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The Population Problem : Its Qualitative Dimension*

IN most discussions of the population problem, major concern and attention I have been directed to the quantitative dimention-the alarming growth in numbers outstripping available or anticipated resources essential for sustaining such growth. There is, however, another dimension of the population problem in our country, the *qualitative* dimension which should cause even greater concern and alarm. This is the steady deterioration of the physical and mental calibre of our Human Resources- the most precious of all national resources- through persistant ill-health and undernutrition afflicting large proportions of successive generations of our children, during the crucial years of their growth and development.

The Dimension of the Problem

Thus, of the nearly 23 million children who will be born in our country in 1983, nearly 3 million may be expected to die before they reach the first year; another one million more will drop by the way-side before they complete their childhood. Of the remaining 19 million nearly 9 million will emerge into adulthood with impaired physical stamina, low productivity and poor mental abilities because of serious under-nutrition and ill-health during their childhood. Yet another 7 million who will suffer milder forms of malnutrition may reach adulthood with less striking physical and mental impairment. Only less than 3 million of the 23 million to be born in 1983 will become truly healthy, physically fit,

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productive and intellectually capable citizens of this country. Thus the full genetic potential for growth, physical and mental development would have been achieved by less than 15% of the children born; and even this may perhaps be an overestimate.

In absolute terms, the annual numbers of citizens of sub-standard quality that will be added to our population will steadily rise in the years ahead if present trends persist. This steady and relentless undermining of the most valuable of all our resources, poses a far greater threat to our nation than any threat of armed aggression from external agencies. It must however be pointed out that this frightening scenario, is based on currently prevailing trends in our national health and nutrition situation; it seeks only to indicate what would happen *; these trends continue.*

The qualitative dimension of the population problem as stated above, is of course, interrelated to the quantitative dimension in a mutually synergistic fashion. Thus, while the relentless increase in numbers aggravates the qualitative deterioration, the latter serves to facilitate such increase.

Population Growth not the Sole, nor even the Main Cause of Qualitative Deterioration

It must however be emphasised that population growth, accounts only partly for the progressive erosion of the quality of our human resources, and the current picture of ill-health and malnutrition in the country. Even with our present population and food resources, if all the food available in the country can be distributed in accordance with physiological needs, there will be very little malnutrition in the country. This will of course imply the raising of the income levels of the vast majority of the rural poor. The total amount of food needed to bridge the calorie-gap in the diets of our poor children in the entire country represents only a small fraction of our buffer stocks.

Again, it is not population growth that is, preventing doctors, nurses and health personnel from going to rural areas, or our policy makers from providing basic minimal health care to our rural masses. Population growth provides a convenient alibi for those who are either unwilling or unable to take and implement those hard decisions necessary to remove the glaring socio-economic, and rural-urban, disparities which disfigure our national scene today, and which are largely responsible for the present state of ill-health and undernutrition in the country. Family-planning programmes do not call for sacrifices from the rich, nor do they threaten entrenched vested interests. It is tempting, therefore, to lay the blame for all the ills of the poor on their own improvidence and offer them family planning programme as a panacea. This is indeed what the developed countries are doing with respect to poor developing countries, and in turn

what the urban rich within the country are doing with respect to their own rural poor.

Let me add at once that I do not underrate the great importance and the imperative need for family-planning programmes and population control measures. It is in national interests that these programmes continue to receive a high priority and indeed that they are further intensified. But the problems of ill-health and undernutrition among the poor will not be solved by these measures alone within the next three decades.

The National Nutrition Scene

Lest it should be said that the picture of undernutrition as presented above is exaggerated, let us take a closer look. For some years now, Sukhatme has argued that the magnitude of undernutrition in the country is not as high as 40%, but only around half this figure. Even if, for the sake of argument, we accept the lower figure, the number of undernourished people in the country will be around 140 million; certainly not a situation to feel complacement about! Sukhatme's thesis is that in judging the adequacy of diets, the yard-stick should not be the recommended mean intake (a yard-stick that is now widely used by national and international bodies) but the recommended mean intake minus 2 standard deviations (m-2SD). Using this yard-stick he holds that half the problem of undernutrition in the country can be 'wiped out'—at least on paper if not in reality. Sukhatme has tried to support his thesis through some physiological (not statistical) postulates which have no factual foundation of proven validity. Sukhatme's views have been forcefully challenged and rebutted on the basis of his own data, by several eminent members of his own statistical fraternity, let alone physiologists and nutrition Scientists. But, what is important for our purpose here is the fact that successive reports of the National Nutrition Monitoring Bureau in Hyderabad show that even according to Sukhatme's questionable yard-stick of m-2SD (a yard-stick which serves to underestimate undernutrition), more than 50% of children under five suffer from undernutrition and that in some parts of the country, the figure is as high as 80%. Thus, it would appear that Sukhatme's new yard-stick does not help to wipe out malnutrition even on paper.

