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Nutrition And Developmental Transition: Lessons From Asian Experience

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Most Asian countries were under colonial rule till the end of the first half of the present century. In a real sense, therefore, these countries started on their developmental journeys barely 50 years ago. They hoped that the developmental backlog that had accumulated over centuries of colonial rule would at last be reversed.

POPULATION EXPLOSION

The most tangible and immediate result of the 'development', however, has been a steep decline in death rates and a consequent surge in population growth. The population explosion unleashed in Asia during the last 50 years has largely been the 'price' of development and has, in fact, further retarded development. Thus, the population of India (which

in the pre-independence era included Pakistan and Bangladesh) had risen from 238.4 million in 1901 to about 345 million in 1947, an increase of just about 100 million in 46 years. Population growth had been kept down during this period, not by efficient contraception but by recurrent large-scale famines and acute pestilence. On the other hand, the population of India alone had soared from 361 million in 1951 to 950 million by 1997 – an increase of about 600 million in the last 46 years (Fig).

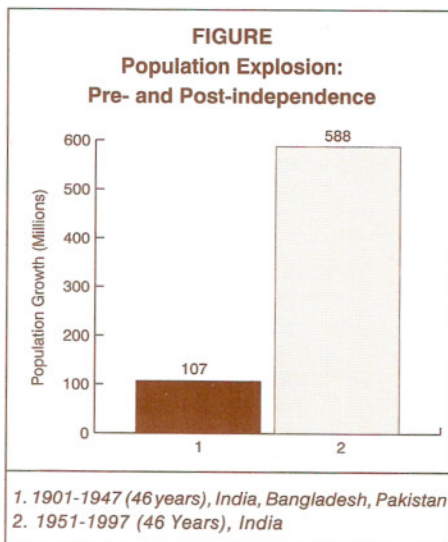
As a result of this phenomenal rise in population, much of India's developmental effort (as, indeed that of other Asian countries) during the last few decades had to be devoted towards achieving an increase in food production commensurate with population growth. The total food grain production in India had thus increased from 50.9 million tonnes in 1950 to 199.3 million tonnes by 1997, and the per capita food grain availability was maintained despite population growth (Table 1, on page 2).

Famines were averted. But population growth had nearly nullified the benefits of development, more so in some Asian countries than in others. As a result, most Asian countries have not as yet been able to achieve the desired improvement in the quality of their human resources and even in the latest Human Development Report of the UNDP (1999)¹. They remain in the 'Medium Human Development' category.

However, despite the enormous strain on resources imposed by population growth, the last 50 years have not been barren of impressive achievements. Apart from acute large-scale famines which have now been practically eliminated, florid clinical manifestations of severe malnutrition such as kwashiorkor, keratomalacia, beriberi and pellagra are now no longer the major public health problems that they once were. Apart from population growth, the major attributes of developmental transition have been: urbanisation; changes in occupational pattern; changes in family structure; changes in life-style and value systems; changes in dietary practices; environmental degradation and progressive ageing of populations. All these attributes have had important effects on the overall pattern of morbidity in the populations.

EMERGENCE OF CHRONIC DEGENERATIVE DISEASES

Sizeable sections of populations, once poor, are now ascending the socio-economic scale and are adding to the growing numbers of the



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TABLE 1
Production and Per Capita Availability of Food Grains

Year	Population* (millions)	Production** (million tonnes)	Per Capita Availability (kgs/yr)
1951	361	50.8	140.0
1997	950	199.3	209.8

Source: *Registrar General, Census Commissioner of India, 1998.
**Agricultural Statistics at a Glance, Ministry of Agriculture, Government of India, 1998.

urban middle class. It is estimated, for example, that this relatively affluent middle class may now account for 200 million of India's population. New-found affluence, together with progressive aging of the population and concurrent control of acute infectious diseases, are now contributing to a progressive escalation of the prevalence of chronic degenerative diseases. This has been another major price of the 'development'.

Chronic degenerative diseases are now emerging as a major cause of morbidity and mortality. The aging of the population and the decline in infectious diseases cannot, by themselves, fully explain the escalation of chronic degenerative diseases. There is also a rise in age-specific rates and the percentage of chronic degenerative diseases in the adult population. There are obviously factors incidental to 'development' which affect diets, lifestyles and environment, and which contribute to this escalation.

