

India: Towards Universal Health Coverage 4



Health care and equity in India

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In India, despite improvements in access to health care, inequalities are related to socioeconomic status, geography, and gender, and are compounded by high out-of-pocket expenditures, with more than three-quarters of the increasing financial burden of health care being met by households. Health-care expenditures exacerbate poverty, with about 39 million additional people falling into poverty every year as a result of such expenditures. We identify key challenges for the achievement of equity in service provision, and equity in financing and financial risk protection in India. These challenges include an imbalance in resource allocation, inadequate physical access to high-quality health services and human resources for health, high out-of-pocket health expenditures, inflation in health spending, and behavioural factors that affect the demand for appropriate health care. Use of equity metrics in monitoring, assessment, and strategic planning; investment in development of a rigorous knowledge base of health-systems research; development of a refined equity-focused process of deliberative decision making in health reform; and redefinition of the specific responsibilities and accountabilities of key actors are needed to try to achieve equity in health care in India. The implementation of these principles with strengthened public health and primary-care services will help to ensure a more equitable health care for India's population.

Introduction

India accounts for a substantial proportion of the global burden of disease, with 18% of deaths and 20% of disability-adjusted life-years (DALYs).¹ Although the burden of chronic disease accounts for 53% of deaths (44% of DALYs), 36% of deaths (42% of DALYs) are attributable to communicable diseases, maternal and perinatal disorders, and nutritional deficiencies, which suggests a protracted epidemiological transition.² A fifth of maternal deaths and a quarter of child deaths in the world occur in India.^{3,4} Life expectancy at birth is 63 years for boys and 66 years for girls, and the mortality rate for children younger than 5 years is 69 per 1000 livebirths in India—higher than the average for southeast Asia (63 per 1000 livebirths).⁵

These data, however, mask the substantial variation in health within India. Although health outcomes have improved with time, they continue to be strongly determined by factors such as gender, caste, wealth, education, and geography.^{6–8} Caste in India represents a social stratification: categories routinely used for population-based monitoring are scheduled caste, scheduled tribe, other backward class, and other caste; scheduled tribes (8%) and schedules castes (16%) are thought to be the most socially disadvantaged groups in India.⁹ For example, the infant mortality rate was 82 per 1000 livebirths in the poorest wealth quintile and 34 per 1000 livebirths in the richest wealth quintile in 2005–06.¹⁰ The mortality rate in children younger than 5 years who are born to mothers with no education compared with those with more than 5 years of education was 106 per 1000 livebirths and 49 per 1000 livebirths, respectively, during 1995–96 to 2005–06 (figure 1). The variation in mortality in children younger than 5 years in different states tends to be largely associated with the extent of the economic development of the state (figure 2). India

has substantial geographical inequalities in health outcomes—eg, life expectancy is 56 years in Madhya Pradesh and 74 years in Kerala; this difference of 18 years is higher than the provincial differences in life expectancy in China,¹⁵ or the interstate differences in the USA.¹⁶

Many of the inequities in health result from a wide range of social, economic, and political circumstances or factors that differentially affect the distribution of health

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Key messages

- Substantial socioeconomic inequalities exist in access to health care in India. In 2005–06, national immunisation coverage was 44%, whereas the coverage was 64% for children of mothers with more than 5 years of education, and 26% for children of mothers with no education. Similarly, even though rates of delivery in institutions have increased with time, only 40% of women in India report giving birth in a health facility for their previous birth in 2005–06, with women in the richest quintile six times more likely to deliver in an institution than those in the poorest quintile.
- Inadequate public expenditure on health (estimated to be 1.10% of the share of the gross domestic product during 2008–09), and imbalanced resource allocation with much variation between state expenditures on health, restrict capacity to ensure adequate and appropriate physical access to good-quality health services. For example, per person public health expenditures in Bihar were estimated to be INR93 compared with INR630 in Himachal Pradesh in 2004–05. Furthermore, a greater proportion of resources are directed towards urban-based and curative services that suggest an urban bias and rural disadvantage in access to health-care services.
- More than three-quarters of health spending in India is paid privately. High out-of-pocket health expenditures, therefore, are a major source of inequity in financing of health care and in financial risk protection from health adversities. This effect is disproportionate across population groups; health expenditures account for more than half of Indian households falling into poverty, with about 39 million Indian people being pushed into poverty every year.

