

Review Article

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Social exclusion, caste & health: A review based on the social determinants framework

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Poverty and social exclusion are important socio-economic variables which are often taken for granted while considering ill-health effects. Social exclusion mainly refers to the inability of our society to keep all groups and individuals within reach of what we expect as society to realize their full potential. Marginalization of certain groups or classes occurs in most societies including developed countries and perhaps it is more pronounced in underdeveloped countries. In the Indian context, caste may be considered broadly as a proxy for socio-economic status and poverty. In the identification of the poor, scheduled caste and scheduled tribes and in some cases the other backward castes are considered as socially disadvantaged groups and such groups have a higher probability of living under adverse conditions and poverty. The health status and utilization patterns of such groups give an indication of their social exclusion as well as an idea of the linkages between poverty and health. In this review, we examined broad linkages between caste and some select health/health utilization indicators. We examined data on prevalence of anaemia, treatment of diarrhoea, infant mortality rate, utilization of maternal health care and childhood vaccinations among different caste groups in India. The data based on the National Family Health Survey II (NFHS II) highlight considerable caste differentials in health.

The linkages between caste and some health indicators show that poverty is a complex issue which needs to be addressed with a multi-dimensional paradigm. Minimizing the suffering from poverty and ill-health necessitates recognizing the complexity and adopting a perspective such as holistic epidemiology which can challenge pure technocentric approaches to achieve health status.

Key words Caste and health - holistic epidemiology - social exclusion - social determinants

The role of social and economic dimensions in health improvement is now axiomatic despite problems in evolving a universal probabilistic framework due to the influence of several contextual variables. Empirical examinations of the linkages between socio-economic factors such as poverty, income, occupation, class, *etc.* have a long history. William Petty (1623-1687)

anatomist turned economist and author of “Political anatomy of Ireland” provided numerical data to show the influence of societal resources on health status. Louis-Reñe Villerme (1782-1863) another physician turned economist conducted empirical research showing the linkage between poverty and elevated mortality rates, short stature, illness, deformities, *etc.* in the

suburbs of Paris¹. Villermé carefully sought the explanation for these differences using the conceptual tools of his time. He tried to correlate mortality with the distance of the *arrondissement* (districts) from the Seine River, the relationship of the streets in the *arrondissement* to the prevailing winds, source of water and local climatological factors such as soil type, exposure to the sun, elevation and inclination of the *arrondissement*, *etc.*¹. Villermé found that mortality patterns correlated nearly perfectly with the degree of poverty in the *arrondissement*. As a measure of poverty, he used the percentage of people in the *arrondissement* exempted (because of low income) from a particular tax. Thus, the districts arranged in terms of poverty correlated quite well with the observed differences in death rates. Later, work of Engels showed how the health of destitute workers and their children were affected by extremely adverse living and working conditions¹.

Chadwick's pioneering work on the sanitary condition of labouring population in Great Britain indicated that non-biomedical factors are responsible for the occurrence of disease and pestilence in the 19th century. McKeown's convincing thesis on the role of non-biomedical determinants for the decline of mortality rates in England and Wales during the 19th century reinforced these linkages which led to further examination of the linkages between environment, socio-economic changes and disease trends². The search for environmental and social determinants of disease was not fashionable topic and carried little scientific prestige at one point in time³. As Dubos remarked, history alone need not provide the evidence of disease patterns differing and changing rapidly with environmental and social conditions. A spectacular proof of this relationship emerges from a comparison of mortality and morbidity rates, as well as type of diseases, recorded in our own times for different countries and different social groups⁴. Despite early reservations, considerable research evidence has further reinforced these linkages. Michael Marmot argues that the environment shaped by social and economic organization is partly responsible for the status of health and factors such as ill-health and childhood environment, the work environment, unemployment, patterns of social relationships, social exclusion, food, addictive behaviour, transport, *etc.*, do account for the differences in disease rates within and between countries⁵. They also create problems for the medical care system. The equality question came into prominence when

Richard Wilkinson proposed the relative income hypothesis, maintaining that societies with wider income differences show lower levels of average health than societies with greater income equality⁶.

