

A Study on Health Indicators and Their Determination with Reference to India

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Introduction

Health is defined as a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity” (The World Health Organisation). It is an essential objective of development and the capacity to develop depends on health, i.e., health and development are interdependent and health status cannot be traded off against economic gain. “Wealth cannot buy health, but health can buy wealth” Many factors combine together to affect the health of individuals and communities. Whether people are healthy or not, is determined by their circumstances and environment. To a large extent, factors such as where we live, the state of our environment, genetics, our income and education level, and our relationships with friends and family all have considerable impacts on health, whereas the more commonly considered factors such as access and use of health care services often have less of an impact. In this context this paper examines health indicators and their determinants with special reference to India and also the importance of vulnerability and health care. This paper is only diagnostic study and also based on secondary data.

The Importance of Measuring Health Status

If we want to understand the most important global health issues and what can be done to address them, then we must understand what factors have the most influence on health status, how health status measured, and what key trends in health status have occurred historically, we must, in fact, be able to answer the questions that are posed in the narratives above.

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If one wants to understand and address differences in health status among different groups, then how do we have to measure health status? Do we measure it by age? By gender? By socio-economic status? By level of education? By ethnicity? By location?

Millennium Development Goals (MDG) Related to Health Aspects

The aim of the MDGs is to encourage development by improving social and economic conditions in the world's poorest countries. They derive from earlier international development targets, and were officially established following the Millennium Summit in 2000, where all world leaders present adopted the United Nations Millennium Declaration.

Goal 4: Reduce Child Mortality Rates

- Target 4A: Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate
 - Under-five mortality rate
 - Infant (under 1) mortality rate
 - Proportion of 1-year-old children immunized against measles

Goal 5: Improve Maternal Health

- Target 5A: Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio
 - Maternal mortality ratio
 - Proportion of births attended by skilled health personnel
- Target 5B: Achieve, by 2015, universal access to reproductive health
 - Contraceptive prevalence rate
 - Adolescent birth rate
 - Antenatal care coverage
 - Unmet need for family planning

Goal 6: Combat HIV/AIDS, Malaria, and Other Diseases

- Target 6A: Have halted by 2015 and begun to reverse the spread of HIV/AIDS

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- HIV prevalence among population aged 15–24 years
 - Condom use at last high-risk sex
 - Proportion of population aged 15–24 years with comprehensive correct knowledge of HIV/AIDS
- Target 6B: Achieve, by 2010, universal access to treatment for HIV/AIDS for all those who need it
 - Proportion of population with advanced HIV infection with access to antiretroviral drugs
 - Target 6C: Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases
 - Prevalence and death rates associated with malaria
 - Proportion of children under 5 sleeping under insecticide-treated bednets
 - Proportion of children under 5 with fever who are treated with appropriate anti-malarial drugs
 - Incidence, prevalence and death rates associated with tuberculosis
 - Proportion of tuberculosis cases detected and cured under DOTS (Directly Observed Treatment Short Course)

Importance of Health Status and Vulnerable Groups

The capacity for survival in the prevailing socio-economic conditions is accompanied by adaptation to a poorer quality of life and increasing under-nourishment in all age groups, particularly mothers, infants and children. The technology and health care available appears to be able to sustain and prolong life in conditions of great deprivation. The proportion of babies with a low birth weight in a poor country with a relatively very high life expectancy is an alarming evidence of this phenomenon.

Vulnerability groups have nevertheless for survival in conditions of extreme deprivation. This capacity indicates their potential for greater productivity, given adequate access to resources. The development strategy can transform vulnerable communities and lift

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them to act simultaneously on all the conditions responsible for their vulnerability. The continuing impact that such a strategy has on the well-being of the household and the community will be the measure of its success. In it improvement of health status plays a vital role and becomes a critical indicator for the other inputs required for the process of transformation.