This ascendancy of chronic degenerative diseases implies a greater loss of productivity of a crucial segment of the population, and a greater expense with regard to the health care of the nation as a whole.

The escalation of nutrition-related chronic degenerative diseases is, to a considerable extent, an urban phenomenon. The urban population in India, which was around 17 per cent in 1950, has now reached over 35 per cent and is expected to exceed 40 per cent within the next decade. The major factors in the urban situation which could contribute to the escalation of chronic diseases are: changes in dietary pattern; occupational lifestyles; and the impact of environmental and air pollution. It is the relatively affluent sections of the urban population that seem to bear the brunt of the escalation of chronic degenerative diseases.

transition. These diseases form a part of the constellation of syndrome X. What adds urgency to this finding is the disturbing evidence pointing to the possible increased susceptibility of South Asians to Syndrome X.

The question to be answered is: "Are South Asians genetically more susceptible to this syndrome than other ethnic groups?" or "Is this increased susceptibility no more than a first generation phenomena, seen among South Asians, emerging from poverty in childhood to relative affluence in adulthood, in line with Barker *et al*'s^{5,6} hypothesis, that intra-uterine growth retardation reflected in low birth-weight deliveries, could programme the subject towards increased vulnerability to this syndrome."

In this connection, the marked difference between the incidence of low birth-weight in South Asia and South-East Asia is significant¹.

Whatever the true explanation, this increased susceptibility to chronic degenerative diseases can find expression only in situations where potential factors are present in the environment.

It should, therefore, be the control of these factors, including dietary excesses and errors and the lack of adequate physical exercise among the relatively affluent engaged in sedentary occupations, that should now com-

Data on the rising incidence of obesity (abdominal)², coronary heart disease³ and non-insulin dependent diabetes⁴ (NIDDM), will show the progressive escalation of these diseases as part of developmental

mand immediate attention in Public Health Programmes.

IMPORTANT LESSONS

Improvements in nutritional and socio-economic status of populations have apparently been slower in some parts of Asia than in others. The countries of South Asia, with the possible exception of Sri Lanka, would seem to be generally worse off than those of South-East Asia. It is important to examine the reasons for this difference. Such examinations will throw up two major lessons.

The importance of female education: A scrutiny of the data presented in Table 2 will show a close correlation between the level of female literacy in a country, on one hand and child mortality rate and nutrition status in its children on the other.

The relationship between the level of female literacy in a society and its health/nutrition status is apparent from the data derived from six states of the Indian union presented in Table 3. India is a vast country and 'average figures' for the whole country do not convey much meaning. Desegregated data presented in the table seek to compare four of the most 'backward' states of the country with two of the most 'forward'. From the point of view of natural resources and the per capita availability of food, the two 'forward' states are certainly no better off than the four 'backward' states in the table.

TABLE 2
Comparison of Female Literacy with Under-five Mortality Rate and Percentage of Low Birth-weight

Country	Female Literacy (1995)	Under-five Mortality Rate (1997)	Low Birth-weight % (1997)
Philippines	94	41	9
Thailand	92	38	6
Vietnam	91	43	17
Sri Lanka	87	19	25
Singapore	86	4	7
Malaysia	78	11	8
Indonesia	78	68	8
Myanmar	78	114	24
China	73	47	9
India	38	108	33
Pakistan	24	136	25
Bhutan	28	121	-
Bangladesh	26	109	50
Nepal	14	104	-

Source: The State of the World's Children, UNICEF, 1999.

TABLE 3
Relationship of Female Literacy with Health and Nutrition Status

State	Female Literacy (%)	Total Fertility Rate	Infant Mortality Rate	Under-five Mortality Rate	Stunted (%)	Under-weight (%)
Bihar	29.6	4	89.2	127.5	61	63
MP	34.3	3.9	85.2	130.3	–	61
Rajasthan	25.4	3.63	72.6	102.6	43	42
UP	31.5	4.82	99.9	141.3	59	59
Kerala	82.5	2	23.8	32	27	28
Goa	72.9	1.9	31.9	38.9	32	35

Source: National Family Health Survey, 1998.

The striking difference with respect to fertility control, infant and child mortality and child nutrition, as between these two sets of states, will indicate the enormous importance of the level of female education as being a major determinant of health/nutrition status of developing societies. It may be argued that the data disclose an 'association' and not necessarily a cause and effect relationship between levels of female of education and of health/nutritional status; and that the same 'cultural' factors in a community which facilitate female education also favour better health/nutritional status. It however seems reasonable to expect that even in families with low income, educated mothers may prove more resourceful in managing available resources to maximal advantage for the overall health nutritional status of the family as a whole.