The linkages between health and development are also now well-established. Tables I and II show the wide differences between some selected developed and developing countries. There are considerable differences in life expectancy, neo-natal mortality and maternal mortality between the developed and developing countries. Regarding, morbidity, it is seen that tuberculosis prevalence and incidence is almost 100 times more in India compared to the United States. Apart from the above indicators, the recent data from the WHO also show that the protein energy malnutrition is almost four times higher in the African and South Asian regions compared to Europe. The data on child growth standards also show wide differences between developed and the developing countries. In 2005, in all developing countries 32 per cent of children under 5 yr of age (178 million children) were estimated to be stunted (that is, their height fell-2 standard deviations below the median height-for-age of the reference population). In that year, more than 40 per cent of stunting was found in the WHO Regions of Africa and South-East Asia, around 25 per cent in the Eastern Mediterranean Region and 10-15 per cent in the regions of the Americas and the Western Pacific. Of the 39 countries with a prevalence of stunting of 40 per cent and higher, 22 are in the African Region, 7 in South-East Asia, 4 in the Eastern Mediterranean, 4 in the Western Pacific, and 1 each in Europe and in the Americas. Of the 35 countries with a stunting prevalence lower than 20 per cent, 13 are in the Region of the Americas, 11 in Europe, 6 in the Eastern Mediterranean, 3 in the Western Pacific and 2 in South-East Asia⁷. These data indicate the possible linkages between development, poverty and health. It also indicates that such linkages need to be contextualized within the developmental discourse globally.

Approach to social determinants

Poverty and health linkages need to be understood with a broader social determinants framework. The interest in understanding social determinants was revived after the 1986 Ottawa Charter of Health Promotions which recognized peace, shelter, education, food, income, a harmonious eco-system, resources, social justice and equity as essential pre-requisites for health⁸. Despite such a forceful international charter,

Table I. Health status & mortality in some selected countries

Country	Life Expectancy at birth (yr)		Healthy life expectancy (Hale) at birth (yr)		Probability of dying aged 15-60 yr per 1000 population (adult mortality rate)		Probability of dying of dying aged < 5 yr per 1000 live births (under 5 mortality rate)		IMR (per 1000 live births)	Neonatal mortality rate (per 1000 live births)	MMR (per 100000 live births)
	M 2005	F 2005	M 2002	F 2002	M 2005	F 2005	Total 2005	Total 2005	Total 2004	2000	
USA	75	80	67	71	137	81	8	7	4	14	
UK	77	81	69	72	101	62	6	5	3	11	
Japan	79	86	72	78	92	45	4	3	1	10	
China	71	74	63	65	155	98	27	23	18	56	
France	77	84	69	75	128	58	5	4	2	17	
Germany	76	82	70	74	110	57	5	4	3	9	
Canada	78	83	70	74	90	56	6	5	3	5	
Switzerland	79	84	71	75	84	46	5	4	3	7	
Sweden	79	83	72	75	78	50	4	3	2	8	
Italy	78	84	71	75	89	46	4	4	3	5	
Australia	79	84	71	74	84	47	6	5	3	6	
Afghanistan	42	42	35	36	504	448	257	165	60	1900	
UAE	76	79	64	64	86	64	9	8	4	54	
South Africa	50	52	43	45	598	532	68	51	17	230	
India	62	64	53	54	280	207	74	56	39	540	
Pakistan	61	62	54	52	232	212	100	80	53	500	
Bangladesh	62	63	55	53	251	258	73	54	36	380	
Sri lanka	68	75	59	64	228	118	14	12	8	92	
Nepal	61	61	52	51	295	283	74	56	32	740	
Bhutan	62	65	53	53	250	190	75	65	30	420	
Indonesia	66	69	57	59	234	196	36	28	17	230	

Source: Ref 7-World Health Statistics 2007. Geneva: WHO
 IMR-Infant mortality rate, MMR-Maternal mortality rate
 M-male F-female

Table II. Health status & morbidity in selected countries

Country	TB prevalence (per 100000 population) 2005	TB incidence (per 100000 population) 2005	No. confirmed cases of poliomyelitis 2006
USA	3	5	0
UK	11	14	0
Japan	38	28	0
China	208	100	0
France	10	13	0
Germany	6	7	0
Canada	4	5	0
Switzerland	6	7	0
Sweden	5	6	0
Italy	5	7	0
Australia	6	6	0
Afghanistan	288	168	32
UAE	24	16	0
South Africa	511	600	0
India	299	168	660
Pakistan	297	181	40
Bangladesh	406	227	17
Sri lanka	80	60	0
Nepal	244	180	4
Bhutan	174	103	0
Indonesia	262	239	2

Source: Ref 7-World Health Statistics 2007. Geneva: WHO

the approach to social determinants remains extremely individualized and behavioural.