Meaning of Vulnerability

Vulnerability refers to a condition to which the physical and mental well-being required for a normal productive life is impaired and at constant risks. In general it refers to any conditions of exposure to hazards, risks, and stress and the poor health provides an initial entry to this condition. The pattern of morbidity, mortality and reproduction reflects the health-related vulnerability of individuals and communities, and are the products of various forms of social and economic deprivation acting simultaneously. The concept of vulnerability is implicit in the concept of health risk, which has always been part of public health. Vulnerability depends on the level of development and the health transition stage of the concerned country at any given point of time. Each society has its typical patterns for ill health and within these general patterns certain population groups and sections of society are exposed to the highest health hazards and have the lower chances for survival and the poorest quality of life. They form the most vulnerable groups, which consist of women in rural areas, unemployed youths, migrant workers and teenage mothers.

The Various Indicators Used for Defining Health Status in all its Various Characteristics can be Grouped into Four Clusters

- i. The first cluster consists of the following - the types of diseases, their incidence, and the rates morbidity. It helps in defining the prevailing patterns of morbidity and identifying the disease that causes the major health problems. It is also useful for reflecting the quality of the health care available, the infrastructure of the curative,

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preventive and rehabilitation services, and the quality of the physical environment, including water, housing and sanitation.

- ii. The second cluster relates the conditions immediately antecedent disease, such as malnutrition or under nutrition in its various forms, obesity, low birth weight; reproductive health status such as birth spacing and fertility rates; level of immunization, smoking, alcohol and drug abuse; frequently referred to as risk factors.
- iii. The third cluster relates to the mortality indicators.
- iv. The fourth cluster relates to the process of indicators and it included those which relate to the processes that contribute to health status outcomes and human development.

The above mentioned four clusters include not only the quality of health services and the extent to which they are utilized, but also the inputs of education, the immediate health environment of housing, water, and sanitation, the work environment, and the income and purchasing power. The indicators used to define health contain the main elements of the primary health care strategy which emphasizes the importance of water and sanitation, information, agricultural extension, and other services designed to protect and improve health status.

Key Health Indicators

Life Expectancy at Birth - The average number of years a newborn baby could expect to live if current mortality.

Maternal Mortality ratio - The number of women who die as a result of pregnancy and child birth complications per 100,000 live births in a given year.

Infant Mortality Rate - The number of deaths of infants under age 1 per 1000 live births in a given year.

Neo-natal Mortality Rate - The number of deaths to infants under 28 days of age in a given year per 1000 live births in that year.

Under 5 Mortality Rate (child mortality rate) - The probability that a newborn baby will die before reaching age 5, expressed as a number per 1000 live births.

Table-1

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Health Status Indicators in India-2011

Sl.No	Parameters	1951	1981	1991	2001	Current Levels
1	Crude Birth Rate per 1000 population	40.8	33.9	29.5	25.4	22.1 SRS (2010)
2	Crude Death Rate (Per 1000 population)	25.1	12.5	9.8	8.4	7.2 SRS (2010)
3	Total Fertility Rate	6.0	4.5	3.6	3.1	2.6 (2009)
4	Maternal mortality Ratio	NA	NA	398 SRS (1997-98)	301 (2001-03)	212 SRS (2007-09)
5	Infant Mortality Rate (Per 1000 live births)	146 (1951-61)	110	80	66	47 SRS (2010)
6	Child Mortality Rate (0-4 Years) Per 1000 children	57.3 (1972)	41.2	26.5	19.3	14.1(2009)
7.	Neo Natal Mortality Rate					35 SRS (2009)
8	Couple Protection Rate (%)	10.4 (1971)	22.8	44.1	45.6	40.4(2011)
9	Expectation of life at Birth (in Years)		54.1			62.6
	Male	37.1	54.7	60.6	61.8	64.2
	Female	36.1 (1951)		61.7 (1991-96)	63.5 (1999- 03)	

Source: http://mohfw.nic.in/NRHMDocumentsExecutive_Summary_september_2011.pdf

The table-1 reveals that major health indicators in India as on 30th September 2011. Still the progress of health status in India has not impressive after getting 60 years of republic. It is not easy task to achieve MDG's Goals in India before 2015.

What Influences Health

There are many factors that influence people's health and they are known as the determinants of health. These factors are often interactive and outside an individual's control. The below diagram summarises the main determinants of health according to their spheres of influence. Starting from those at the individual level and moving through to those in the wider society.