Latest reports of the National Nutrition Monitoring Bureau also show that in nearly 85% of children under 5 years of age, weight/age is less than 80% of the normal values observed in well-nourished Indian children not subject to socio-economic constraints. Here Sukhatme argues that we may ignore weight dificits upto 60% of normal values and consider as undernourished only those children with high weight deficits, i.e. those with wt./age less than 60% of normal values. This will again "help" to reduce the magnitude of the malnutrition problem on paper. The justification proffered for this approach is that it is only

children with weights less than 60% of normal that are malnourished severely enough to be on the verge of death. The others may somehow 'muddle through' and manage to survive, and so could be described as "adapted"-meaning that they have come to terms with, and have learnt to reconcile themselves to their bad lot. In the first place, the 60% cut-off point is wholly arbitrary and is not based on any physiological criteria. In the second place the entire reasoning is based on lack of appreciation of the true implications of the word 'adaptation'. Adaptation has been apparently considered as equivalent to or synonymous with normalcy. A person with high blood-pressure can 'adapt' himself to hiscondition through hypertrophy of his heart; but no cardiologist will pronounce him as normal.

The fact that between death and normalcy, there exists a broad twilight zone of morbidity, functional impairment of various kinds, apathy, lack of sense of well-being, poor physical stamina, low productivity, etc., has been largely lost sight of. Malnourished children who may escape death eventually grow into stunted adults of low body-size and productivity; and low body-sized women with relatively small bicrestal diameters beget babies of low body weight which in turn develop along a low growth trajectory (unless taken in hand for special nutrition care in infancy). In a recent in-depth longitudinal study of rural communities in Mexico, Chavez and his colleagues have clearly portrayed the long-term effects on physical development, productivity, mental functioning and behavioural attitude of survivors of childhood malnutrition who had reached adulthood. They also refer to the "limited intra-uterine foetal development" in small-sized undernourished women, which in turn affects the weight of the child at birth and limits his development resulting in his ending up as a small adult.

But then, we are told that-"low body size is welcome ("small is beautiful") because the energy requirements of such subjects will be low; that the resultant low productivity and low earning capacity should not matter because in any case we are a labour-intensive, cheap-labour economy. Our labourers have the body size suited to our poor economy." It should be obvious that this is precisely the approach that will serve to perpetuate undernutrition in the country and aggravate the progressive qualitative deterioration of human resources. The following quotation from Cravioto, a pioneer in studies of the effect of unde--nutrition on child development, sums up the situation: ". . . Survival from severe malnutrition may constitute the event that starts a developmental path characterised by psychological defective functioning, school failure and subsequent subnormal adaptive functioning. At the familial and societal levels the ultimate results of this chain of events is what in an ecological sense could be called 'a spiral effect'. A low level of adaptive functioning, lack of modern knowledge, social custom, infection, or environmental insufficiency of foods produces malnutrition which gives a large pool of survivors who come to function in sub-optimal ways. Such survivors are themselves at risk of being the victims of their

poor socio economic environment, being less effective than otherwise would be the case in their social adaptations. In turn they will choose mates of similar characteristics and may rear children under conditions and in a fashion fatally programmed to produce a new generation of malnourished individuals". It is a tragedy that childhood undernutrition contributes heavily to high child mortality? but an even greater tragedy, from the national point of view, is that it generates a pool of sub-standard survivors who serve to perpetuate the undernutrition scenario over successive generations.

Major Nutritional Problems

Protein calorie malnutrition is not our only major nutritional problem, though perhaps it is the most important. The other major nutritional problems which affect vast segments of our population- goitre, iron-deficiency anaemia and nutritional blindness deserve special mention. Nutritional blindness is already attracting governmental attention; I will here confine my comments to the two other problems.

