children (NNMB surveys)

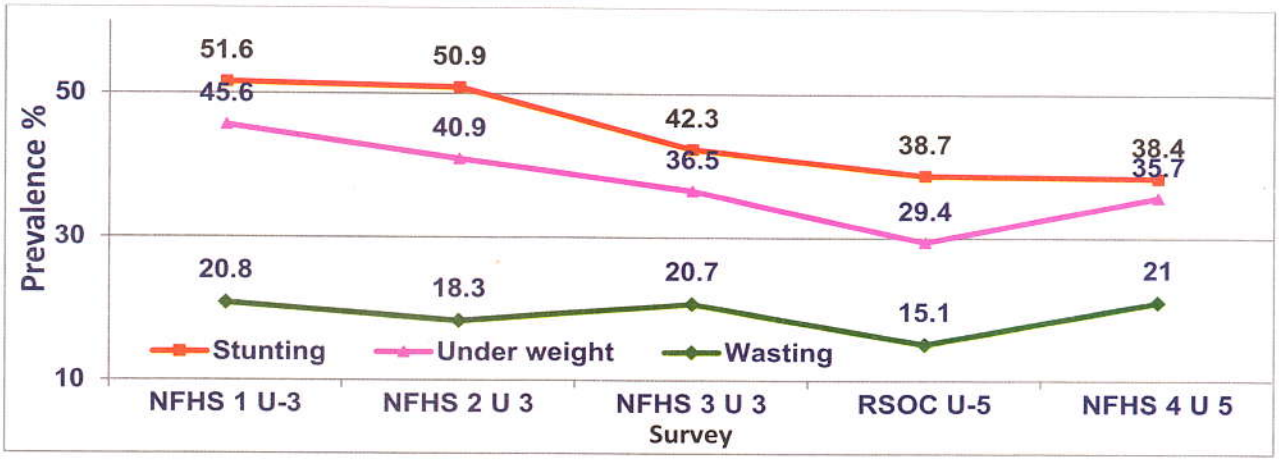

Figure 3. Prevalence of under-nutrition in pre-school children (NFHS2, 3, 4 & RSOC)

assessment of nutritional status in adults. However, WHO standards for BMI-for-age for children became available only in 2006 (0-5 years) and 2007 (5-18 years). Analysis of data from NFHS 4 using WHO standards showed that if BMI for age is used as the criterion for under-nutrition only 18.4 per cent of the under-five children were under-nourished and 2.6 per cent were over-nourished (Fig 5). Data from research studies in India indicate that under-five children, who gain undue weight during childhood and adolescence, were more prone to become adipose and develop hypertension and diabetes in adult life. At present, there is very little awareness on the use of BMI-for-age for assessment of nutritional status in Indian children and providing appropriate nutrition education.