A structural orientation was missing in policy prescriptions in developing and developed countries⁹. However, in recent years the social determinants are being centre-staged in global public health policy with the setting-up of a high profile Commission on Social Determinants. Considerable background and conceptual work have been completed since its inception. It is now well-accepted that poverty, quality of life, employment, working and living conditions influence health and behavioural modifications and health education will have a limited impact on improving health status unless the larger structural issues which sustain inequality are addressed. The current interest in poverty and health stems from this recognition.

The linkages between poverty and health have also become important after the declaration of the Millennium Development Goals (MDG) by the United Nations. According to the MDG, the member countries are expected to halve the proportion of people living

on less than a dollar a day and those who suffer from hunger. Strategies for moving forward include: support for country-led economic and social initiatives that focus on poverty reduction; strengthening capabilities to provide basic social services and; assisting capacity building for assessment, monitoring and planning. The basic approach does not involve any re-orientation or restructuring of the economic policies. It is based on poverty reduction strategies mainly involving instrumentalist programmes such as school meal schemes, take-home rations and supplementary feeding programmes which are considered to be cross-cutting solutions. Alleviation of hunger is also another objective under this with the objective of increasing labour productivity and earning capacity of individuals. Many critiques feel that it is unrealistic to achieve considerable reduction in the proportion of poor without focusing on a viable distributive policy on food and land. One cannot expect to improve access to nutritionally adequate food for the poor through agricultural production, agricultural trade and the overall trade policies alone¹⁰.

Poverty and social exclusion

Poverty and social exclusion are important socio-economic variables which are often taken for granted while considering ill-health effects. In recent years however, these variables have come to the centre stage in public health discourse.

The approach to poverty and health vary across different societies. According to Kosa, there are four possible approaches to poverty: (i) poverty is taken for granted and its existence is not perceived; (ii) poverty is taken for granted but its existence is perceived; (iii) poverty is not taken for granted and its existence is perceived; and (iv) poverty is not taken for granted but its existence is not perceived¹¹. We find a mixture of all these attitudes in our societies where despite clear recognition poor are increasingly marginalized from the health sector.

For the social exclusion agenda and its policy directions, there may be two approaches¹². While considering the health inequality and social inequality interphase, the focus has to be on the poorer classes who have a higher risk for diseases as well as higher probability from being excluded from the health services. This is essential given the higher proportion of the poor as well as socially disadvantaged, the magnitude of health problems and the epidemiological profile in the society. However, given a social determinants framework, one

has to also understand the vulnerability to ill-health which may cut across different socio-economic categories. The priority has to be however given to the former approach in the overall health policy.

Social exclusion mainly refers to the inability of our society to keep all groups and individuals within reach of what we expect as society to realize their full potential¹³. Marginalization of certain groups or classes occurs in most societies including developed countries and perhaps it is more pronounced in underdeveloped countries. Economic capability (poverty), gender, age, caste and religion, *etc.* are important variables which indicate exclusion from social and economic opportunities. Amartya Sen has pointed out that the concept of social exclusion has to take into cognizance the issues regarding poverty and deprivation¹⁴. According to Sen, poverty is the lack of capability to live a decent life as social beings and it has to be centrestaged in any strategy on social exclusion. There is already evidence that poverty, social exclusion and deprivation have a major impact on health. Absolute poverty *i.e.*, lack of basic necessities for life still exists in many countries including developed countries and these sections are increasingly at risk including premature death. Relative poverty which excludes people from basic amenities such as housing, water, *etc.*, also leads to ill-health and premature deaths¹⁵. Especially women and children are affected by such deprivations.