It has been estimated that today about 40 million people are suffering from goitre. This is not just a cosmetic problem but a disease which impairs health and productivity. Recent studies, one carried out by a team for the All-India Institute of Medical Sciences, and another by a team headed by Prof. K. N. Agarwal on behalf of the Nutrition Foundation of India, have provided new indications of the impact of goitre on child development. Earlier we had imagined that the damage inflicted by goitre on child development was restricted to clinically detectable cases of cretinism which are relatively small. But Prof. Agarwal's studies suggest that developmental quotients of children of goitrous mothers are significatly lower though they do not actually exhibit clinical signs of frank cretinism. Considering that the endemic goitre belt in our country stretches across the entire sub-Himalayan region, and endemic goitre zones have also been detected in Maharashtra and Madhya Pradesh, we have in the goitre problem another major factor contributing to the qualitative erosion of our population.

Iron-deficiency anaemia is a relatively ancient disease, but some recent observations indicate a set of important new dimensions. There was a time when it used to be thought that iron-deficiency anaemia was largely a disease of women of the reproductive period. Studies carried out in the National Institute of Nutrition, Hyderabad, have however shown that it is also very much a disease of children. In a fairly large sample, nearly 63% of children below 3 years of age and about 45% of children between 3 and 5 years were found to suffer from anaemia; the anaemia being moderate or severe in 10% to 15%. The disease is not dramatic in its effects and therefore goes largely undetected and untreated in poor communities. One of the most exciting discoveries in the field of Nutrition

in recent times, is that iron deficiency can deleteriously alter brain biochemistry and function; and thereby influence human behaviour itself. The involvement of iron in central nervous system oxidative metabolism, dopamine receptor function, catecholamine metabolism and in neurotransmitter metabolite function has been demonstrated; and the relationship between biochemical changes in brain metabolism induced by iron deficiency and behavioural/congnitive changes implicating specific metabolic pathways has been elucidated. These observations indicate that iron-deficiency anaemia which is so widespread in our population could bring about functional changes that could alter the entire behavioural pattern of the subjects concerned—that is, of whole segments of our population. The enormous significance of this finding from the point of view of social development of poor communities has yet to be fully elucidated and comprehended. It is however clear that iron deficiency, which we had taken for granted, can infact be an important factor in bringing about a qualitative change in the behaviour and attitudes of the poorer sections of our populations.

It will thus be clear that widespread undernutrition in the country has far-reaching implications affecting not only the physical stamina and mental ability, but indeed even the behaviour and attitudes of vast sections of our population. The changes in the physical and mental qualities and behavioural attitudes brought about by undernutrition in our poor people are precisely such as to perpetuate the undernutrition scenario, not only in the present generation but also to facilitate the passage of these disabilities to succeeding generations as well. It is for this reason that the Nutrition Factor must be accorded the most earnest consideration in a population policy designed to promote national development.

The Health Scene

The same sections of our population who are the victims of food deprivation are also the victims of other stresses affecting their health—poor environmental sanitation, lack of personal hygiene, lack of easy access to adequate, safe drinking water and lack of basic minimal health care. These stresses are compounded and aggravated by lack of education and lack of knowledge regarding the optimal ways of utilisation of their meagre resources to their maximal advantage. Infact the picture of undernutrition described earlier is the cumulative effect of all these factors. As in the case of our food resources, there is a gross maldistribution of Health Manpower and Health Care resources as well. The 'game' continues to be played with a loaded dice, resulting in progressive accentuation of disparities. Just as in global economics, there is a 'North' and a 'South' within the country itself; we have apparently a more urgent North-South problem.

Infant Mortality Rate in our rural population has remained stationary in the

past decade (136 in 1970 and also in 1978). There has been some decline in urban mortality rate—from 90 in 1970 to 70 in 1978, and thus the rural-urban disparity today is even greater than a decade ago. Age specific death rates in the 0-4 year age group have shown only a slight decline (55.3 in 1970 to 50.4 in 1978). These figures would suggest that there has been no significant improvement in the health conditions of our population as a whole, during the last decade.