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- Between 1986–87 and 2004, the absolute expenditures per outpatient visit and inpatient visit in rural and urban areas increased, particularly affecting the ability of the poorest individuals to access services. Although costs have increased in the public and private sectors, the increase has been much faster (>100%) in the private sector. Expenditures for drugs, which represent 70–80% of out-of-pocket expenditures for outpatients, have been increasing with time at a rate that is at least twice as fast as the general price increase.
- Policies oriented towards incorporation of equity metrics in monitoring, assessment, and strategic planning of health care; investment in development of a rigorous knowledge base of health-systems research; development of equity-focused process of deliberative decision making in health reform; and redefinition of the specific responsibilities and accountabilities of key players along with strengthening the foundation of public health and primary care, provide an approach for ensuring more equitable health care for India's population.

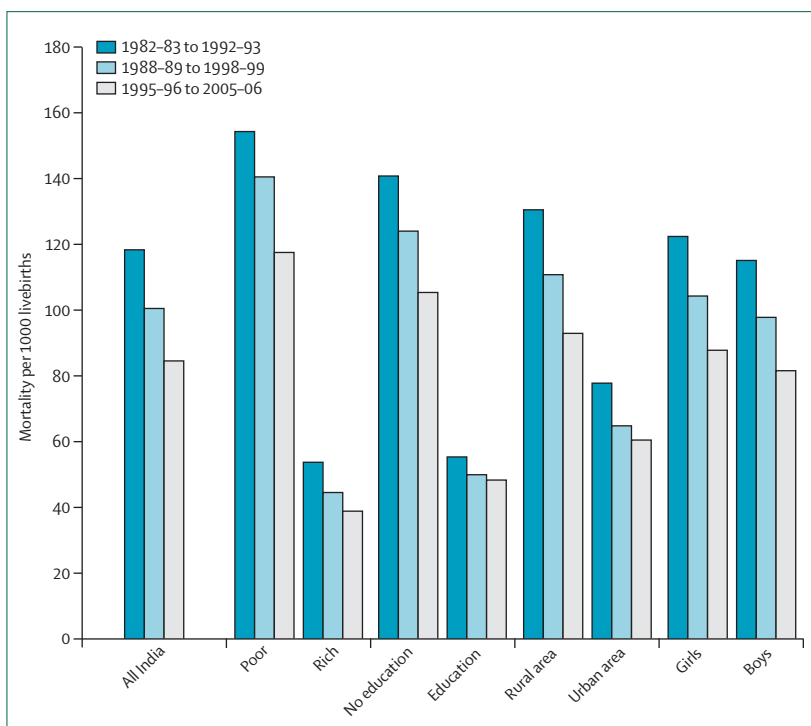


Figure 1: Inequalities in mortality in children younger than 5 years in India

Sources are National Family Health Surveys.^{10–12} Mortality rates for children younger than 5 years are for the 10 years before the survey (analysis excludes month of interview). Inequalities in wealth are presented as poorest quintile versus richest quintile, and those in mother's education as no education versus more than 5 years of education.

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within a population. Since some of these inequities in health result from the unfair distribution of the primary social goods, power, and resources, the social determinants of health need to be addressed (panel 1).^{23,24} A primary goal of public policies should be to address any inequities in health, with health systems having a special and specific role in the achievement of equity in health care and health, alongside efficiency.^{21,22,25}

Equity in health and health care has been a long-term guiding principle of health policy in India, with a

commitment to provide for the needs of individuals who are poor and underprivileged. A detailed plan for provision of universal coverage for the Indian population through a government-led health service was set out in a report by the Health Survey and Development Committee in 1946.²⁶ Since then, health policies and priorities have been outlined in the Five Year Plans, developed as part of India's centralised planning and development strategy. The need for universal comprehensive care was reiterated in the first official National Health Policy proposed in 1983.²⁷ Shaped by the Alma Ata Declaration,²⁸ recommendations emphasised in this policy were improved primary health care, decentralisation of the health system, improved community participation, and expansion of the private sector to reduce the burden on the public sector.²⁷ Although the second National Health Policy in 2002 continued to support India's vision, it was undertaken on the "basis of realistic considerations of capacity".²⁹ In 2009, the Government of India drafted a National Health Bill for the legal system to recognise the right to health and right to health care with a stated recognition to address the social determinants of health.³⁰ However, implementation of policy commitments to equity in health care remains a challenge because of India's institutional and implementation capabilities,³¹ and is also a challenge for the global health community.¹⁹

In this report, we first describe the inequalities in access to health care. By use of a supply-demand framework, we discuss the key challenges in the achievement of a health system that provides equity in service delivery, and health financing and protection of financial risk (figure 3).