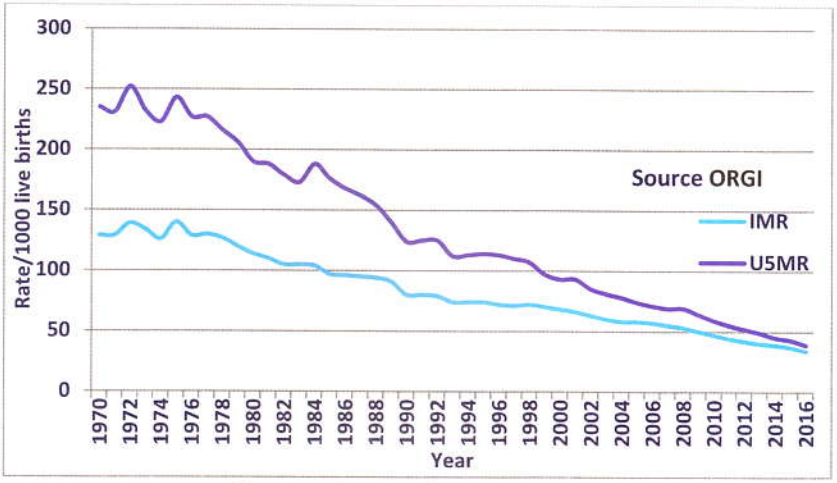

Figure 4. Time trends in IMR & U5MR

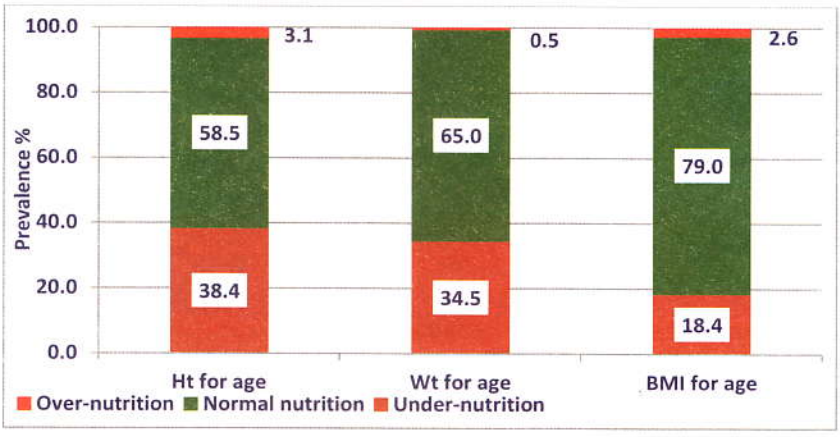

Figure 5. Assessment of nutritional status using BMI in children (NFHS 4)

Elimination of blindness

During the 1960s poverty, household food insecurity and hunger were widespread among poorer segments of the population. Dietary intake of all nutrients was low and moderate and severe under-nutrition in young children were common. Poor green and yellow vegetable intake led to widespread vitamin A deficiency. Prevalence of respiratory infection and measles was high in young children living in overcrowded households. The primary health care infrastructure for treating infections was poor in urban areas and non-existent in rural areas. Untreated severe infections, especially measles, in the already severely under-nourished young children, led to keratomalacia; those who survived the infections were often left with nutritional blindness. Studies carried out by the National Institute of Nutrition showed that massive dose Vitamin A (200,000 units) administered once in six months to children between one and three years of

age, reduced xerophthalmia by 80 per cent. Based on these findings, Massive Dose Vitamin A Supplementation (MDVAS) once every six months for 1-5-year-old children was initiated in 1970; but coverage under the programme was low (<10 per cent). During the eighties there was a steep reduction in keratomalacia; over the next decade blindness due to vitamin A deficiency was not reported by major hospitals. Analysis of data from large-scale studies showed that the coverage under MDVAS was still quite low; but the primary health care infrastructure in urban and rural areas had been established and access to immunization, treatment of infections and severe grades of under-nutrition had improved substantially. The elimination of keratomalacia was, therefore, an example of health care interventions helping in achieving nutritional goals.

Universal salt iodization

Iodine deficiency disorders (IDD) have been recognised as a public health problem in India since the 1920s. Unlike other micro-nutrient deficiencies, iodine deficiency disorders are due to deficiency of iodine in water, soil and foodstuffs and affect all socio-economic groups living in defined geographic areas. IDD during pregnancy was associated with high abortion and foetal wastage rates; some infants born to these mothers suffered from cretinism and mental retardation. In adults, IDD include hypothyroidism and goitre. Universal use of iodised salt is a simple, inexpensive method of preventing iodine deficiency disorders.

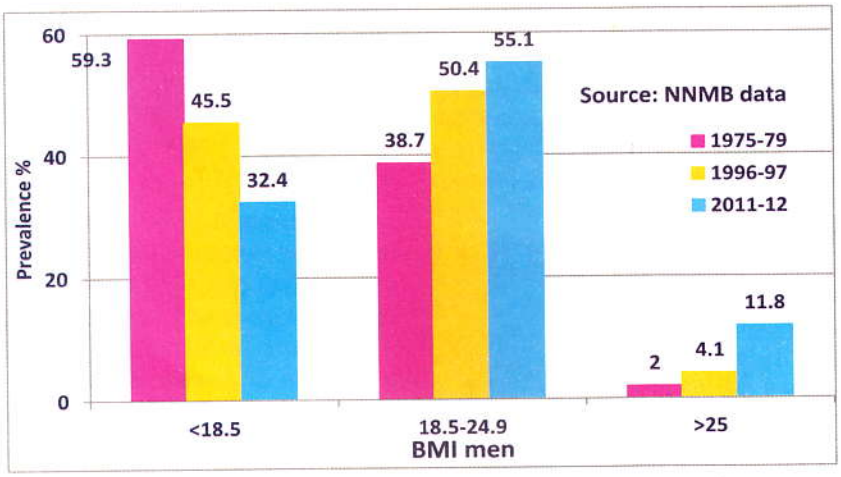

Figure 6. Time trends in over-nutrition in men (NNMB surveys)