Figure-A

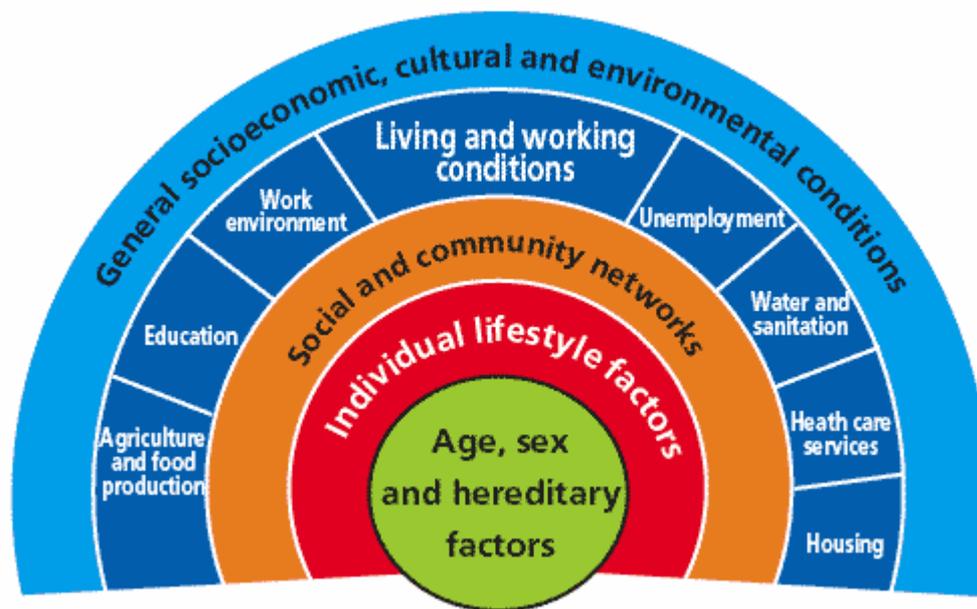
Main Determinants of Health

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Source: Whitehead M. & Dahlgren G. (1991)

The Determinants of Health Include

- the social and economic environment,
- the physical environment, and
- the person's individual characteristics and behaviours.

The context of people's lives determines their health, and so blaming individuals for having poor health or crediting them for good health is inappropriate. Individuals are unlikely to be able to directly control many of the determinants of health. These determinants—or things that make people healthy or not—include the above factors, and many others:

- **Income and Social status** - higher income and social status are linked to better health. The greater the gap between the richest and poorest people, the greater the differences in health.
- **Education** – low education levels are linked with poor health, more stress and lower self-confidence.
- **Physical Environment** – safe water and clean air, healthy workplaces, safe houses, communities and roads all contribute to good health. Employment and working

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conditions – people in employment are healthier, particularly those who have more control over their working conditions

- **Social Support Networks** – greater support from families, friends and communities is linked to better health. Culture - customs and traditions, and the beliefs of the family and community all affect health.
- **Genetics** - inheritance plays a part in determining lifespan, healthiness and the likelihood of developing certain illnesses. Personal behaviour and coping skills – balanced eating, keeping active, smoking, drinking, and how we deal with life's stresses and challenges all affect health.
- **Health Services** - access and use of services that prevent and treat disease influences health
- **Gender** - Men and women suffer from different types of diseases at different ages.

Evidence Base of Health Determinants

An evidence base about the impact that projects, programmes and policies have had on health is required to carry out **Health Impact Assessment (HIA)**. The best available evidence is used within the appraisal stage of HIA to determine what impacts may occur (both positive and negative), the size of the impact (if possible) and the distribution of that impact in different population groups. It is generally assumed that the evidence for health impacts exists, and that searching and collating will provide the necessary evidence. Unfortunately this is not often the case, and the evidence of health impacts is often not available. This is because of the long causal pathway between the implementation of a project/programme/policy and any potential impact on population health, and the many confounding factors that make the determination of a link difficult. Within the HIA it is important therefore to be explicit about sources of evidence and to identify missing or incomplete information.

Providing a comprehensive review of the evidence base is not simple. It needs to draw on the best available evidence – that from reviews and research papers, and including qualitative and quantitative evidence. This information must be supplemented with local and expert knowledge, policy information, and proposal specific information.