The scenario is far too complex in the South Asian context and especially in India where health improvement is a product of a myriad of factors. However, it is possible to generally discern the influence of social dimensions on health status of the population. One of the conundrums which may show this complexity is the state of Kerala in India. Kerala has achieved social and human development indicators that are approximate to those of the first world with a low per capita income which made scholars characterize this as a model¹⁶. Most often this is attributed to the efforts made by the welfare state, especially in the field of health that made the experience of Kerala unique in many ways. The achievements made in the field of health are documented as an impact of various socio-economic factors like land reform movements, high female literacy rate, an effective public distribution system, a strong public health system and so on. Despite health improvements in the context of Kerala, socio-economic status still plays an important role in the health status. Two consecutive surveys conducted by Kerala Sastra Sahitya Parishad (KSSP) in the 1980s and 1990s

tried to link the socio-economic and health status of the people. They found an inverse relationship between the rate of mortality and socio-economic status¹⁷.

The inter-state comparisons however may show a number of patterns which defy a uniform model although it may be possible to evolve broad linkages between socio-economic status and health¹⁸. The pathways leading to better health are too dissipated to develop predictors on a pan-national scale. Apart from health status, the availability and accessibility of health services to the people also show wide differentials between different socio-economic groups. The 11th plan approach paper states “While both education and curative health services are available in the market to those who can afford to pay, quality sources are expensive and beyond the reach of the common people. Other privately provided services are of highly variable quality. In this situation, access for the mass of our people can only be assured through a substantial effort at public financing of essential services”¹⁹.

Caste, poverty and health

In the Indian context, caste may be considered broadly as a proxy for socio-economic status and poverty. In the identification of the poor, scheduled caste and scheduled tribes and in some cases the other backward castes are considered as socially disadvantaged groups and such groups have a higher probability of living under adverse conditions and poverty. The health status and utilization patterns of such groups give an indication of their social exclusion as well as an idea of the linkages between poverty and health. In this review, we examined broad

linkages between caste and some select health/health utilization indicators. We examined data on prevalence of anaemia, treatment of diarrhoea, infant mortality rate, utilization of maternal health care and childhood vaccinations among different caste groups in India. The data based on the National Family Health Survey II (NFHS II)²⁰ highlight the caste differentials in health.

There are considerable differences between different caste groups regarding prevalence of anaemia among women and children. The differences in the proportion of women and children with anaemia seem to be more prominent among women belonging to scheduled tribe population. Proportion of women and children with severe anaemia also brings out these caste differentials (Table III). Similarly, the differentials are more prominent while considering post-neonatal mortality, child mortality and under 5 mortality. The difference between scheduled caste and the other castes (consisting of upper castes) stand out in the table in most of the above variables (Table IV).

Regarding accessibility variables, the other castes (the upper castes) are better-off regarding treatment of diarrhoea while the proportions of scheduled castes, scheduled tribes and other backward castes not availing any treatment are considerably higher. The proportion of scheduled castes not availed any treatment for diarrhoea stands out which clearly indicates problems of accessibility and availability for these sections which belong to the poorer sections (Table V). The same pattern is discernible in the case of maternity care as well. The proportion of scheduled caste and scheduled

Table III. Anaemia among women and children by caste/social groups in India (in percentages)

Social groups	Anaemia							
	Anaemia among women				Anaemia among children			
	% of women with any anaemia	Mild	Moderate	Severe	% of children with any anaemia	Mild	Moderate	Severe
India								
SC	56.0	37.2	16.5	2.3	78.3	22.0	49.7	6.6
ST	64.9	41.2	21.4	2.3	79.8	22.8	50.1	6.9
OBC	50.7	34.3	14.5	2.0	72.0	22.8	44.4	4.8
Other	47.6	33.3	12.9	1.5	72.7	23.6	44.1	5.0
Total	51.8	35.0	14.8	1.9	74.3	22.9	45.9	5.4

Source: National Family Health Survey (NFHS -II) 1998-99, Ref 20
 SC- scheduled caste, ST- scheduled tribe,
 OBC- other backward castes

Table IV. Infant and child mortality (in percentage) by caste/social groups in India

Social groups	Neonatal mortality	Post neonatal mortality	Infant mortality	Child mortality	Under five mortality
SC	40.1	20.2	60.4	25.2	84.0
ST	35.6	22.1	57.6	23.4	79.6
OBC	35.3	15.8	51.2	16.3	66.6
Other	29.8	13.7	43.5	14.1	57.0
Total	43.4	24.2	67.6	29.3	94.9

Source: National Family Health Survey (NFHS -II) 1998-99, Ref 20.

