UNDERSTANDING EPIDEMIOLOGICAL TRANSITION IN INDIA

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ABSTRACT

Evolution is a key biological phenomenon in various forms of life and as far as human species exist they are amenable to changes constantly. The impacts of epidemiologic, demographic and nutritional transitions are rapidly reflected in developing country like India in a negative way owing to the mistangled influences of globalisation, industrialisation and urbansiation. The key to balancing the aftermath of the transitions is proper planning and utilization of resources along with strong boost to public health awareness and environmental friendly policies to ensure maintenance of homeostasis. Inequalities in health still acts as major hurdle for efficient distribution of health care services to cater the ever growing population which requires design of proper health care statistics to identify the weaker sections of people and assigning policies for their overall well-being and development.

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Introduction

As a developing country India is facing huge transitions in epidemiological, nutritional and demographic levels which impacts the population as a whole in various dimensions. The key component can be global burden of disease with progress from communicable to non-communicable diseases. Epidemiologic transition can be portrayed as a combination of demographic and nutritional transitions which overlap each other. The gap in epidemiologic transitions in relation to urban and rural areas can be interlinked to differences in socio-economic conditions of people. The major socio-economic issues in rural areas are poverty, malnutrition, in-adequate access to health care, lack of education and sanitation issues including unsafe drinking water. The common issues in urban areas being environmental pollution, un-healthy diet and ways of living, addiction to smoking and alcohol due to stress factor. The irony to be noted is that even though the in-equalities are prevailing among social classes, the burden of diseases is still relevant in various sections of society. The significant progress on other hand is reduced cases of mortality due to communicable diseases and epidemics as a result of extensive immunisation programmes, better technological progress in medical care, economic growth and increased awareness.

Furthermore, demographic transition is acknowledged by the changing spheres of people migrating from rural to urban areas owing to rapid industrialisation and urbanisation in turn leading to economic stability due to reduction in income inequalities and labour demands, which is more profound in developing countries than the developed one resulting in improved standards of living among the middle income groups which constitutes the majority of Indian workforce. The key notable feature as a result is lack of physical activity and increased sedentarism due to the work culture causing weight gain which has trigerred obesity as the end-product.[1] As a result rates of cardio-vascular diseases are on a higher side which is the main cause of mortality in the current scenario of life events. Irregularities in working hours, increased work pressure and the need for economic stability has resulted in such a phenomena. Moreover pediatric obesity is a rising cause of concern as more children rely on processed foods rich in fat content coupled with reduced physical exertion due to influence of computing and video-gaming which can pre-dispose them towards adult obesity and risk of metabolic syndrome.

Meanwhile stress also plays a pivotal role due to increased demands for economic welfare and good quality of life pushing people beyond their comfort zone and breaking the work-social life balance which immensely affects the personal health and contributes to unhealthy ways of living such as consumption of junk food products, smoking and alcoholism. This can cause elevated blood pressure levels, reduced immunity levels and infection risks, and high exposure of cardio-vascular diseases.

Another interesting variable of urbanization which can be linked to epidemiologic transitions is Industrialisation. It produces both favourable and un-favourableoutcomes.The key ones being enhanced economic development leading to better access for healthcare in urban cities with state of advanced facilities thereby influencing mortality rates dis-proportionately by reducing deaths due to communicable and non-communicable diseases. On the other hand, industrialisation has contributed to depletion of ozone layers by infiltration of poisonous gases from the factories and industrial sites and they are more densely distributed in urban cities than in rural areas.

Neverthless, as a result of over-crowding of the cities environmental pollution may lead to chronic pulmonary diseases and cancerous conditions which may boost up the morbidity and mortality rates especially in slum areas. Another interesting component is reduction of educational in-equalities among men and women. Nowadays, more women are educated and there is a need for female labour in industrial and technological sectors reflecting a reduction in birth rates as more emphasis is laid on family planning and nuclear families. The birth preventive measures adopted my women in the current scenario will help to improve maternal health conditions such as better

pre-natal and antenatal care thereby more focus could be provided to infant healthcare and this is a boon to single child in nuclear families promoting their well being and holistic development. The fertility rates have gone down drastically following family planning and life-style conditions decreasing the birth rates and death rates simultaneously.[2] On the contrary there is a hike in morbidity rates as the geriatric population are slowly rising limited by disabilities.