Health and Rural Development

Our experience in the last few years also indicates that "rural development" programmes need not necessarily be automatically reflected in better health/nutritional status, especially of women and children. This has been strikingly illustrated by the Punjab experience. Cowan draws pointed attention to the curious paradox that while the villages around Ludhiana in Punjab are booming with prosperity and only 11 per cent of the rural families of the state live below the poverty line, infant mortality rate has shown no decline, and the number of premature low birth-weight babies has increased. Cowan attributes this to the following factors. "The fruits of development were being enjoyed by the privileged approximately two-thirds of each village who do not belong to the scheduled castes,—the landowners. As for the poor, development had certainly increased their work opportunities, their incomes and the total amount of food consumed by the family and the state of nutrition of the male wage earners and older children was satisfactory. . . As for the mother of the poor community however, 'prosperity' had resulted in more work, more food to be cooked, fewer opportunities to rest even during the latter months of pregnancy, little time to expend on infant feeding." It is the children of these poor mothers—especially the female children—that accounted for the high mortality and high prevalence of malnutrition—50% of the girls and 20% of the boys below 5 years suffering severe malnutrition in prosperous rural Punjab! On the basis of these observations Cowan goes on to support and endorse my earlier suggestion for including a specific health/nutrition component as an integral part of all Rural Development/Employment Programmes. She concludes that because of the "additional burdens imposed on the mother by 'prosperity', infant mortality rate and malnutrition will not decrease without an inbuilt health and nutrition component specially designed to meet the special needs of the under-privileged mother, and help her to find a solution which will not deprive her of income generating opportunities while not jeopardising her health." It is to be hoped that the lessons of the Punjab experience will benefit future Rural Employment Programme in the country.

Breast-feeding

There is now increasing concern in the country over the possible erosion of the breast-feeding practice as a result of unethical and aggressive sales promotion campaigns of baby food manufacturers. We must also give careful considerations to the possible effects of increasing employment opportunities to poor women in rural areas on the breast-feeding practice. We must institute and devise arrangements to ensure that without denying income-generating opportunities to women, the practice of breast-feeding is not undermined and jeopardised. If we do not do so, we are sure to find infant malnutrition increasing substantially inspite of increasing employment and increasing income to mothers. These will certainly be major areas of concern to social, health, and development scientists in the next two decades.

The Aged

A subject which will inevitably receive increasing focus and special attention in our country in the coming decades will be the health/nutrition problems of the aged. Our life expectancy is still only around 52 years and the age structure of our population still reflects overwhelming preponderance of children and will continue to do so for some decades. Even so the problems of the aged will receive increasing attention in the years ahead, not so much because of relative increase in the numbers of the aged, but because of the rapidly changing family structures, value systems, urban migration, industrialisation and increasing employment of women. Joint families are slowly and steadily breaking and the old value systems which enjoined protection of old parents by their children are steadily weakening. The old must soon learn to stand on their own! The recent Tamil Nadu Meal Programme highlighted the fact that old subjects in rural areas required as much nutritional care as the children, and for this reason the Programme has been structured in such a way as to benefit the old and the destitutes.

Some Specific Issues Needing Urgent Attention

Thus, the next two or three decades will witness the aggravation of several current distressing features and the emergence of new ones in our population, and all these together constituting the 'qualitative dimension' of the population problem will pose formidable challenges to demographers, health and social scientists, planners and policy-makers. I am aware that numerous plans and programmes to combat the major nutrition and health problems that I have touched upon have been discussed and many of them are on the anvil. I will

certainly not be presumptuous enough to offer here a blue-print for the solution of all these problems. However, I wish to specially refer to four areas to which I feel particular attention has to be drawn :

(1) We have certainly done well with regard to our foodgrains production during the last two decades. But there is absolutely no room for any complacency with regard to the coming two decades; indeed there is a cause for anxiety. Thus we are able to increase the total area under foodgrains cultivation from 110.58 million hectares in 1955-56 to 128.18 million hectares in 1975-76. In 1980-81, the total area under foodgrains cultivation was 125.70 million hectares. Thus with regard to bringing in more area under cultivation, we have apparently already reached a plateau phase. The yield per hectare which was 605 kg in 1955-56 rose to 944 kg in 1975-76. In 1980-81 it was 1,032 kg. Apparently we have so far been able to maintain a sustained increase in yield, but it seems unlikely that we will be able to maintain a continuous increase *of a progressively increasing order* (which is what we will need to keep abreast of population growth) throughout the next two decades. Our per capita availability of food grains has not diminished so far in spite of the tremendous population growth. But are we going to be able to sustain this record over the next two decades, during which we will be entering perhaps the most crucial phase in the race between population growth and increase of food supply'. I must confess to an uneasy feeling that the green revolution may be losing its momentum, and that we must invoke and press into service new strategies to maintain the increasing trend in food production. We may also have to devote greater attention to items other than foodgrains. I reckon the next two decades as the decades of real challenge to our agricultural scientists.