Inequalities in health care

In India, individuals with the greatest need for health care have the greatest difficulty in accessing health services and are least likely to have their health needs met.^{32–35} We conceptualise access as the ability to receive a specific number of services, of specified quality, subject to a specified constraint of inconvenience and cost,³⁶ with use of selected health services as a proxy for access. To show the persisting inequities in health care in India, we focus on access to maternal and child health services since the disease burden relating to communicable, maternal, and perinatal disorders can be partly addressed by access to these services.

Use of preventive services such as antenatal care and immunisations remains suboptimum, with much variation in their use by gender, socioeconomic status, and location. In 2005–06, national immunisation coverage was 44%.¹⁰ Immunisation coverage varies by household wealth and education, with absolute and relative inequalities generally showing reduction with time (figure 4).¹⁰ Inequalities exist by caste—eg, in 2005–06, immunisation coverage among scheduled tribes and scheduled castes was 31·3% and 39·7%,

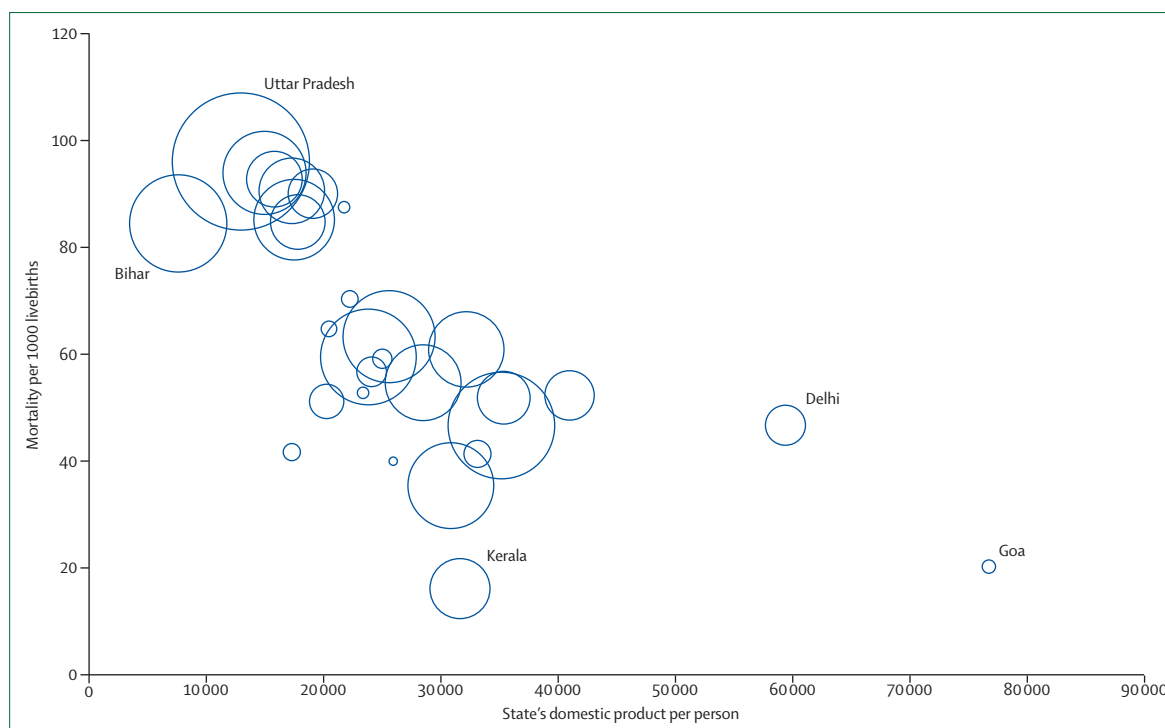


Figure 2: Association between mortality in children younger than 5 years and state's domestic product per person (at factor cost at current prices)

Sources are National Family Health Surveys,¹⁰ Office of the Registrar General and Census Commissioner,⁹ and Ministry of Statistics and Programme Implementation.¹³ Area of each circle is proportional to the size of the population in the state.

respectively, compared with 53·8% among other castes,¹⁰ and absolute inequalities between these castes increased with time.^{10–12} Coverage remains higher in urban areas (58%) than in rural areas (39%),¹⁰ although absolute and relative urban-rural differences have decreased with time.^{10–12} The absolute gender gap has increased from 2·6% in 1992–93 to 3·8% in 2005–06.^{10,11}

Similar patterns in inequalities have been noted for antenatal care coverage (webappendix p 1). In 2005–06, 77% of Indian women received some form of antenatal care during their pregnancies in the 5 years before the survey, although only 52% had three or more visits.¹⁰ Overall, coverage of antenatal care has improved with time. Inequalities by wealth, education, and urban or rural residence, persist, however, even though absolute and relative inequalities have decreased with time. Differences between states are substantial in both the number of antenatal visits and the type of services provided during these visits.