Meanwhile cardio-vascular diseases, diabetes, cancer and chronic pulmonary diseases are the major non-communicable ones plaguing developing countries like India. According to the statistics from WHO in 2012, ischaemic heart diseases, chronic pulmonary disease and stroke contributed to around 12%,10% and 9% of death rates respectively when compared to communicable ones such as tuberculosis (6%) and diarrhoea (2.7%) and an estimate of 26% are more prone and probable to die due to Non communicable diseases.[3] This lays emphasis on adopting preventive measures to combat diseases rather than just focussing on treatment aspect. Another interesting aspect is that technological and medical advancements has decreased infant mortality rates and rather birth rates tend to drop due to health policies and educational advancements among women which can reflect on maternal and child health on a positive way. So the key aspect of demographic transition is temporality. On the other hand there is an escalated population of geriatrics with disability which has raised the burden of diseases and reflective of demographic gap. More emphasis has to be laid on governmental policies along with reducing the gap between socio-economic factors, psycho-social behavioural mechanisms of people with a key focus on improving overall health trends to understand more about temporality factors related to demographic transitions. The key emphasis could be re-structuring the health delivery system and making sure accessibility of services towards rural people. Next, an enhanced focus could be to promote population based interventions such as health education programs and macro-economic police.[4] Indian population falls under stage two of demographic transition[5] but since there is a divide between social, cultural, economic and geographical factors with respect to rural and urban areas there is a slight tendency in urban areas to shift to stage 3 especially people living in high economic backgrounds as they can afford more quality of healthcare and adopt healthier life-styles.

Moreover, nutritional transition has witnessed a change in dietary patterns in both urban and rural areas. The focus in urban areas is fast-food which is so called the comfort food high in saturated fats. The reason to go for such foods is being less expensive when compared to organic fruits and vegetables, palatal acceptability, a high surge in fast food joints catering to the urbanized population and above all a status symbol in high profile social and economic classes. This trend has led to high intake of LDL cholesterol leading to obesity which has a higher risk of atherosclerosis leading to stroke and cardiac arrests.[1]

Even though India has its fare share on agriculture and horticulture the majority of cultivation of cash crops has been exported to boost the revenues and wide-spread use of pesticides and insecticides been sprayed to the crops to meet the consumer demands thereby making them in-edible to human consumption. The end-result being hike in the prices of fruits and vegetables due to black-market methods adopted by traders making it unaffordable to middle and lower income groups to buy good quality edible foods. The surveys undertaken by National Sample survey organization has shown a sharp contrast with 23% more fats and oils being used in rural areas and 58% more in urban areas. Moreover, statistics also show 53% deaths in the year 2008 due to non-communicable diseases and 33% men and 32% women had hypertension above the age of 25.

Nevertheless it is an innate human nature to rely on sugary foods and dietary fats from very young age and this character can prolong till adulthood. Diets rich in sugars and saturated fats are known to cause obesity leading to non-communicable diseases and hence morbidity and mortality. Globalisation has played a huge impact on nutritional transition and

urbanization acts as a key mediator. Indians are more prone to adopting westernized diets especially in urban areas. The key pressing factor lies in the psycho-social aspect of people. The advent and rise of fast food joints coupled with globalization has lead to more people sticking to unhealthy diet such as burgers and pizzas which is linked to high status in society as it is considered to be more affordable for higher social classes and it has become a norm especially in children and young adults due to peer influences and moreover their easy availability has worsened the situation. The common diet related diseases are Type 2 Diabetes mellitus, Metabolic syndrome, Hypertension and Chronic Heart diseases which has lead to increased mortality and morbidity in recent years.[7] The Consumerism culture currently is very supportive for globalization which results in more processed foods available in the market containing high saturated fats and salt which has been labelled"easy to cook" and eat attracting more consumers towards unhealthy ways of eating. Industrialisation has led to in-flexible working hours for men and women especially in the field of Information Technology. Working women in nuclear families do not get enough time to take care of the family and the general perspective would be to encourage children to consume ready to eat foods thereby managing time constraints. The digital media also portrays more of adverts about fast foods and fizzy drink which enhances these products reachability especially among young children and adolescents.

