CHAPTER 3

Increasing Urbanisation in Tribal States of Northeast India: Implications for the Prevalence of Chronic Diseases

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INTRODUCTION

According to the United Nations (UN, 2002), the world population reached 2.9 billion in 2000 and is expected to rise to 5 billion by 2030. The proportion of urban dwellers rose to 47 percent in 2000 from 30 percent in 1950, and is projected to reach 60 percent by 2030. On the basis of these current rates of change, it is expected that the number of urban dwellers is more or less same to the number of rural dwellers in the world this year. The population increase during 2000-2030 is expected to take place mostly in urban areas of developing countries whose population is likely to rise from about 2 billion in 2000 to about 4 billion in 2030, averaging 2.4 percent per year. It is expected that rural-urban migration and the transformation of rural settlements into cities are the major determinants of a rapid population growth in urban areas of developing countries including India in the next thirty years. These changes will lead to the eventual decline in rural population of developing countries. Consequently, the growth rate of rural population in developing countries will become negative for the first time during 2025-2030. Although Asia is expected to have the largest rural population of the world during 2000-2030, it is expected that Asia will account for 54 percent of the urban population of the world during the period. As for India, urban population increases from 14 percent in 1941 to about 28 percent in 2001. This indicates a rapid growth of urban population in India as well.

This chapter is concerned with the nutritional and health implications of increasing urbanization in India in general and in tribal states of northeast India in particular. By urbanization we mean the demographic process whereby the proportion of people in urban areas increases over time especially with increasing migration from rural to urban areas.The migration of people from rural to urban areas, or rural-urban migration, is mainly in search of better jobs, education and living conditions. It has both negative and positive effects on the survival and well-being of peoples. The paper briefly describes the present position of rural-urban migration during 1991 to 2001 in India with special reference to tribal states of Northeast India. Owing to paucity of related literature from Northeast India, it gives an overview of the prevalence of non-communicable chronic diseases (NCDs) such as obesity, hypertension, diabetes mellitus and coronary heart disease (CHD), which are associated with nutrition transition and rural-urban migration in developing countries in general and in India in particular. An attempt has also been made to discuss the evolutionary perspectives of nutrition transition that may help us understand the increasing prevalence of NCDs. Nutrition transition is defined as a process of change from undernutrition to increased prevalence of NCDs due to changing dietary pattern towards energy-dense and high-fat diets, or processed foods, which are associated with economic transition compounded by sedentary lifestyles that reflect less physical activity especially with increasing urbanisation and globalisation.

URBANIZATION IN TRIBAL STATES OF NORTHEAST INDIA

By 'tribal states of Northeast India' we mean the states of India in the Northeastern region, which have a tribal population of more than 50 percent.These states include Arunachal Pradesh (64.2%), Meghalaya (85.9%), Mizoram (94.5%) and Nagaland (89.1%) according to 2001 Census of India. Increasing urbanization in these states is mainly because of rural-urban migration. These tribal states of Northeast India are the top four states in India according to 2001 Census data on rural-urban migration based on last residence with duration 0-9 years.Table 1 shows that rural-urban migration was highest in Mizoram (39.1%) followed by Meghalaya (27.4%), Nagaland (26.8%) and Arunachal Pradesh (26.1%). This increasing rural-urban migration in tribal states of Northeast India could be associated with various factors especially in search of better jobs, education and living conditions. Nevertheless, rapid urbanisation in these tribal states of

Northeast India seems to be mainly accounted for by an increasing rural-urban migration. It is perhaps relevant to the observation that rapid urbanization due to rural-urban migration is the major feature of developmental transition in India during the last few decades (Shetty, 2002). The point that we would like to make in this chapter is that rural-urban migration may have a number of health implications for the Indian populations in general and the tribal populations in particular, irrespective of certain merits. The changes in economic conditions, dietary intakes, physical activity and lifestyles among the migrants may be responsible for their predisposition to different NCDs.

