

## GLOBALIZATION AND HEALTH: A CASE STUDY OF PUNJAB

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**Abstract:** Globalization is an extremely complex phenomenon and it is the interactive co-evolution of multiple technological, cultural, economic, institutional, social and environmental trends at all conceivable spatio-temporal scales. The commercialization of agriculture in Punjab through the Green Revolution led to the effects, which were far-reaching and irreversible. The Green Revolution replaced indigenous agriculture with modern agriculture led to the use of high yielding seed varieties leading to a loss of indigenous varieties of various crops; the contamination of soils and water systems from the use of pesticides, chemical fertilizers, modern irrigation systems and dependency on modern machinery and technology. The data is collected from various secondary sources and arranged into three sections. The first section of the research paper deals with concepts of globalization and health. The theoretical framework relating globalization and health is the content of second section. The impact of globalization, in the form of Green Revolution technologies on the health in the Indian state of Punjab, is the content of last section. The research paper proposes a theoretical model for health impacts of globalization in Punjab. The proposed model indicates that the globalization led to three kinds of changes in context of Punjab, namely, economic changes, socio-cultural changes and environmental changes. All these changes had profound effects on health such that the people of Punjab are battling health problems including a noticeable rise in cancer cases, kidney ailments, premature ageing and infertility.

**Key words:** Environment, Globalization, Health.

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### Introduction

Globalization is a complex process of development and growing awareness of the people in the world. By this process regional economy, society, and cultures become integrated through a global network of social, cultural, economic, political and environmental ideas. It has in common the basic concepts that relationships and organizations have spread increasingly across the world. Its key components are the contraction of distance, the stretching of relationships beyond national boundaries, a growing awareness of the world as a whole and an increasing interdependence between different parts of the world (Fulcher and Scott,

2003).

Giddens (1997) opines “globalization not only refers to economic processes or the development of global institutions but also describes the interconnection between “individual life” and “global futures”. More specifically, globalization is defined as the process of increasing economic, political, and social interdependence and global integration that take place as capital, traded goods, persons, concepts, images, ideas, and values diffuse across state boundaries. Hence, Rennen and Martens (2003) defined contemporary globalization as an intensification of cross-national cultural, economic, political, social and technological interactions that lead to the establishment of transnational structures and the global integration of cultural, economic, environmental, political and the social processes on global, supranational, national,

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regional, and local levels. The roots of globalization can be traced back to the industrial revolution and the laissez-faire economic policies of the 19th century (Yach, 1998). It is clear that globalization is something more than a purely economic phenomenon manifesting itself on a global scale. Among the visible manifestations of globalization are the greater international movement of goods and services, financial capital, information and people. In addition, there are technological developments, more transboundary cultural exchanges, facilitated by the freer trade of more differentiated products as well as by tourism and immigration, changes in the political landscape and ecological consequences.

Health is a broad concept which can embody a huge range of meanings, from the narrowly technical to the all-embracing or philosophical. The word health is derived from the old English word for heal which means 'whole', signalling that health concerns the whole person and his or her integrity, soundness or well-being. Health has two common meanings in everyday use, one negative and one positive. The negative definition of health is the absence of disease or illness. The positive definition of health is a state of well-being, interpreted by the World Health Organization (WHO) in its Constitution as a state of complete physical, mental and social well-being, not merely the absence of disease or infirmity. In the context of medical anthropology, Landy (1977) defined a state of health as "the condition of an organism that permits it to adapt to its environmental situation with relative minimal pain and discomfort, achieve at least some physical and psychic gratification and possess a reasonable probability of survival". While on the other hand, a state of disease according to Landy "is a condition of the organism that seriously obtrudes against these adaptive requirements and causes behavioural dysfunction. It can be concluded that the concept of health varies from situation to situation, individual to individual and community to community. Procter (2000) reviewed the prominent definitions of health found in the literature and classifies each definition into one of two frameworks or

approaches to health care provision. The definitions of health could be classified as selective definitions of health and universal definitions of health (Table 1).