On the contrary, as the socio-economic conditions improve people tend to enhance their diet by consuming more red-meat which can lead to cancer susceptibility. To combat the negative effects of dietary transitions the governmental policies should be aimed at preventive measures ranging from curbing processed foods and fizzy drinks in the market and encouraging more people to follow traditional diet patterns such as rice, wheat, millets and cereals through nutritional counselling which would bring about a stable diet pattern and enhance the reduction in life-style disorders and taxation of fast food joints and processed foods can go way ahead to reduce unhealthy food habits. Currently India is undergoing stage two in nutritional transition but a fluctuating curve can be noticed among people living in high SES groups tracing their way towards healthy diets and lifestyle practices along with exercise regimes. So the transition is from traditional diet rich in carbohydrates and proteins to hydrogenated fats and processed chemical treated foods.[8]

Effects of epidemiologic, demographic and nutritional transitions on oral diseases

India faces a huge burden of oral diseases each year. The fact that oral diseases are neglected by majority of population in low socio-economic levels due to less awareness and education about its impact leads to more agony. Teeth is a major organ responsible for chewing, mastication and speech and it has to be given utmost care by an individual to lead a good quality of life in the society. The fact that dental diseases lead to nutritional impairment can lead to morbidity and pressing fact that oral cancer leads to mortality should be of utmost importance.[9]

Epidemiological transitions coupled with dimensions of demography and nutrition has a negative effect on oral health. For instance smoking is the main risk factor for oral diseases such as periodontitis and oral cancer and the fact that irrespective of Socio-economic status criteria, smoking and smokeless tobacco forms is quite common among rural and urban areas. India is the country with highest oral cancer cases in the world and more cases are reported in rural areas due to widespread use of smokeless forms such as arecanut and beetlenut. There is another interesting aspect to link tobacco chewing to culture especially among Hinduism where arecanut chewing is a part of cultural heritage.[10] Amongst the urban population stress has been coined a major factor in the wake of work pressure especially among men, amidst industrialization forcing them to smoke more cigarettes per day. Then fact that smoking has a higher incidence of contracting periodontitis and oral cancer which can eventually lead to tooth loss and malignancies in later stages of life. Alcoholism can also be pointed out as an mediator to exaggerate risk of periodontitis

in smokers and susceptible to oral infections as a result of impaired host resistance. Owing to peer-pressure, stress to perform well either in studies or work-place and the failure to cope up in balancing life has lead to young individuals refuting to alcohol and drug abuse perpetuating burden of oral diseases.[11]

In addition as a result of changed diet trends, use of carbonated drinks and sugary products has lead to higher prevalence of dental caries especially in children and adults. Intake of processed sugar rich foods in adults mainly in urban cities has shown direct link to Diabetes mellitus which can predispose to oral infections rapidly. The extensive use of carbonated sugary drinks which leads to attrition of teeth as well, is related to following westernized diet which is linked to globalization and Industrialisation especially in the urban cities. Likewise, in lower economic classes due to insufficient intake of diet rich in fruits, vegetables and vitamins can lead to greater susceptibility of oral infections due to reduced immunity especially deficiency of vitamin A, D and proteins are linked to hypoplasia of enamel.[9] This can prove that irrespective of socio-economic divides among the rural and urban areas oral diseases are prevalent among the population classes.“According to WHO non-communicable disease profile in 2014,” shows tobacco smoking as an adult risk factor among 25% males and 4% females respectively. This statistics clearly proves the susceptibility of Indian population to contract oral cancers.

Neverthless, the fact that dental diseases are quite expensive to treat makes it more difficult for the common man to seek treatment and majority of the individuals bear the pain for a long-time and eventually resulting in loss of tooth and other dental infections worsening the situation. It also prevents people from functioning well in the society due to social inhibitions, steals the confidence of a person to smile and greet, adversely affecting community relations and tend to cause low self esteem thereby affecting the mental health. As malnutrition is very common among children in under-privileged communities it can lead to decreased host resistance and thereby more prone to dental infections.

Conclusion:

The effects of epidemiologic, demographic and nutritional transitions are rapidly reproduced in developing country like India in a unfavourable way owing to the mistangled influences of globalization, industrialisation and urbanisation. The key to stabilizing the impact of the evolution is proper planning and utilization of assets along with strong boost to public health awareness and environmental friendly policies to ensure maintenance of equilibrium. Inequalities in health still acts as dominant obstacle for productive dispersion of health care services to cater the ever increasing population which requires draft of proper health care statistics to analyze the weaker portion of people and assigning policies for their overall well-being and development.

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