URBANISATION AND PREVALENCE OF NCDs

There is considerable evidence of the increased risk of type-2-diabetes and other NCD risk factors (including obesity, hypertension, glucose intolerance, high triglyceride levels and CHD or cardiovascular disease), following migra-tion and the consequent environmental changes, especially among South Asians who migrated to different parts of the world (McKeigue, 1997; Deedwania and Singh, 2005). It is suggested that the variation in NCD risks between migrant populations and native residents or indigenous populations is largely a manifestation of environmental influences that may be contributed by genetic predisposition (Shetty, 2002). Similar observation is made on the variation in the prevalence of NCDs between rural and urban populations within a country or region, especially following rural-urban migration. Although there is a lack of literature from Northeast India, several studies in India have revealed that the prevalence of type 2 diabetes and CHD risk factors is higher in urban than in rural areas (Chadha et al., 1997; Singh et al., 1997; Ramachandran, 1998, Copalan, 1997; Shetty, 2000; Lubree et al., 2002). It has been suggested that rural-urban migration, which is associated with changing dietary patterns and lifestyles, is linked to increased risk of chronic diseases in India. Epidemiological studies have revealed that the prevalence of CHD is much lower in adult rural (3 to 5%) than urban (7 to 10%) populations (Gupta, 2005).

The situation in India is more alarming especially in tribal states of Northeast India where rural-urban migration is increasing rapidly. It may be noted that mortality from cardiovascular diseases is projected to decline in developed countries from 1970 to 2015, but it becomes almost double in the developing countries (Reddy, 1993; Gupta, 2005). It is predicted that by 2020 there would be an increase of 111 percent of deaths from cardiovascular disease in India. This increase is much more than 77 percent for China, 106 percent for other Asian countries and 15 percent for developed countries (Murray and Lopez, 1997). Therefore, India is projected to have the largest proportion of population with NCDs. For example, it is estimated that the proportion of 19.3 million Indians diagnosed with diabetes mellitus in 1995 will surpass 57.2 millions by 2025 (Deedwania and Singh, 2005). Effective screening strategies, therapeutic interventions, educational programs and other preventive measures are urgently needed to reduce the alarming increase in the prevalence of NCDs in India.

Table 1: Top ten states for rural-urban and urban-rural migration based on last residence with duration 0-9 years

Rural to urban		*Urban to rural*	
States	*Percent*	*States*	*Percent*
Mizoram	39.1	Goa	26.7
Meghalaya	27.4	Kerala	13.3
Nagaland	26.8	Nagaland	13.2
Arunachal Pradesh	26.1	Sikkim	11.8
Gujarat	25.9	Tamil Nadu	11.5
Tamil Nadu	23.3	Meghalaya	11.0
Haryana	21.9	Mizoram	8.5
Maharashtra	21.2	Andhra Pradesh	8.4
Karnataka	21.2	Maharashtra	8.2
Jammu & Kashmir	21.1	Karnataka	7.4

Source: Census of India. 2001. *Data Highlights-Migration Tables*

NUTRITIONAL AND LIFESTYLE FACTORS

Various factors are associated with NCDs. Nutritionally related factors associated with increasing urbanisation and sedentary lifestyles are generally considered to be responsible for the increasing prevalence of NCDs in developing countries. It may be noted that the mechanisation of agriculture and the breeding of high-yielding crops during the last century have boosted the availability of all foods, including meat, vegetable oils, dairy products, sugar, and other commodities previously reserved for the affluent or for festivals and holidays. With the improvement in socioeconomic condition, the consumption of

grains and starchy foods drops drastically during the last 15 years (Gardner and Halweil, 2000; Popkin, 2004). However, the per capita consumption of calories derived from other food stuffs increases significantly. It is reported that the energy intakes in developing countries ranges from 2152 kcal per capita per day in the 1970s to 2681 kcal per capita per day in the 1990s (WHO/FAO, 2003). This increase is projected to reach about 3000 kcal per capita per day by 2030. It is also observed that there is a decrease in energy intakes derived from cereals in developing countries, i.e., falling from 60 percent to 54 percent in a period of only 10 years. The consumption of vegetable oil since the 1960s alone has added roughly 30 grams of fat to the average daily diet. Data from India revealed that higher-income groups consumed a diet with 32 percent of the energy from fat while the lower-income groups consumed only 17 percent energy from fat. Results of dietary surveys in Delhi also confirmed that the upper income groups in urban India consumed higher levels of energy derived from fat as compared to the urban poor or rural populations (Shetty, 2002).