The level of female education may thus emerge as a major indicator and determinant of the developmental level of a community and of its health/nutritional status. Indeed, on this basis, it would appear that societies which have failed to accord adequate attention to the importance, and more especially to education, of women as homemakers, are the ones that have failed to achieve progress.

For over 15 years now, I had earnestly pleaded for special focus on the girl child and the adolescent girls of poor communities in all-developmental programmes^{7,8,9}. These are the mothers-to-be, who will not only usher in the next generation but will also shape it. Today, in the conventional health services of some countries, adolescent girls are not being reached by health/welfare services as they are not children, not pregnant,

and not old. The precious years of adolescence, which should be appropriately used for preparing and equipping the mothers-to-be and the future homemakers are, thus, being wasted. Any programme for social development and nutrition security must obviously give major attention to this group.

The need for forging community leadership: It is now clear that durable and sustainable nutritional upliftment of poor communities is likely to be achieved through programmes in which communities themselves are mobilised, trained and motivated to take the leading implementing role. Such programmes promote self-reliance and self-esteem. The VAC programme of Vietnam¹⁰ and the community-based programme of Thailand¹¹ are examples of this strategy. On the other hand, free give-away programmes and large-scale free supplementary feeding programmes, operated largely by the bureaucracy with the community playing a passive role, are unsustainable and least cost-effective. Such programmes can only be justified as temporary 'relief' operations in regions and seasons of dire poverty and food scarcity. Countries which had largely opted for the latter strategy have generally been less successful than those which had relied on the former.

THE NEED FOR A PARADIGM SHIFT

It must be confessed that the 'achievements' in this century as far as most of Asia is concerned, amount to no more than a 'holding operation' which has helped to buy precious time and to hold at bay Malthusian fears, such as "Freedom from Hunger", "Child Survival" and "Safe Motherhood". These have largely been the

targets during this century and are no more than 'survival' strategies. If Asian countries are to achieve real nutrition security for their people so that they can find full expression for their genetic potential, then their policy-makers must set for themselves more ambitious targets in the next century. There must now be a major paradigm shift in national nutritional policies of Asian countries. Children must 'live'; not just 'survive'; mothers must be productive, educated and resourceful – not just 'safe' for reproduction; people must be 'well-nourished', not just free from hunger. All this may seem a tall order at this point of time, but we are talking of the agenda for the next century. Unless Asian policy-makers are inspired by a grand vision of a vigorous, healthy and nutritionally secure Asia, the continent will continue to be a continent of 'second class' powers of the 'Medium Development' category. Asian policy-makers must dare to 'dream'. The realisation of the 'dream' would involve formidable tasks, but the dream will become a reality if the tasks are pursued with diligence and dedication.

THE FUTURE

Though there has been some retardation in population growth during the last years of this century in several Asian countries, Asian populations will continue to grow (from the 1997 figure) by an additional 820 million by 2015, accounting for 60 per cent of the increase of the world population during the same period¹. About 50 per cent of this population increase will occur in South Asia, which is the part of Asia which is currently the most hardpressed. This would imply that there can be no let-up whatsoever in attempts to augment food production. Apart from the anticipated population growth, the rising affluence in some sections of the population will cause an increase in the per-capita requirement. Since land resources cannot be further expanded, additional food production will have to be achieved mainly through significant increase in production per unit of land.

Reversing the mistakes of the past: The green revolution of earlier

years, which helped Asia tide over its food crisis in the 1970s, is unfortunately showing signs of fatigue. Our first task will be to reverse the mistakes of the past and get the maximal returns that we can get with the available technology. Use of earlier technology in an ill-regulated way had resulted in soil depletion and soil salinity and consequent decreased soil fertility should be reversed. Also, the unbalanced pattern of food production, vis-à-vis the exclusive reliance on wheat and rice, to the relative neglect of pulses, millets and vegetables, will now need to be corrected.

Nutrition security will call for adequacy, not just with respect to cereals (wheat and rice), but also with respect to pulses, milk, vegetables and fruits which supply micronutrients. Most Asian countries are fortunately endowed with fairly long coastlines and rivers. During the present century, near-exclusive attention was bestowed on augmenting food production from land resources.