Inadequate access to appropriate maternal health services remains an important determinant of maternal mortality. Although the proportion of deliveries in institutions has increased with time, only 38·7% of women in India report giving birth in a health facility for their most recent birth in 2005–06.¹⁰ Women in the richest quintile were six times more likely to deliver in an institution than were those in the poorest quintile (webappendix p 2). Although this relative difference in

inequality has decreased with time, the absolute difference in the proportion of delivery in an institution between the poorest and richest quintiles has increased from 65% in 1992–93 to 70% in 2005–06.^{10,11} Among scheduled tribes, delivery in an institution was 17·1% in 1998–99 and only 17·7% in 2005–06.^{11,12} Rates of admission to hospital also vary by gender, wealth, and urban or rural residence.³⁷ Some of this variation might be due to differences in actual and perceived need and health-seeking behaviour; indeed, evidence suggests that gender inequalities exist in untreated morbidity, and illness is probably under-reported among women.³³

Although poor individuals are more likely to seek care in the public sector than in the private sector, rich people use a greater share of public services, and are more likely to use tertiary care and hospital-based services.²⁷ Rich individuals are also more likely to be admitted to hospital than are poor people and have longer inpatient stays in hospitals in the public sector.³⁸ Analysis of the 52nd round (1995–96) of the National Sample Survey³⁹ of health services in the public sector showed a more equitable distribution of services for preventive care (immunisation and antenatal visits) than did most of those for curative care.⁴⁰

Factors affecting supply of health care

Efficient allocation of resources between primary, secondary, and tertiary care, and geographical regions is

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For more on the **Five Year Plans** see <http://planningcommission.nic.in/plans/planrel/fiveyr/welcome.html>

See Online for webappendix

Panel 1: Key definitions and concepts**Social determinants of health**

These refer to the social, economic, and political situations that affect the health of individuals, communities, and populations.¹⁶

Absolute and relative inequalities in health

Inequality in health is an empirical notion and refers to differences in health status between different groups.¹⁷ It is a multidimensional concept, consisting of technical and normative judgments in the choice of appropriate metrics.¹⁸ We have presented absolute and relative inequalities.

The rate difference is the absolute difference in prevalence or rates between groups and is a measurement of absolute inequality. For example, the absolute inequality in immunisation coverage (Imm) can be expressed as $Imm_{Poor} - Imm_{Rich}$. Conversely, the rate ratio is the relative difference between groups, and is a measurement of relative inequality—eg, the relative inequality can be expressed as Imm_{Poor}/Imm_{Rich} .

Inequity in health and health care

Inequity in health is a normative concept and refers to those inequalities that are judged to be unjust or unfair because they result from socially derived processes.^{17,19,20} Equity in health care requires active engagement in planning, implementation, and regulation of health systems to make unbiased and accountable arrangements that address the needs of all members of society.¹⁹

Health system and health-systems performance

The health system as defined by WHO describes "all the activities whose primary purpose is to promote, restore, or maintain health."²¹ We have adopted the deterministic framework that was developed by Roberts²² to conceptualise the health system. When the goals of the health system are the equitable distribution of health outcomes, financial risk protection, and public satisfaction, adjustments to the components of the system—financing, payment, organisation, regulation, and behaviour—are treated as part of the policy processes that can be used to strengthen health-system performance. They can be used to indirectly improve the intermediate performance goals of access to health care, quality, and efficiency, or can directly change the performance goals.

crucial to ensure the availability of appropriate and adequately resourced health services.²² In India, this challenge is compounded by low public financing with substantial variation between states.⁴¹ India's total expenditure on health was estimated to be 4·13% of the gross domestic product (GDP) in 2008–09, of which the public expenditure on health was estimated to be 1·10%.⁴² Private expenditures on health have remained high during the previous decade,⁴³ with India having one of the highest proportions of household out-of-pocket health expenditures in the world—71·1% in 2004–05.