Table 1. Definitions of health

Selective definitions of health	Health as the absence of disease Health as socio-psychological adaptation or adjustment to circumstances Health as a functional capacity to fulfill essential life functions.
Universal definitions of health	Health as growth Health as independence, the exercise of autonomy and self-determination Health as well being Health as the realization of potential Health as empowerment Health as wholeness

Source: Procter, 2000

### Globalization and health: A conceptual and theoretical framework

Globalization is a key challenge to public health, especially in developing countries, but the linkages between globalization and health are complex. While health is a complex outcome and the processes of globalization are far from straightforward. McMichael and Beaglehole (2000) explain that from a public-health perspective, globalization appears to be a mixed blessing. On the one hand, accelerated economic growth and technological advances have enhanced health and life expectancy in many populations and various health care and public-health programmes yield gains in population health. On the other hand, aspects of globalization jeopardise population health via the erosion of social and environmental conditions, the global division of labour, the exacerbation of the rich-poor gap between and within countries, and the accelerating spread of consumerism.

Many scholars have tried to conceptualise the possible linkages between globalization and health. Woodward et al. (2001) proposes an explanatory model that focuses on five key linkages (three direct and two indirect) from globalization to health. Direct effects included impacts on health systems, health policies and exposure to certain kind of hazards such as infectious diseases and tobacco marketing; indirect effects were those operating through the national economy on the health sector and on population risks. The framework is based on three component circular processes of globalization: openness; cross-border flows; and rules and institutions. However, their conceptualization mainly focused on the health effects of economic globalization. The model explains that increasing cross-border trade flows stimulate the development of global rules and institutions, which promote the opening of economies, which increases the scale and scope of cross-border flows. Globalization is influenced by a large number of driving and constraining forces: technological developments, political influences, economic pressures, changing ideas, and increasing social and environmental concerns.

Labonte and Torgerson (2002) review different conceptualisations of the globalization-health relationship, resulting in a diagrammatical synthesis that mainly focuses on governmental policy changes as well as economic determinants of health, but with the inclusion of an environmental pathway. Hence, many of these approaches primarily emphasize the economic and institutional side of globalization, defining globalization in a rather narrow way. The effects that are identified by Woodward et al. (2001) as most critical for health are mainly mediated by economic factors. Labonte and Torgerson (2002) primarily throw light on the effects of economic globalization and international governance in their conceptual framework. Huynen et al. (2005) identified global governance structures, global markets, global communication and the diffusion of information, global mobility, cross-cultural interaction and global environment changes as important features of globalization (Table 2).

Table 2. Features of globalization

New global structures	Globalization influences the interdependence among nations as well as the nation state's sovereignty leading to a need for new global governance structures
Global markets	Globalization is characterised by worldwide changes in economic infrastructure and the emergence of global markets and a global trading system
Global communication and diffusion of information	Globalization makes the sharing of information and exchange of experiences around common problems possible
Global mobility	Global mobility is characterised by a major increase in extensity, intensity and velocity of movement and by a wide variety in 'types' of mobility
Cross-cultural interactions	Globalising cultural flows result in interactions between global and local cultural elements
Global environmental changes	Global environment threats to ecosystems include global climate change, loss of biodiversity, global ozone depletion and global decline in natural areas

They concluded that these features operate at the contextual level of health determination and influence distal factors such as health-related policies, economic development, trade, social interactions, knowledge and provision of ecosystem goods and services. In turn, these changes in distal factors affect the proximal health determinants and, consequently, health.

Labonte and Schrecker (2007) took a somewhat different approach in their framework for the Commission of Social Determinants of Health, conceptualizing how

globalization affects disparities in access to social determinants of health.

### Globalization and health: A case study of Punjab (India)

Punjab is a state situated in Northern India comprising of 1.57% of country's geographical area, contributes nearly 40% wheat and 60% rice to the central pool and is recognized as a classic example of fastest growing economy with agricultural basis (Punjab State Council for Science and Technology, 2005). One of the most significant developments in western development strategy in the post-war era was the commercialization of Third World agriculture through the Green Revolution. The Ford Rockefeller inspired and World Bank backed scheme led to the transformation of Third World societies with effects which were far reaching and irreversible. The relationships between globalization and health in context of Punjab are analysed in Figure 1.