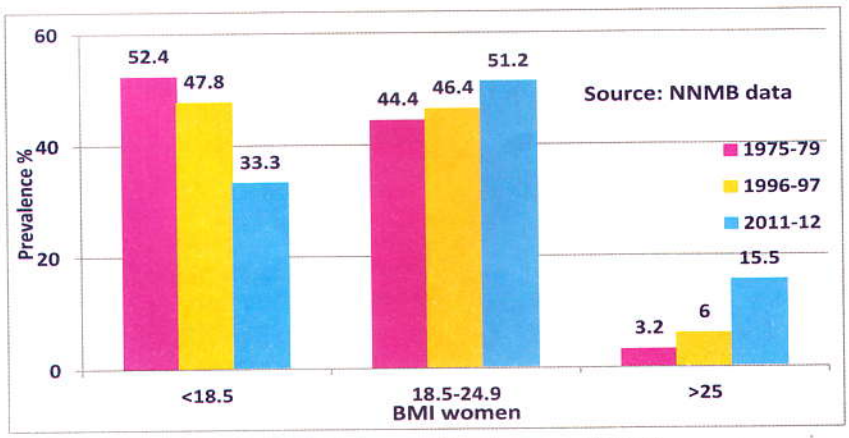

Figure 7. Time trends in over-nutrition in women (NNMB surveys)

Initially, IDD in India was thought to be a problem in the sub-Himalayan region. The National Goitre Control Programme initiated in 1962, focused on supplying iodised salt to those living in goitre belt. Research studies carried out over the next two decades showed that in areas where iodised salt was used there was a decline in cretinism and mental retardation in children and some reduction in the prevalence of goitre in 6-12-year-old children. Surveys carried out in the eighties showed that IDD existed in pockets in all states in India. Taking this into account National Iodine Deficiency Disorders Control Programme (NIDDCP) was initiated in 1992 with the goal that all salt for human consumption will be iodised to ensure universal household access to iodised salt. However, over the next fifteen years, the household access to adequately iodised salt remained

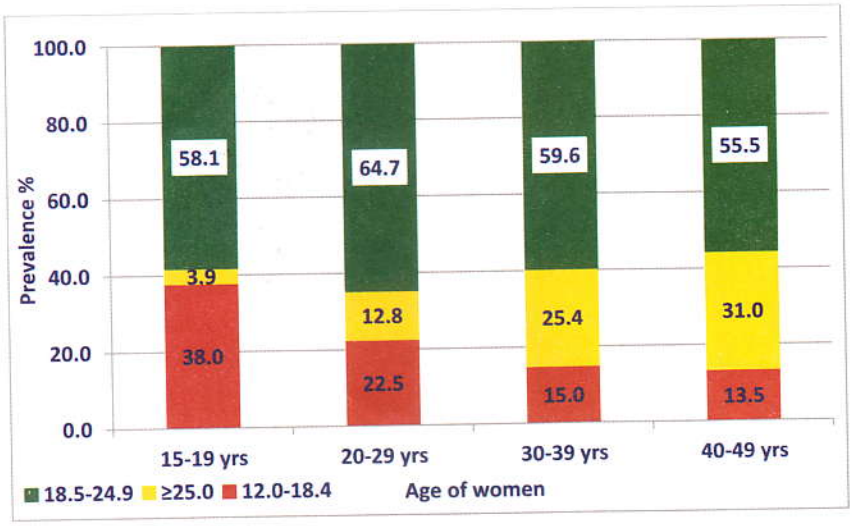

Figure 8. Effect of age on nutritional status in women (NFHS 4))

below 50 per cent. This was partly because persons living in coastal states with a low prevalence of IDD were not aware of the health benefits of the use of iodised salt and bought and used cheaper non-iodised salt. In 2007 mandatory fortification of all salt for human consumption with iodine was notified. Concurrently, an awareness campaign on health benefits of the use of iodised salt was mounted through all media of communication. These initiatives paid rich dividends. Data from the NHS 4 showed that in 2015, over 90 per cent of the households accessed and used iodised salt. Universal salt iodization programme is an example of a nutrition programme not only achieving nutritional goals but also preventing mental retardation in children and IDD related health problems in adults.

Dual nutrition and health burden

Over the last three decades, there has been increasing mechanization of the transport, occupation and household work related activities. As a result, there has been a steep reduction in the physical activity and majority of Indian have become sedentary. There has been some reduction in food intake but this was not commensurate with the reduction in physical activity. As a result, there has been a progressive rise in over-nutrition. The data from surveys carried out by the NNMB had shown that there has been a progressive

increase in the over-nutrition rates both in men and in women in the last four decades. The increase in over-nutrition rates was steeper between the mid-nineties and 2012 (Figure 6 and Figure 7). Over-nutrition rates in women were higher than over-nutrition rates in men. Data from NFHS 4 showed that with increasing age, over-nutrition rates increased (Figure 8). Women ignore such weight gain and do not seek any nutrition or health advice and incur the risk of NCD and their complications. To reduce the health hazards associated with obesity, it is essential to screen men and women for over-nutrition and provide appropriate health and nutrition counselling to over-nourished persons.