Many Asian countries are in the process of nutrition transition and urbanisation. "Increasing urbanisation will distance more people from primary food production, and in turn have a negative impact on both the availability of a varied and nutritious diet with enough fruits and vegetables, and the access of the urban poor to such a diet. Nevertheless, it may facilitate the achievement of other goals, as those who can afford it can have better access to a diverse and varied diet. Investment in peri-urban horticulture may provide an opportunity to increase the availability and consumption of a healthy diet. The rapidly increasing burden of chronic diseases is a key determinant of global public health. Already 79% of deaths attributable to chronic diseases are occurring in developing countries" (WHO/FAO, 2003). Therefore, increasing urbanisation, changes in standards of living, dietary patterns and occupational-work patterns are risk factors of the high prevalence of NCDs. As a result, although under-nutrition remains a major health problem in many developing countries, over-nutrition is also emerging with the improvement in socio-economic condition and increasing urbanisation (Khongsdier, 2006). Consequently, the double burden of under- and over-nutrition is likely to exert considerable impact on the economy and health system in many developing countries (Popkin, 1998, 2002).

FETAL ORIGINS HYPOTHESIS

There is increasing evidence that chronic disease risks begin in fetal life and continue into old age (WHO/FAO, 2003). According to 'fetal origins' hypothesis (it is now known as 'developmental origins' hypothesis), many NCDs originate through development of the fetus in response to under-nutrition (Barker, 1992; 1995; 1999; Hales and Barker, 2001).The underlying principle of the 'developmental origins' hypothesis is that human beings are "plastic" and able to adapt to different environmental conditions (Lasker, 1969; Khongsdier, 2006). This developmental plasticity, or capacity of the individual or fetus to produce more than one alternative form and function, is universal to all living organisms. For example, human fetus is able to adapt to a limited supply of nutrients by changing its physiological and metabolic mechanisms and characteristics that are irreversible after adulthood. It is suggested that these changes might be the origins of diabetes and CHD in later life (Barker, 1998). In response to maternal under-nutrition, the fetus may change by either reducing its size to meet the nutrient's requirements, or altering the production of hormones, especially insulin, which regulate growth or redistribute the flow of blood in order to protect vital organs such as the brain at the expense of muscle growth - a phenomenon referred to as *thrifty phenotype*. In addition, maternal nutritional intake acts like a signal to the fetus that the after-birth environment is likely to be plentiful or harsh. Changes during the early life or sensitive period of development might have permanent effects on the body form and function in later life, and the whole phenomenon is known as *programming*. As a whole, developmental plasticity during early life is relatively beneficial for growth and survival but at the expense of longevity because such modes of adaptation has far reaching consequences on productivity and health in later life.

Birth weight is widely used as an indicator of fetal growth and nutritional status although the same birth weight might be the result of different growth trajectories. But there is increasing evidence of the inverse relationship between birth weight and increased risk of CHD,

hypertension, type-2 diabetes and the metabolic syndrome in later life (Fall, 2001). A study in South India revealed that the prevalence of CHD decreased from 11 percent for men and women whose birth weights were 2·5 kg, or less to 3 percent for those whose birth weights were more than 3·1 kg (Stein et al., 1996). High rates of the disease were also observed in those individuals whose mothers had a low body weight during pregnancy. In addition, short length and small head circumference at birth were associated with the increased prevalence of the disease. In another report, Fall et al. (1998) observed that the prevalence of type 2 diabetes was higher in men and women, who were short at birth and high in ponderal index. Short, fat babies of heavier mothers during pregnancy were likely to develop type 2 diabetes, with a lower 30-minute insulin increment, a marker of reduced beta-cell function. Barker (1999) explained these findings in relation to the widespread prevalence of type 2 diabetes in urban and migrant Indian populations. Fetal under-nutrition is widespread in the Indian population, and this may predispose people to insulin resistance. After moving to urban areas, young women gain more weight and become more insulin resistant due to decrease in physical activity levels. "These women would be less able to maintain glucose homeostasis during pregnancy, even at relatively low levels of obesity, and could become hyperglycemic (although not necessarily diabetic). Their children, who would be exposed to high circulating glucose concentrations in utero, may have impaired pancreatic b-cell development and become insulin deficient. These ideas need to be confirmed by further studies in India" (Barker, 1999).

Evidence of the time of insulin resistance has also been reported from India. In their study of children born in the King Edward Memorial Hospital, Pune, Bavdekar et al. (1999) reported that children with lower birth weight were more insulin resistant at 8 years of age. The highest levels of insulin resistance and LDL cholesterol were in children of low birth weight but high fat mass at 8 years. There is also evidence of increased insulin levels or hyperinsulinemia among Indian babies at birth (Yajnik et al., 2002). Moreover, studies have shown that the body composition of Indians with type 2 diabetes is different from that of the white Caucasians. Indians have more central fat and higher percentage of body fat for a given body mass index, and they are more insulin resistant as compared to white Caucasians. This characteristic is referred to as 'thin-fat phenotype' which originates in fetal life (Yajnik et al., 2002; Yajnik, 2004). All studies have stressed the need for improving fetal growth which is directly associated with maternal factors. Accordingly, the obvious strategy is to improve the nutritional and health condition of mothers during reproductive age.