The figure 1 depicts that globalization process in the form of Green Revolution introduced three kinds of changes including economic changes, socio-cultural changes and environment changes. On the basis of above figure, it can be concluded that contextual determinants such as global markets, global communication, and diffusion of information, global mobility, cross-cultural interaction and global environmental changes affect distal factors. The distal determinants have the potential to affect the proximal health determinants, and consequently, affect health.

**Economic changes:** During the mid-sixties, the Green Revolution transformed not only the state's agriculture and economy but also contributed significantly to make India self-reliant in food. In 1950s to 1960s, India

was importing food grains to feed its millions. Under drought conditions, during 1964-65, India imported 13 million tons of food grains. This put a heavy strain on the foreign reserves of the country. Therefore, the country adopted the agricultural policies that promoted food grain production for the National Food Security. The Government of India, then, decided to explore the areas where production of food grains could be increased at the maximum rate that too at a minimum cost. As a result, 70 million rupees was spent on the development of agriculture in the states of Punjab, Andhra Pradesh, Tamil Nadu, Gujarat, etc., with the Punjab emerging as the forerunner. Green Revolution led to bringing more cultivated area under irrigation particularly by huge investments in major irrigation structures and consolidation of land holdings to make agriculture amenable for mechanisation. Thus, Punjab became the hub of agricultural activity and consequently, the economic development took place. To keep up with the economic development and to increase the yield of the crops, the use of pesticides and chemical fertilizers also increased which led to ill health effects.

The pesticide consumption in Punjab increased from 3300 Metric Tons (MT) in 1975 to 6900 MT in 2005. The comparison of patterns of pesticide consumption (in Metric Tons) of various states clearly indicates that the consumption of pesticides in Punjab increased almost twofold from 1975 to 2005 while in Andhra Pradesh it reduced significantly. Although in Uttar Pradesh, the consumption decreased in 1980, then increased significantly in 1995 and reduced again in 2005. The pesticide consumption at national level also declined but to some extent only (Table 3).

Table 3. Comparison of patterns of pesticides consumption (in Metric Tons) of three states

Year	Punjab	Andhra Pradesh	Uttar Pradesh	India
1975	3,300	10,000	6,400	44,733
1980	4,800	11,200	4,670	65,749
1995	7,300	9,343	7,970	61,357
2005	6,900	2,133	6,855	40,672