Abbreviation as in Table III

tribe women who have not availed any antenatal care is considerably higher compared to other castes. Institutional delivery is also comparatively lower among these sections (Table VI). Regarding childhood vaccinations, complete coverage is lowest among the scheduled castes followed by the scheduled tribes.

On the whole, the data show that the marginalized sections such as scheduled castes/scheduled tribes and the other backward castes who are also the poor in India suffer from a 'social gap' in terms of health status and health services.

What needs to be done? Towards a holistic epidemiology

There are a number of levels which need to be addressed if the linkages between poverty and health are to be grappled. The linkages between caste and some health indicators only show that poverty is a complex issue which needs to be addressed with multi-dimensional paradigm.

In order to be meaningful and to grapple with the complexity, there is a need for evolving an alternative approach to epidemiology which we call holistic epidemiology. The challenge is how best the multiple scientific traditions can be optimally utilized for decreasing suffering and improving health and well-being of populations. On one hand, it requires an examination of conceptual and methodological issues in bringing together diverse scientific traditions, and on the other hand it calls for evolving intervention strategies based on integrative approaches. Even while considering poverty as the core issue, there is a need to consider parameters beyond the biomedical framework, in keeping with the complexities of plural systems and the diversity of social context. It calls for a dialogue between different approaches to social

science issues in epidemiology, as well as between different perspectives in epidemiology itself.

The holistic epidemiology has to function at different levels. One is the issue of perspectives. In the present understanding of social determinants in health, holistic views are based on a systemic understanding especially with regard to interactions between people and the health service system. Distinctions like health system and health service system are posed within this framework. Health system is considered as dynamic concept involving biological and social dimensions of the well-being of human beings. Health service system, on the other hand, is an organized complexity involving preventive, promotive and rehabilitative services and is only one of the many inputs required to improve the health of the people²¹. The two systems are important for understanding social determinants and to grapple with the problem of health of the people. However, different approaches are needed for undertaking empirical studies as both systems have distinct social-political-technological subsystems. For instance, an epidemiological and managerial approach is more important for studying the health services system while a predominantly social science and epidemiological approach is needed for the health system. The health of the people is influenced by the interphase between the two systems in all their complexity with epidemiology providing the connecting link

The political economy tradition which is subsumed in some of the above literature tries to locate the ill-health and health inequalities in a wider framework contextualized within the structure of the society²². The political economy approach in health starts with a critique of the organization of the economy and the process of changes and their implications for the health of the people²³. These critiques largely located their perspective arguments on a wider notion of inequality prevailing in the developing and developed countries, inequitable relationships within and between countries, *etc.* However, it may not be correct to say that political economy approach is only a macro-critique of public health trends emerging from societal restructuring and therefore theoretical, but even understanding of social determinants can form the empirical base for the approach. The fuel for the political economy critique comes from the knowledge of pathways to ill-health such as class and other social categories, inequality research, *etc.* The political economy approach therefore has to constantly

Table V. Treatment of diarrhoea by different caste/social groups in India (in percentage)

Social groups	Oral rehydration						Other treatment					
	Taken to a Health facility/provider	ORS packets	Gruel	Homemade sugar-salt water solution	Increased fluids	ORT not given	Pill or syrup	Injection	iv/drip/bottle	Home remedy/herbal medicine	other	No treatment
India												
SC	64.6	25.3	15.8	1.9	23.4	52.5	52.0	17.4	4.1	2.5	0.4	27.6
ST	52.2	31.9	13.2	3.5	18.6	50.6	44.1	9.6	2.8	4.7	0.3	36.3
OBC	63.8	25.2	14.2	2.8	21.9	50.0	52.5	16.4	3.8	4.3	0.6	28.2
Other	66.1	27.6	15.7	4.2	22.6	50.4	55.7	13.5	3.6	3.6	0.7	23.8
Total	63.4	26.8	14.9	3.2	22.2	52.3	52.7	14.8	3.6	3.8	0.5	27.4

Source: National Family Health Survey (NFHS -II) 1998-99, Ref 20

Abbreviations as given in Table III, ORS- oral rehydration salt

Table VI. Maternity care by caste/social groups in India (in percentage)