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However, there are examples where the best available evidence has been documented, and in some cases summarized. These are presented below:

- Transport
- Food and Agriculture
- Housing
- Waste
- Energy
- Industry
- Urbanization
- Water
- Radiation
- Nutrition and health

Transport

Evidence of health impact focus on:

- Accidents between motor vehicles, bicycles and pedestrians (particularly children and young people).
- Pollution from burning fossil fuels such as particulates and ozone.
- Noise from transportation.
- Psychosocial effects such as severance of communities by large roads and the restriction of children's movement.
- Climate change due to CO₂ emission
- Loss of land
- Improved physical activity from cycling or walking
- Increased access to employment, shops and support services
- Recreational uses of road spaces
- Contributes to economic development
- Vector borne diseases

Food and Agriculture

Agricultural Production Issues and Manufacturing

- Tobacco farming and its impact on heart disease, stroke, certain cancers and chronic respiratory disease. Including passive smoking and impact of foetal development. Pesticide policies on tobacco crops require consideration.
- Changes in land use, soil quality, choice of crop, use of agricultural labour and occupational health.
- Mechanisation of work previously done by hand, and plantation agriculture.
- Fisheries – biotoxins, pollution, chemical use, wastewater, processing, and occupational health
- Forestry – vector borne diseases, occupational health, and food security.

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- Livestock use – vector borne diseases, drug residues, animal feed, waste, and food security.
- Sustainable farming including chemical and energy use, biodiversity, organic production methods, and diversity of foods produced.
- Fertiliser use – nitrate levels in food, pollution of waterways, re-use of agricultural waste.
- Water – irrigation use and its impact on river/water-table levels and production outputs.
- Pesticide usage and veterinary drugs– legal requirements, best practice, consumer issues.
- Food packaging, preservation and safety, and avoidance of long storage and travel.

Access to and Distribution of Food

- Household food security – appropriate food being available, with adequate access and being affordable (location of markets, supermarkets and closure of small suppliers creating food deserts in cities).
- Food supplies, including national and regional food security, and regional production.
- National food security – able to provide adequate nutrition within a country without relying heavily on imported products
- Cold-chain reliability – the safety of transporting products that deteriorate microbiologically in the heat.

Dietary Patterns, Diversity of Food Available and Home Production, Particularly:

- Fruit and vegetable consumption on reduced stroke, heart disease and risk of certain cancers,
- Total, saturated and polyunsaturated fat, carbohydrates and sugars consumption on obesity, heart disease, stroke and other vascular diseases.
- Alcohol consumption and impact on social effects related to behaviour (traffic accidents, work/home accidents, violence, social relations, unwanted pregnancy and STDs), and toxic effects (all-cause mortality, alcoholism, certain cancers, liver cirrhosis, psychosis, poisoning, gastritis, stroke, foetal alcohol syndrome and others).
- Micronutrients such as iron, vitamin A, zinc and iodine and their impact on deficiency syndromes.

Food Safety and Food Borne Illness Hazards

Food and water are the major sources of exposure to both chemical and biological hazards. They impose a substantial health risk to consumers and economic burdens on individuals, communities and nations.

- Microorganisms such as salmonella, campylobacter, E. coli O157, listeria, cholera.
- Viruses such as hepatitis A, and parasites such as trichomonosis in pigs and cattle.
- Naturally occurring toxins such as mycotoxins, marine biotoxins and glycosides.
- Unconventional agents such as the agent causing bovine spongiform encephalopathy (BSE, or "mad cow disease"),

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- Persistent organic pollutants such as dioxins and PCBs. Metals such as lead and mercury.
- New foods developed from biotechnology such as crops modified to resist pests, changes in animal husbandry, antibiotic use and new food additives.

Housing

Evidence of health impacts focus on:

- Improvements in housing and improved mental health and general health
- The possibility of improved housing leading to rent rises, impacting negatively on health.
- Movement of original tenants after housing improvement and therefore not benefiting from the improvements.
- Housing tenure, outdoor temperature, indoor air quality, dampness, housing design, rent subsidies, relocation, allergens and dust mites, home accident prevention, and fire prevention.
- Homelessness.