Source: www.punensis.com

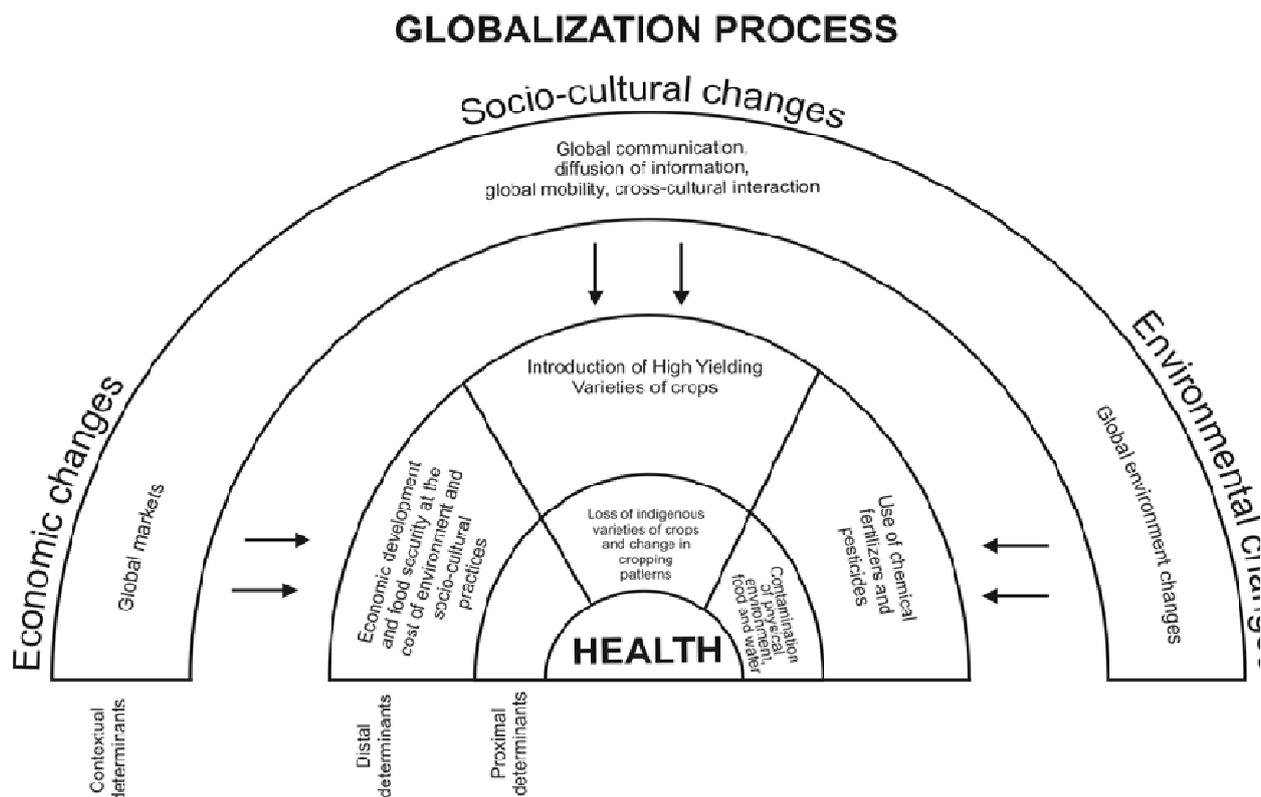


Figure 1. The link between health and globalization process

Fertilizers are an important component of agricultural technology. Since, the introduction of high yielding varieties, the consumption of chemical fertilizers has been increasing steadily. It has increased more than 8 times in the past 35 years from 213 Nutrient thousand tons in 1970-71 to 1694 Nutrient thousand tons in 2005-06 (Punjab State Council for Science and Technology, 2007).

**Socio-cultural changes:** Green Revolution led to the diffusion of information regarding modern technology of cultivation which further led to the stimulation of agriculture production primarily by replacing traditional varieties of crops by High Yield Varieties, increasing the use of fertilizers and plant protection chemicals and changes in the cropping patterns. Punjab State Council for Science and Technology (2005) reported that prior to Green Revolution there were 41 indigenous varieties of wheat, 37 varieties of rice, 4 varieties of maize, 3 varieties of millets, 16 varieties of sugarcane, 19 varieties of pulses, 10 varieties of cotton and 9 varieties of oil seeds but after Green Revolution most of these traditional varieties are lost and the cropping pattern have changed from multiple cropping

to mono cropping pattern consisting of wheat-paddy cycle. Green Revolution led to increase in area under cultivation of wheat and rice. On the other hand, the area under other cereals, legumes and oilseeds decreased. Brar (1998) further opined that the homogeneity was introduced in the crop cover with wheat-paddy rotation replacing the traditional subsistence oriented, ecology adjusted diversified cropping patterns. Such a homogenization of the crop cover also increased the incidence of pests and led to decreased fertility of soil. Thus, the use of pesticides and chemical fertilizers became unavoidable which led to health-related problems. Punjab State Council for Science and Technology (2005) mentioned that the area under wheat has increased by three times, area under rice has increased by eleven times from 1960-1961 to 2000-2001. The area under maize, on the other hand, has almost halved (from 1971 to 2001) and area under millets has decreased by twenty times (from 123 sq Km to 60 sq Km). Similarly the area under barley has come down to less than 5 sq Km from 60 sq Km in 1960-1961. In the 1960-1961, pulses occupied 19 per cent of state's

total cropped area but in 1999-2000, this dropped to 0.78 per cent. Whereas traditionally the farmers grew a large number of varieties as per local suitability but emphasis now is only on a few high yielding varieties. Since the advent of Green Revolution in the state, 38 hybrid varieties of wheat, 17 varieties of rice, 37 varieties of pulses, 10 varieties of sugarcane, 18 varieties of maize, 9 varieties of millets, 27 varieties of oilseeds, 5 varieties of barley and 14 varieties of cotton have been introduced. This clearly led to changes in cropping patterns in Punjab.