The immense possibilities offered by marine and riverine resources have not as yet been fully utilised. Horticulture and animal husbandry have not received the attention they deserve. In the coming century, an integrated agricultural strategy for balanced food production should be attempted. India's experience with respect to milk production in the last two decades has been truly rewarding. Today, India is the leading milk producer in the world. Such a situation would not have been dreamt of three decades ago. It should likewise be possible to exploit optimally the vast, as yet poorly utilised resources, for food production in Asia, so that a balanced range of foods essential for national nutrition security becomes available.

New genetic technologies: These offer promises and opportunities for augmentation of not just increased production of food grains but of horticultural products as well. There is, however, considerable controversy and polarisation of views regarding the safety and efficacy of currently available, genetically modified food¹². Since much of the modern genetic technology is in the hands of private investors, it will be important for Asian countries to develop and put in place a rigorous, precautionary package for bio-safety of genetically modified foods. The necessary expertise and infra-

structure for this purpose must be created at national levels. The need for adequate precautions in this regard will be apparent from the recent exhortations of the President of the Rockefeller Foundation, Gordon Conway¹³, to a leading private investor in the USA currently engaged in the manufacture of genetically modified foods.

Conway advised the powerful private investor to "disavow terminator technologies" that prevent reseeding. Terminator technology has generated widespread suspicion that the effort is entirely motivated by commercial consideration of perpetual royalties. Conway also pleaded that "the Biotechnology Company should donate technology to developing countries and train local scientists in bio-safety". Conway concluded his address with the following words: "We need a new way of talking and making decisions. You will not overcome public concerns in South Africa, Asia and Latin America simply by issuing statements reassuring poor people that you are committed to feeding them and caring for their environments. It would be better to treat them as equal partners in a dialogue." It is hoped that genetic engineering efforts will be informed and guided by such humane and enlightened considerations. Meanwhile, developing countries should have their bio-safety protocols in place, ensuring thereby a critical evaluation of transgenic plants for possible harmful effects.

Even when we opt for modern genetic technologies, efforts should be directed towards adopting a judicious blend of traditional and advanced techniques. The conjunctive use of organic and inorganic nitrogenous fertilisers, the application of neem and gypsum, and urea in the root zone, 10 days after transplantation, are traditional techniques, which can be usefully combined with genetic technology. Asian societies should strive for such judicious combinations.

Resisting pharmaceutical shortcuts: Nutrition security may obviously lie in ensuring that habitual diets in households are nutritionally adequate. In short, national nutritional policies must largely be food-based rather than drug-based. Asian countries should firmly resist the pharmaceutical shortcuts being offered by powerful drug cartels for the solution

of Asia's public health problems. It is one thing to opt for selective fortification of foods with appropriate nutrients to meet special situations, and quite another to accept concoctions and cocktails of an arbitrarily chosen plethora of vitamins and trace elements to solve the problem of dietary deficiencies in populations. We must resist attempts at such commercial exploitation of malnutrition – whether with respect to genetically modified foods or with respect to the misuse of vitamins.

Better use of plant foods: With the discovery of a whole range of phytochemicals, and with nutritional and health-promoting values in plants, several new vistas have opened up. The importance of plant foods in health, nutrition and disease management is now being increasingly recognised. While the current emphasis in herbal pharmacology is on the discovery of herbal medicines and phytotherapy, distinctions between the use of foods for better nutrition, health promotion, and for prevention of disease, are indeed faint. Any food that promotes health and helps prevent diseases is a 'nutritious food'. We should indeed enlarge our concept of nutrients to include not only vitamins and minerals and the so-called proximate principles, but also phytochemicals with health promoting properties which act as adjuvants to conventional 'nutrients'. In view of their rich bio-diversity, Asian countries should accord highest priority to intensive research on plant foods. This could also give them a lead over other areas.

NURTURING ASIA'S INTELLECTUAL RESOURCES

In the next century, the strengths of nations and peoples will be determined, more than ever before, not necessarily by their physical but by their intellectual resources. Tomorrow's societies will be "knowledge societies". Knowledge and skills of the average citizen will become the major determining factor, and these must not be allowed to become the prerogative of the few.

The challenge before Asia, therefore, is to equip its citizens with such knowledge and skills. This implies far more than the eradication of illiteracy; it implies education and imparting of technological skills, a formidable undertaking considering that in many