Waste

Evidence of health impacts focuses on environmental and social determinants related to:

- the transmission of agents of infectious disease from human and animal excreta (sanitation, hygiene and water-related);
- exposure to toxic chemicals in human and animal excreta; and in industrial wastes discharged into the environment;
- environmental degradation, direct and indirect impacts on health;
- exposure to radioactive wastes;
- exposure to health-care wastes;
- exposure to solid wastes and involvement in informal waste recycling; and
- breeding of disease vectors.

Energy

Evidence of health impacts focus on health hazards such as:

- Fossil fuels
- Biomass fuels
- Hydropower and their impact on vector borne diseases, and pollution
- Electricity generation and transmission
- Nuclear power
- Other energy sources
- Occupational health effects of energy workers
- Impacts on ecosystems, agriculture, forests, fisheries and building materials
- Noise
- Visual impact

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- Global warming

Industry

Evidence of health impacts focus on industrial sectors such as:

- Asbestos and man-made fibres
- Basic chemicals
- Cement, glass and ceramics
- Electronics
- Iron and steel
- Manufacture of rubber and plastic products
- Metal products
- Mining
- Pesticides, paints and pharmaceuticals
- Petroleum products
- Pulp and paper
- Service industries
- Textiles and leather
- Wood and furniture.

Urbanisation

Evidence of health impacts focus on topics such as:

- Urban housing problems
- City environment and non-communicable diseases
- Communicable diseases
- Road trauma
- Psychosocial disorders
- Sustainable urban development
- Urban wastes
- Health services

One of the key development challenges facing policy makers in low income country such as India is how they can speed the demographic and epidemiologic transitions at the lowest possible cost. To improve health status of Indians the government should be given the importance of the following efforts made such as:

- ✓ Focusing on investing in nutrition, health, and education, particularly poor and vulnerable groups of the people
- ✓ Improving people's knowledge of good hygiene

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- ✓ Making selected investments in health services that at low cost could have a high impact on health status, such as vaccination programs for children and TB control

Social Determinants of Health

In a rapidly globalising world, millions continue to experience profound inequities in health, living, working, and too often, dying in conditions of poverty, exclusion, and disenfranchisement. The greatest successes of health system reform- be it primary of Brazil, or abolishing out-of-pocket spending in Thailand^{1,2,3} -have addressed the wider determinants of health inequities as a national priority, implementing reform through both policy changes and grassroots based action.

The **World Health Organisation's Commission on Social Determinants of Health (CSDH)** embedded the goal of universal health care in strategies that include improving daily living conditions, tackling the inequitable distribution of money, power, and resources, as well as measuring and understanding health inequities.^{4,5}

The Commission's 2008 report defines health inequities as "systematic differences in health" that are "avoidable by reasonable action," and are "quite simply, unfair."⁶ It proposes to terminate these systematic differences, i.e. close the gap in a generation, the space of 30 to 40 years, through action on the social determinants of health.⁷ The **CSDH** defines the **Social Determinants of Health (SDH)** as "the conditions in which people are born, grow, live, work and age, including the health system."⁸

It encourages countries to provide **Universal Health Coverage (UHC)** to address health inequity directly. The report acknowledges, moreover, that health inequities arise not only from within but also from beyond the domain of health, through other social determinants, including the "unequal distribution of power, income, goods, and services, globally and nationally, the consequent unfairness in the immediate, visible circumstances of people's lives - their access to healthcare, schools, and education, their conditions of work

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and leisure, their homes, communities, towns, or cities - and their chances of leading a flourishing life.”⁶ It is already well established that among the most critical social determinants of health is the health system itself.^{9,10} In India, the movement towards Universal Health Coverage (UHC) will necessitate reform of the health system. In addition, Universal Health Coverage will only be possible if there is accompanying action on social determinants like food and nutrition security, social security, water and sanitation, work and income security as well as social inclusion and equity across gender, caste and religious categories. In addition, macroeconomic policies in the country will also have a significant bearing on Universal Health Coverage.

Conclusion

In a country like India, characterized by rapid industrialization and economic growth, demographic and disease transitions are vital issues which demand our attention, and challenge us when we want to achieve health equity. In addition to some of the key determinants mentioned here, additional issues will emerge, such as the complex interactions between health and climate change. The CSDH’s ultimate aim is to stimulate action to reduce health inequalities within and across nations. By moving towards Universal Health Coverage with action on social determinants, India can contribute to the larger cause of equity and social justice.

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