(2) If we have to avoid violent social unrest in the next two decades, we must implement our *Rural Development/Employment Programme in right earnest.* These programmes must be designed to ensure productive and remunerative employment for the rural poor throughout the year and not just as sporadic famine relief operations.

(3) Minimum wages for agricultural labourers have to be fixed at least at Rs. 10 to 12 daily, especially since these labourers have no wages at all for 3 to 4 months in the year. The ridiculously low wage of Rs. 5/- daily suggested by the Wage Committee in Bombay, and even the Rs. 7.50 recently suggested at an all-India meet constitute frank exploitation and social injustice. It is not enough to prescribe a minimum wage; it must be implemented. Unless the income levels of agricultural labourers are substantially raised our health and family-planning, and universal primary education programmes in the countryside will not make headway.

(4) The most crucial population segment from the point of view of family welfare, nutrition and health, is constituted by the young unmarried girls of age

10 and above in rural areas. Girls in rural areas are generally married off when they are barely twelve or thirteen years of age, and once they are so married they are 'lost'. By the time the girls reach their 25th year they have generally already had their five children and all family planning programmes addressed to rural women in their late twenties are largely futile. What is generally not appreciated is that the 'potential' fertility of undernourished women is actually very low in comparison to their well-nourished counterparts. Their reproductive span is low; they attain menarche later and menopause much earlier than well-nourished women. What is more, there is now evidence that for nearly ten years before they attain their menopause the undernourished women are actually infertile, the menstrual cycles being presumably anovulatory. I am, therefore, afraid that our family-planning programmes addressed to poor rural women in late twenties is akin to bolting the door after the horse has escaped. The most important single step that will reduce birth rate, is the raising of the age of girls at marriage. Girls are married off early because, unlike boys, they are now considered "economic liabilities" by their poor parents. The real key to the success of our family planning programme lies in our finding a way by which poor rural parents will find it rewarding not to marry off their daughters till they are at least 20 years of age.

I, therefore, suggest that an imaginative special programme be instituted in our rural areas addressed solely to young unmarried girls of 10 years or more. This programme could be spearheaded by women's organisations with technical help from Home Science Colleges and supported by the Khadi and Village Industries Organisation (or any other equivalent appropriate government or public sector agency) and should include a special two-years education programme on infant feeding and child rearing, nutrition, family planning, personal and environmental hygiene, plus most importantly, vocational training designed to impart special skills for selfemployment in selected fields appropriate to the particular rural areas. The candidates may include even school dropouts. During this period the girls may receive a monthly stipend; after this training they should be helped over the next 2 years through bank loans and managerial and marketing services and technical help provided by government or public sector agencies, to set up in their own village the cottage industry for which they have been trained, either singly or in collective groups; the girls will be paid for the products they produce and in addition receive a salary. Girls who marry before completing 20 years of age will automatically drop out of the programme; those on the programme who marry after 20, may continue to receive these facilities till such time as they have two children and no more. Such a programme will have several obvious spinoffs and will help to transform the social scene in the countryside and enhance the status of women in their own homes and the society.

(5) Despite numerous conferences and committees, effective extension of basic

health care to our rural areas appears still a distant dream. If we do not achieve this ideal before 1980, then 'Health For All by 2000 AD' will have turned out to be no more than a hollow slogan. Among the many measures that have to be undertaken for this purpose, I will briefly refer to two of my earlier suggestions. (1) A phased abolition of the category of multi-purpose workers and their replacement by B.Sc's in Health Science. (2) The rural health programme at the village level may comprise 3 elements with inbuilt functional links, viz. (*a*) the regular health programme operated by the Health Agency through its established infrastructure, (*b*) a programme of health/nutrition insurance cover operated as an integral part of Rural Development/Employment Programme, (*c*) a preventive and promotive health-care and health-education programme operated through the infrastructure of rural schools addressed not merely to school children but to their sibblings and parents, i.e., "the school community".

Health and nutrition are far too important to be left entirely to the tender mercies of medical men alone. The problems I have touched upon and the proposals I have put forward, will call for the closest interaction between health scientists, social scientists, demographers, economists and planners. I believe that the IASP provides an excellent forum for such interaction and can therefore play a truly significant role in meeting the great challenges that lie ahead of us in the next two decades.