Whenever data on time trends in the prevalence of under- and over-nutrition are presented some in the audience feel that changes in BMI had occurred only in a small proportion of women. But overtime BMI in most women has increased. As a result, the proportion of women whose BMI was below the cut-off for under-nutrition had decreased and proportion of women whose BMI was above cut off for over-nutrition has increased (Figure 9). For optimal nutrition, those with BMI <18.5 should gain weight so that they become normally nourished; but normally nourished persons should not gain weight and become over-nourished. Moderate physical activity is essential for optimal nutrition and health. Health education message (through all media of communication) that at least 30 minutes of sustainable discretionary physical activity (such as walking) per day is essential for

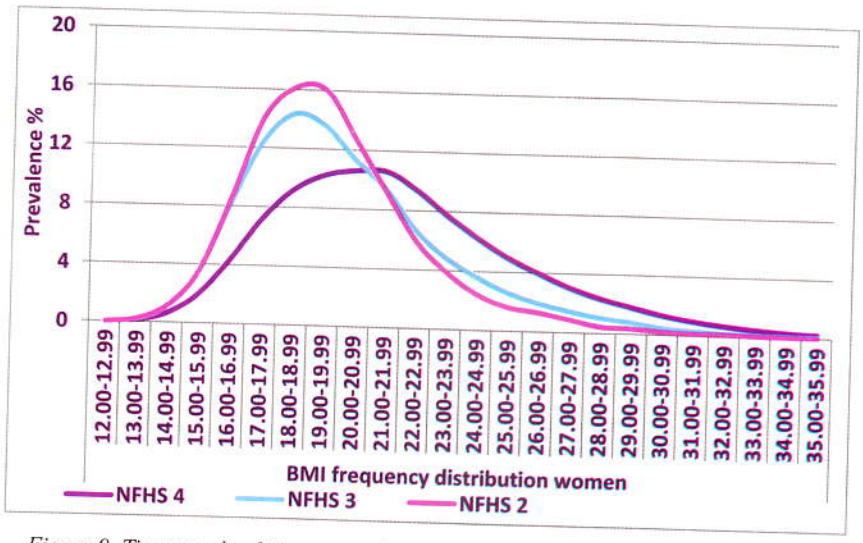

Figure 9. Time trends of Frequency distribution of BMI in women (NFHS 2, 3 & 4)

optimal nutrition and health may go a long way in halting the rise in over-nutrition and NCD rates in adults.

Conclusion

India's health system was built up with focus on early detection and effective treatment of under-nutrition, infections and maternal child health problems. Most of these health problems are symptomatic and acute. Ill persons do access health care and under-nutrition and infections can be readily treated. Over years utilization of health care had improved and this led to sustained reduction in under-nutrition, ill health and mortality rates.

In last two decades, over-nutrition and associated non-communicable diseases are emerging as major public health problems. Majority of Indians do not worry about over-nutrition because it does not interfere with their day-to-day life. They do not realize that adiposity predisposes to NCD. Most of the NCDs are asymptomatic in the initial phases and so the majority of persons with NCD seek care only when symptoms due to complications arise. NCD management requires lifestyle modification and lifelong medication. In the coming years, Indians and Indian health system have to reorient and gear themselves for successfully managing the prevention, early detection and effective management of dual nutrition and disease burden.

In the dual nutrition and health burden era, assessment of nutritional status is an important component of both public health interventions and care of individuals seeking health care. Ideally, nutritional assessment should be carried out periodically in all individuals and more often in vulnerable segments of the population such as children, adolescents, pregnant and lactating women and elderly citizens. Neither nutrition and health services nor our population, are geared for such routine periodic assessment for early detection, appropriate counseling and effective management of nutritional deficiencies and excesses before clinical problems arise. Therefore we should begin with an assessment of nutritional status as when any person seeks health or nutrition care.

Once the assessment is done appropriate advice should be given depending upon their nutritional status:

- normally nourished persons - protect their current lifestyles and provide support for continued normal nutrition and health status;
- those who are under- or over-nourished and are at risk of health problems - provide counselling regarding appropriate food intake and physical activity, if required provide nutritional supplementation and monitor for improvement;
- those with illness- identify nutritional problems, provide appropriate health and nutrition therapy to restore normal health and nutrition and monitor response.

Nutritionists and physicians have to play a critical role in combating the dual nutrition and disease burden by appropriate nutrition and lifestyle counselling and nutrition and health care. Promoting synergy between health and nutrition services will enable the country to successfully face the nutrition challenges and achieve rapid improvement in health and nutritional status of the population. ❑

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