Per person expenditures disbursed by the central government to states are fairly similar, irrespective of the different capabilities and health needs of the states.⁴⁴ Expenditures on health differ by a factor of seven between the major states—eg, public expenditure per person in 2004–05 was estimated to be INR93 in Bihar compared with INR630 in Himachal Pradesh.⁴² Besides interstate variations, a greater proportion of resources are given to urban-based services and curative services, with 29·2% of public expenditures (both central and state) allocated to urban allopathic services compared with 11·8% of public

expenditures allocated to rural allopathic services in 2004–05.⁴² This imbalance in allocation is worsened by a bias in the private sector towards curative services, which tend to be provided in wealthy urban areas. The curative services are mainly provided in the private sector, and evidence from national household surveys shows that the private sector in the previous two decades has become the main provider of inpatient care.⁴⁵

Physical access is a major barrier to preventive and curative health services for India's (>70%) rural population. The number of beds in government hospitals in urban areas is more than twice that in rural areas,⁴⁶ and the rapid development of the private sector in urban areas has resulted in an unplanned and unequal geographical distribution of services.⁴⁷ Although the concentration of facilities in urban areas might encourage economies of scale, the distribution of services is an important factor that affects equity in health care, mainly because many vulnerable groups tend to be clustered in areas where services are scarce. In 2008, an estimated 11 289 government hospitals had 494 510 beds, with regional variation ranging from 533 people per bed in a government hospital in Arunachal Pradesh to 5494 in Jharkhand.⁴⁶

Since distance to facilities is a key determinant for access,^{48,49} outreach programmes or good transport, roads, and communication networks are important to reach disadvantaged and physically isolated groups, such as the scheduled tribes. Distance remains a greater barrier for women than for men.⁵⁰ Furthermore, physical access of services does not assure their use since the costs associated with seeking care also preclude uptake, even when services are available.

India needs sustainable, high-quality human resources for health with a variety of skills and who are adequately distributed in all states, particularly in rural areas.⁵¹ India has more than 1 million rural practitioners, many of whom are not formally trained or licensed.⁵² Another challenge to assurance of equity in health care is that the most disadvantaged individuals are more likely to receive treatment from less qualified providers.

Quality is defined by the use of several criteria, such as safety, effectiveness, timeliness, and patient focus, and it can broadly be divided into service and clinical quality.²² In India, quality in health care is not well understood, with insufficient evidence to infer how it affects equity.⁵³ Adequate regulation of the public and private sectors has been difficult to achieve. Despite the complex regulatory framework, with an extensive set of legal regulations, such as the Indian Penal Code, the Indian Contract Act, and the Law of Torts, effective enforcement and implementation remain difficult.^{54,55}

Quality is affected by high rates of absenteeism among health workers (>40% in some studies), restrictions in opening hours, insufficient availability of drugs and other supplies, poor-quality work environments, and inadequate provider training and knowledge.^{38,51,56–59} In urban centres, individuals who are poor are more likely to visit private

and public providers who are not sufficiently competent.⁵⁹ In a study done in rural Rajasthan, most private providers were unqualified—about 40% did not have a medical degree, and almost 20% had not completed secondary school education.⁵⁶ Dissatisfaction with the quality of care in the public sector might be the reason why individuals who are poor seeking care in the private sector.³⁸ Reduction of the exposure to unnecessary and potentially harmful treatments, and encouragement of appropriate health-seeking behaviour are important issues.^{57,59-63} Since individuals who are disadvantaged and poor are more likely to receive poor-quality services,^{47,64} these issues have important implications for assurance of equity in health care.⁵¹

Regulatory deficiencies in the private sector were partly redressed by the inclusion of private medical practice in the Consumer Protection Act in 1986,⁶⁵ with recognition of the patient's rights and proposals for resolutions during consumer forums. Other authorities involved in regulating the private sector include the Insurance Regulatory and Development Authority, Central Drug Standard Control Organisation, National Pharmaceutical Pricing Authority, state drug controllers and the nursing home acts of different cities and states, and until recently the Medical Council of India.^{51,66}

Factors affecting demand for health care

Insufficient public financing, lack of a comprehensive method for risk pooling, and high out-of-pocket expenditures because of rising health costs are key factors that affect equity in health financing and financial risk protection.⁴¹ Evidence from surveys of national expenditures suggests that inequalities in health financing have worsened during the past two decades.⁴⁵ Only about 10% of the Indian population are covered by any form of social or voluntary health insurance, which is mainly offered through government schemes for selected employment groups in the organised sector (eg, state insurance scheme for employees, central government health scheme).⁶⁴ The Insurance Regulatory and Development Authority Bill was passed in 1999, and private insurance companies account for 6.1% of health expenditures on insurance.^{67,68} Community-based health-insurance schemes and schemes for the informal sector that encourage risk pooling provide for less than 1% of the population.^{64,69}