Social groups	Antenatal care					Place of delivery					Postnatal care	
	Antenatal check-up only at home from health worker	Doctor	Other health professional	Traditional birth attendant, other	No antenatal check-up	Health facility/institution			Home		Other	Post-Partum check-up with in two months of birth
						Public	NGO	Private	Own home	Parents' home		
India												
SC	5.9	41.7	13.3	0.2	38.2	16.0	0.5	10.3	60.1	12.0	1.1	17.0
ST	10.0	34.7	11.5	0.3	43.1	10.7	0.7	5.7	70.4	11.4	1.1	14.1
OBC	5.9	48.9	9.6	0.2	34.8	16.3	0.8	19.0	49.8	13.0	1.1	15.6
Other	4.0	56.5	10.6	0.2	27.9	17.9	0.9	21.3	47.1	11.9	0.9	18.3
Total	5.6	48.6	10.9	0.2	34.0	16.2	0.7	16.7	53.2	12.2	1.0	16.5

Source: National Family Health Survey (NFHS -II) 1998-99, Ref 20

NGO- non government organization, all other abbreviations are as given in Table III

Table VII. Childhood vaccination coverage by caste/social groups (in percentage)

Social groups	BCG	Polio 0	DPT1	DPT2	DPT3	Polio1	Polio2	Polio3	Measles	All
India										
SC	69.6	11.7	68.4	52.7	82.6	77.8	61.3	47.6	40.2	15.1
ST	60.0	4.5	57.0	37.5	73.9	66.9	49.0	34.3	24.2	24.5
OBC	71.6	18.7	72.4	56.7	86.6	81.3	65.6	50.7	11.6	33.4
Other	76.1	11.6	76.4	60.4	84.6	79.4	65.6	57.1	13.3	38.1
Total	71.6	13.1	71.4	65.0	55.1	83.6	78.2	62.8	50.7	42.0

Source: National Family Health Survey (NFHS -II) 1998-99, Ref 20
 BCG- Bacillus Calmette-Guerin
 DPT- Diphtheria, Pertussis and tetanus
 All other abbreviation are as in Table III

undertake reality checks to develop its perspective analysis. For instance, the roles of different economies, the political traditions within these economies and their policy framework which impact on health have empirical explorations within this framework²⁴. One of the earliest empirical explorations influenced by a political economy approach is an ethnographic study on the introduction of Western medicine in Tamil Nadu, India by adopting a theoretical perspective which considers health not only a socially defined entity but also as a socially produced reality²⁵.

The holistic approach considers social determinants from the point of view of praxis where the starting point is the perspective which is linked to trends observed empirically. The approach is valuable from the point of view of policy directions and functions as a barometer for large scale deviations in structure of the society which impact on the health and well-being of the population. The poverty-ill-health nexus need to be understood from a holistic perspective wherein the outcomes are contextualized in terms of social inequality and the social forces that influence health status.

The second is the operational and empirical level. For instance, even identification of the poor is a challenging methodological task. As single measures like income or calorie intake are often inaccurate, several indices have been used to identify families below the poverty line. The Kerala State Poverty Eradication Mission known as Kudumbasree²⁶ uses the following to identify the poor. Families with four or more of the factors below are listed as poor and vulnerable:

(i) No land /less than 10 cents of land; (ii) No house/dilapidated house; (iii) No sanitary latrine; (iv) No access to safe drinking water within 300 m;

(v) women headed household/presence of a widow, divorcee/abandoned lady/unwed mother; (vi) No regularly employed person in the family; (vii) Socially disadvantaged groups (SC/ST); (viii) Presence of mentally or physically challenged person/chronically ill member in the family; and (ix) Families with an illiterate adult member.

Having identified the poor, from a pragmatic and practical point of view it is important to identify the pathways that result in ill-health in order to initiate disease-eradication strategies. Generating evidence regarding the processes that lead to ill-health needs this holistic vision. Many of our current evidences regarding the relationships between ill-health and social factors including poverty do not have such multi-dimensionality.