**Environmental changes:** The advent of Green Revolution with its major components of consolidation of land holdings, land reforms, high yielding seed varieties, irrigation, use of chemical fertilizers and pesticides, agricultural credit, rural electrification and farm mechanization heralded a new era in history of Indian agriculture (Chopra, 1985). Whereas the initial increase in production was mainly due to increase in the area under cultivation but a spectacular rise of 18.36 million tons in food grain production from 1971 to 2005 could be largely attributed to intensive use of inputs like fertilizers, pesticides, insecticides, herbicides, etc. (Punjab State Council for Science and Technology, 2007). The large scale use of pesticides to control pests resulted in the development of pesticides resistance in various pests and insects which in turn led to the resurgence of insect pests and decline in population of the natural enemies of pests. In order to minimise the crop loss, farmers aggressively adopted self-defeating practices such as increasing either dosage or frequency of pesticides application, regardless of its effects on environment, health and socio-economic conditions of the community (Shetty, 2004). However, the assumption of nature as a source of scarcity, and technology as a source of abundance lead to the creation of technologies which created new scarcities in nature through ecological destruction. The reduction in availability of fertile land and genetic diversity of crops as a result of the Green Revolution practices indicated that at the ecological level, the Green Revolution produced scarcity and not abundance (Shiva, 1991). Further, the damaged ecology of Punjab

increased the cost of agriculture by increasing the expenditure on irrigation, fertilizers, land reclamation and pesticides. Apart from this, the depleting water table adversely affected soil properties which further added to the damage of the Punjab's ecology.

There are studies which link environmental degradation with various diseases in Punjab. Halder (2009) found the premature greying of hair in children as early as ten years old, ageing and predisposition to cancer in Jajjal village of Bathinda district of Punjab. Another study by Thakur et al. (2008) found the prevalence of various pesticides above the permissible limits in tap water and vegetable samples in Talwandi Sabo area in Bathinda district of Punjab. The Age Adjusted Prevalence Rate of confirmed cancer cases was found to be 125 in the same region which is higher than the national average of 70. Tirado (2009) found the nitrate levels as high as 601.6 mg/l in village Doda of district Muktsar as against the prescribed level of 50 mg/l for safe drinking by World Health Organization. The study linked the higher incidence of blue-baby syndrome and cancer to the higher levels of nitrate in the district. Agnihotri (2010) linked the rising instances of abortion, early menarche, foetal abnormalities especially neural tube defects and early ageing to the higher pesticides levels in Punjab.

## Discussion

The present research paper focuses on how globalization and health are related and how the globalization affects the health with special reference to Indian state of Punjab. It also proposes a theoretical model for health impacts of globalization in case of Punjab. The proposed model indicates that the globalization led to three kinds of changes in context of Punjab, namely, economic changes, socio-cultural changes and environment changes. All these changes have profound effects on health such that the people of Punjab are battling health problems including a noticeable rise in cancer cases, reproductive health problems, mental retardation and kidney ailments. It is to be noticed that all the three processes, namely economic changes,

socio-cultural changes and environmental changes are related to each other such that one triggers the other aspects to change. Economic development formed the basis for socio-cultural change and environmental change as a result of focus on increasing product for economic gains. Socio-cultural change as a result of Green Revolution led to economic development but at the cost of environment. Environmental change is stimulated both by economic change as well as socio-cultural change.

Anthropology, as a discipline, critically examines the processes of development and questions the sustainability of the development. One of the major contributions of anthropology in the study of globalization and development processes is to distinguish between “the local” and “the global” and how the global forces affect “the local”. In the case of Punjab, the traditional agricultural systems used their excellent knowledge to create a balance between the natural resources such that the cropping systems include a symbiotic relationship between the soil, water, farm animals and plants. This system was based on strengthening the ecological base of agriculture and the self-reliance of the peasantry but the Green Revolution was based not on cooperation with the nature but on its conquest. The Green Revolution was based not on intensification of nature's processes but on the intensification of credit and purchased inputs like chemical fertilizers and pesticides, not on self reliance but dependency, not on biodiversity but on uniformity.

Thus, the development in terms of globalization forces us to think about the right of future generations to healthy environment and a healthy life.

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