EVOLUTIONARY PERSPECTIVE

Hunting and gathering of wild foods encompassed almost the entire evolutionary history of humans and other hominids. Despite controversy over the proportion of vegetable and animal foods, it is widely accepted that the types of food and basic nutrient requirements for humans are relatively constant through different stages of human evolution. Thus, the nutritional requirements of modern humans must also be understood as a result of a complex interaction between our ancestors and their dietary patterns in relation to the social and physical environments (Eaton and Eaton, 1998). It has been suggested that the ways of acquiring foods remained relatively constant till about 10,000 years ago when agricultural revolution started (Baker, 1984). The widespread of agriculture, after about 10,000 years ago, has a profound impact on nutritional and socio-cultural conditions of the people. Ever since the advent of agriculture, people have started consuming large amounts of grain, milk, and meat of domesticated animals and becoming more sedentary. Population growth started increasing and societies became larger. Thus, the shift from foraging to farming was one of the major changes ever seen in the dietary history of humans since the time of *Homo erectus*. This transition has taken place only within the last 10 thousand years, which is but a tiny part of our evolutionary history (Larsen, 1998).

With the advent of industrial revolution about 200 hundred years ago in the high-income countries, human populations have experienced yet another dramatic changes in food production, processing, storage and distribution.These have brought about major changes in the nutritional composition of the diets. The traditionally plant-based diets have been quickly replaced by high-fat, energy-dense diets with high content of animal-based foods (WHO/FAO, 2003). These dramatic and rapid changes are believed to have

a greater impact on the health and nutritional status of people in developing countries. Although under-nutrition remains a major health problem in many developing countries, there is evidence of increasing prevalence of NCDs due rapid changes in dietary patterns compounded by changes in work patterns (lifestyles), associated with increasing urbanisation, industrialisation and globalisation.

Compared to the scale of human evolution during the past million years, the changes in food production and manufacture systems that have taken place in the last and present centuries might have been beyond the broad range of human adaptation. In other words, the changes brought about by human cultural capacity for food production and processing might have exceeded other "bio-cultural capacity" to deal with them (Thomas et al., 1989). Accordingly, the nutritional programming of growth and development might override much of the genetic control that has been programmed during the long-time span of hunting and gathering ways of life in the history of human evolution. A metabolic efficiency, which is adaptive to humans as hunter-gatherers, might have become extraordinarily maladaptive perhaps since the beginning of agricultural revolution. It is suggested that the human gene pool has changed very little since the modern humans, *Homo sapiens*, became widespread from 250,000 to about 35,000 years ago. Our genetic ability to response to a wide range of environmental conditions is still similar to our early ancestors as hunter-gatherers. It is argued that our genes are programming us today in much the same way they have been programming humans since the emergence of *Homo sapiens* at least 40,000 years ago (Eaton et al., 1988, 1996). It is estimated that about 99 percent of our gene pool dates from before our biological ancestors evolved into *Homo sapiens* about 40,000 years ago, and 99.99 percent of our genes were formed before the advent of agricultural revolution about 10,000 years ago. As a result, "our biochemistry and physiology are fine-tuned to conditions of life that existed before 10,000 years" (Eaton et al., 1988).

Another impact of agricultural revolution on human health and well-being is the repeated outbreaks of infectious diseases such as measles, chickenpox, smallpox, malaria, mumps, pneumonic plague, tuberculosis and others due to increased contacts as a result of dense population and increased contamination. As hunter-gathers, humans lived in small bands and were highly mobile. Most of the infectious diseases disappeared except those that could travel with humans. Infectious diseases might have been the consistent stress since the early stages of human evolution, but they become more accentuated with the advent of agricultural evolution (Cockburn, 1971). The point to be made here is that the repeated outbreak of infectious diseases may also lead to genetic adaptation of human populations over generations. Populations without previous exposure to a given disease are likely to have a higher mortality as compared to those with repeated exposure to the disease (Volpe, 1990). The decrease in mortality rate due to tuberculosis among the Plains Indians of the Qu'Appele Valley Reservation in Saskatchewan, Canada, from 1886 to 1921 is often cited as a good example of such genetic adaptation of human population to infectious diseases in the absence of modern chemotherapy. Also, it is well-established that individuals who are heterozygous for hemoglobin S (Hbb^A/Hbb^S) have a higher Darwinian fitness than the individuals with either normal homozygosity (Hbb^A/Hbb^A) or abnormal homozygosity (Hbb^S/Hbb^S in environment where malaria is endemic.