The third level has to be located within the health services. As noted earlier, access to health care has become increasingly problematic to large sections of the population. The process of globalization has been associated with a number of negative trends in several countries and these have become apparent at the local level which has been termed as 'glocalization' by some scholars²⁷. From a health services and programme point of view, such trends have been discernible in India as well. Combined with this, the social trends in India necessitate the rejuvenation of the vision of *Bhore* committee and the ideals of Alma Ata. Needless to add, it is important to centre-stage the primary health care approach to refocus the issue of universal access to the poor and the disadvantaged. Minimizing the suffering from poverty and ill-health necessitates recognizing the complexity and adopting a perspective such as holistic epidemiology which can challenge pure technocentric approaches in achieving health status.

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References

1. Krieger N. Introduction. In: Drexler M, editor. *Health disparities and the body politic*. Boston, Massachusetts: Harvard School of Public Health; 2005 p. 5-9.
2. McKeown T. *The modern rise of population*. London: Edwin Arnold; 1976.
3. Dubos R. *Man adapting*. New Haven: Yale University Press; 1965.
4. Dubos R. *Man, Medicine and environment*. Harmondsworth: Penguin, 1968.
5. Marmot M. Introduction. In: Marmot M, Wilkinson RG, editors. *Social determinants of health*. Oxford: Oxford University Press; 1999 p. 1-16.
6. Wilkinson RG. *Unhealthy societies. The afflictions of inequality*. London: Routledge; 1996.
7. *World health statistics*. Geneva: World Health Organization, 2007.
8. World Health Organization. *Ottawa Charter for Health Promotion*. Geneva: World Health Organization; 1986.
9. Raphael D. Social determinants of health: Present status, unanswered questions, and future directions. *Int J Health Services* 2006; 36 : 651-77.
10. Nayar KR, Razum Oliver. Millennium Development Goals and Health: Another selective development? *Int Studies* 2006; 43 : 317-22.
11. Kosa. The nature of poverty. In: Kosa J, Zola IK, editors. *Poverty and health; A sociological analysis*. Massachusetts: Harvard University Press; 1969 p. 1-39.
12. Graham H, and Kelly MP (2004) Health Inequalities: Concepts, Frameworks and policy. NHS briefing paper. Available from: <http://www.hda.nhs.uk>, accessed on July 29, 2007.
13. http://www.who.int/social_determinants. Accessed on July 27, 2007.
14. Sen A. *Development as freedom*. New Delhi: Oxford University Press; 1999.
15. Wilkinson R, Marmot M. *The social determinants in health: The solid facts*. Copenhagen: WHO Regional Office for Europe, 1998.
16. Nayar KR, Nair SB. Kerala's roadmap to privatization in health care. *J Health Dev* 2006; 2 : 43-51.
17. *Kerala Padanam* (in Malayalam). Trivandum: Kerala Sashtra Sahitya Parishad; 2006.
18. Nayar KR. Housing and health: another Kerala conundrum. In: Oommen MA, editor. *Kerala's development experience*, vol. I. New Delhi: Concept Publishing Company; 1999 p. 444-58.
19. Government of India. Approach paper to the 11th plan. New Delhi: The Planning Commission; 2006 p. 6. Available from: http://planningcommission.nic.in/plans/planrel/app11_16jan.pdf. Accessed on July 29, 2007.
20. *National family Health Survey (NFHS II)*. 1998-99; International Institute of Population Sciences, Mumbai, India; ORC, MACRO, Calverton, Maryland, USA, October 2000.
21. Qadeer I. Health services system in India: an expression of socio-economic inequalities. *Soc Action* 1985; 35 : 199-222.
22. Mykhalovskiy E, Weir L. The problem of evidence-based medicine: directions for social science. *Soc Sci Med* 2004; 59 : 1059-69.
23. Navarro V. *Medicine under capitalism*. New York: Prodist, 1976.
24. Navarro V, Shi L. The political context of social inequalities and health. *Soc Sci Med* 2001; 52 : 481-91.
25. Djurfeldt G, Lindberg S. *Pills Against Poverty: A Study of the Introduction of western medicine in a tamil village*. New Delhi: Oxford and IBH Publishing Company; 1976.
26. Kudumbashree. Available from: <http://www.kudumbashree.org/>, accessed on July 27, 2007.
27. Maeseneer DJ, Willems S, Sutter DA, Geuchte Van DML, Billings M. *Primary health care as a strategy for achieving equitable care: a literature review commissioned by the health systems knowledge network*. Geneva: World Health Organization; 2007.

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