In short, the major event in cultural adaptation of humans is the method of food production, which is one of the most successful adaptations that brought about an increase in population growth and distribution (Baker, 1984). At the same time, it has brought about multiple biological stresses including infections and under-nutrition. However, little is known about the adaptive response of obesity that is associated with economic and nutrition transition. Of course, it may be mentioned that J.V. Neel proposed a 'thrifty genotype' hypothesis to explain the causes of obesity and diabetes (Neel, 1962). According to this hypothesis, a thrifty genotype may be beneficial for survival of some tribal groups during the 'feast and famine' conditions in the past, but becomes detrimental in a modern society with abundance of food and less physical activity. In his own words, "a thrifty genotype rendered detrimental by progress" (Neel, 1962). During the feast season when food is abundant, a thrifty genotype enables a person to accumulate fat deposition that acts as energy buffer for times of food scarcity or famines. He suggested that this metabolic efficiency in fat storage was mediated by a "quick insulin trigger", or a high

insulin response to food intakes. This quick insulin trigger was under genetic control. However, in the present affluent societies where food is abundant (especially carbohydrates and fats) compounded by less physical activity, such a thrifty genotype is no longer advantageous. Instead, it predisposes an individual to both obesity and diabetes. The high prevalence of type 2 diabetes in various Amerindian groups has created a speculation that it might have a genetic basis as proposed by Neel's hypothesis. It is suggested that thrifty genes promote fat storage, perhaps mediated by leptin resistance, as a means of survival advantage during periods of food shortage or cold stress (Bindon and Baker, 1997; Zimmet et al., 1997), thereby promoting its evolutionary selection. However, although the hypothesis has received a wide acceptance, the responsible genes are yet to be identified. It is not yet clear which genes determine the high insulin trigger, although genome-wide scans have been carried out to identify the location of responsible genetic factors. But empirical evidence indicates that the emerging trend of obesity in developing countries is associated with changing dietary patterns and lifestyles. Moreover, there is considerable evidence that obesity is uncommon in rural areas as compared to urban areas. The reason is that not all people are undernourished in rural areas but their nature of work and lifestyles are quite different from those living in urban areas. "In fact, subsistence in modern societies requires adaptations in dietary and physical activity behaviors that most people find difficult to achieve" (Weinsier, 1999). Ultimately, these behavioural factors are very important in predisposing the individuals to obesity and associated morbidity. Thus, the need for sustainable improvement in the environmental conditions (including cultural or social and behavioural ways of life) is of considerable importance in the current knowledge of the nature and nurture relationship especially with regard to the nutritional status of human populations.

CONCLUDING REMARKS

Various factors contribute to the emerging burden of chronic diseases in developing countries. In this overview an attempt has been made to look at the increasing urbanisation in tribal states of Northeast India and its possible nutritional and health consequences with special reference to NCDs. Considering the increased risk of NCDs in populations with rapid urbanisation and nutrition transition, it may be speculated that urban populations in tribal states of Northeast India will have a greater risk of NCDs, especially in the next decade or so. However, there is limited information on the prevalence of NCD and other risk factors in Northeast India. In rural areas, under-nutrition is still the major concern (Khongsdier, 2001).

If assumptions of the 'developmental origins' hypothesis are applicable to nutritional situation in India in general and in Northeast India in particular, increasing rural-urban migration along with changes in dietary and physical activity patterns is likely to predispose many individuals (especially low-birth-weight individuals) to obesity, type 2 diabetes, hypertension and other risks of CHD.The significance of 'developmental origins' hypothesis lies in the fact that human life begins as a single cell and a large part of growth and development takes place before birth which is associated with rapid cell division. Intrauterine growth and development is a sensitive and critical period of the interaction between gene and environment. Changes during the early life or sensitive period of development might have permanent effects on the body form and function which are irresistible in later life. However, it has been argued that small sizes at birth and low-birth weight have been widespread in India for many centuries, whereas the diabetes and other risk factors of NCDs are recent phenomena. Urban Indian babies are heavier (2.9 kg) than rural babies (2.6 kg) but have higher susceptibility to diabetes (Yajnik, 2004). Future studies are expected to shed more light on the application of 'developmental origins' hypothesis in India in general and in Northeast India in particular.

Various factors are likely to contribute to the emerging burden of chronic diseases in India. Pollution of food sources by pesticides, chemical fertilisers and toxins is common due to weak regulatory bodies and enforcement agencies, poor public awareness and ineffective consumer organizations (Shetty, 2002). Increasing environmental damage is concentrated in the poorest regions affecting the poorest people. They are more exposed to polluted air and water, thus contributing to the risk of NCDs. Reduction of important micronutrients in dietary intakes of local populations may also take place as a result

of free markets and globalisation. Although access to global markets creates new income opportunities for local farmers and food processors, globalisation of trade may also contribute to the risk of NCDs. Globalisation of trade not only encourages cash crops for export but also paves the way for the replacement of traditional micronutrient-rich foods by heavily marketed, sugars-sweetened beverages and energy-dense fatty, salty and sugary foods. Along with reduced physical activity, these trends may predispose many individuals to obesity and chronic diseases. Strategies are needed to improve the quality of diets by increasing the consumption of fishes, fruits and vegetables, in addition to increasing physical activity to prevent the epidemic of obesity and associated chronic diseases (WHO/FAO, 2003).

As for prevention, the concept of a life-course approach is critical for preventing and controlling NCDs. "This starts with maternal and child health, nutrition and care practices, and carries through to school and workplace environments, access to preventive health and primary care, as well as community based care for the elderly and disabled people" (WHO/FAO, 2003). The continuity of the life-course approach - from fetal to adult stages – should recognize that malnutrition in terms of both under-nutrition and over-nutrition are the key factors to the development of chronic diseases. Accordingly, human-made and natural environments should be taken as important factors that are predisposing humans to NCDs (see, WHO/FAO, 2003). Another aspect in developing countries like India is that a large proportion of people who migrate from rural areas are poor and live in poor sanitation and hygienic conditions in the slums where they are more prone to under-nutrition and infections. Such poor socioeconomic conditions and under-nutrition are likely to contribute to the increasing epidemic of obesity and associated morbidity. This holds the same implications for the increasing rural-urban migration in Northeast India.

Last but not least, understanding of the increasing prevalence of obesity and NCDs in developing countries is an appealing area of anthropological researches, especially for those who are interested in bio-cultural approach. Central to the bio-cultural study is the interaction between biological and cultural characteristics of human populations in relation to the biotic and physical environment in time and space. Increasing prevalence of NCDs are the products of such complex interaction that have become maladaptive. For example, little is known about adaptive response of obesity. Obesity *per se* appears to be a phenomenon mainly associated with economic and nutrition transition compounded by urbanisation and industrialisation that is beyond the broad range of bio-cultural adaptation. Our capacity for culture, on the one hand, makes us possible to create and manage many aspects of the biotic and physical environments. That very capacity, on the other hand, creates havocs and challenges to the survival and well-being of the different species including our own species. Anthropologists and other scientists should pay more attention to understand the cultural dimensions of socio-economic and/or rural-urban differences in health or risks of chronic diseases (Dressler et al., 1998; Dressler, 2004). Formulating of meaningful research questions relating to this area ought to be an important contribution to the society as well as to the scientific thought.

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KEYWORDS Rural-urban migration; nutrition transition; evolutionary perspectives

ABSTRACT This chapter is concerned with the prevalence of non-communicable chronic diseases (NCDs) such as obesity, hypertension, diabetes mellitus and coronary heart disease (CHD) due to nutrition transition and increasing urbanization in developing countries in general and in India in particular. It briefly describes the present position of rural-urban migration during 1991 to 2001 in India with special reference to tribal states of Northeast India. Considering the increased risk of NCDs in populations with rapid urbanization and nutrition transition, it is speculated that urban populations in tribal states of Northeast India will have a greater risk of NCDs, especially in the next decade or so. Increasing rural-urban migration along with changes in dietary and physical activity patterns may predispose many individuals (especially low-birth-weight individuals) to obesity, type 2 diabetes, hypertension and other risks of NCDs.An attempt has also been made to discuss the evolutionary perspectives of nutrition transition that may help us understand the increasing prevalence of NCDs.

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