Individuals who are poor are most sensitive to the cost of health care;⁷⁰ they are less likely than are those who are rich to seek care when they are ill, and this difference is more evident in rural than in urban areas.³⁷ Moreover, people who are poor are most likely to report financial cost as the reason for foregoing care when they have an illness, and this effect has increased with time for individuals living in rural and urban areas.⁴⁵ For example, the cost of maternal care is not affordable for the poorest households (lowest two deciles), when the average costs incurred during the year of childbirth exceeds their yearly capacity to pay.⁷¹

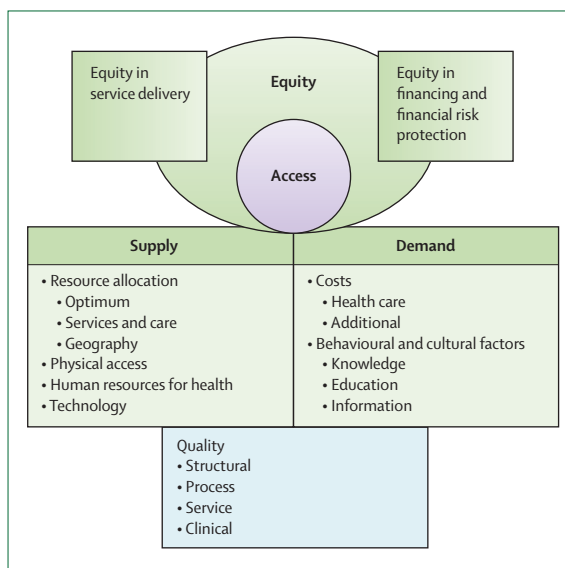


Figure 3: Conceptual model of challenges to achievement of equity in health care

Out-of-pocket expenditure on health, as a proportion of household expenditure, has increased with time in rural and urban areas.^{45,67} Expenditures on inpatient and outpatient health care are consistently higher in private facilities than in public facilities; and expenditure is greater for non-communicable diseases than for communicable diseases.⁷² Notably, the proportion of money spent on health has increased most for the poorest households (figure 5).⁶⁷

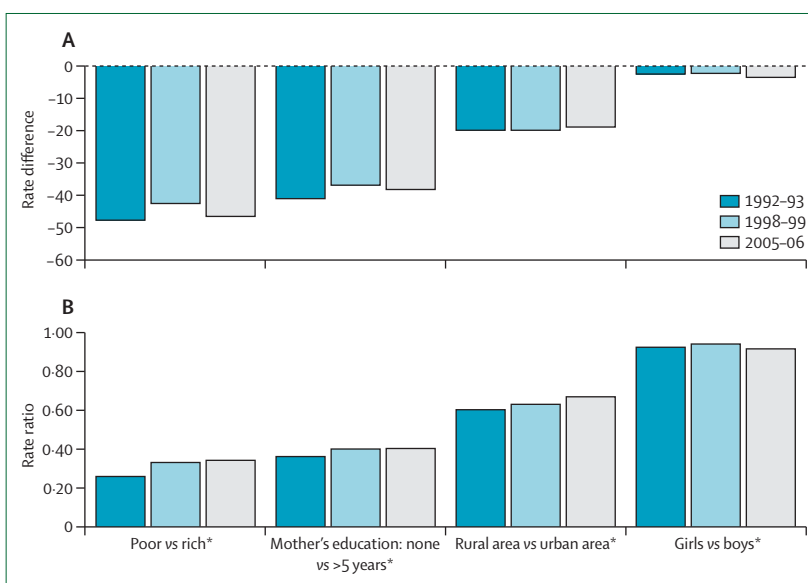


Figure 4: Trends in inequalities in coverage of immunisation expressed as rate difference (A) and rate ratio (B). Sources are National Family Health Surveys.¹⁰⁻¹² Rate difference is absolute inequalities. Rate ratio is relative inequalities. The immunisation coverage represents the percentage of children aged 12–23 months who had received full immunisation consisting of BCG, measles, and three doses each of diphtheria, tetanus, pertussis, and polio vaccines (excluding polio vaccine given at birth). *Reference group.

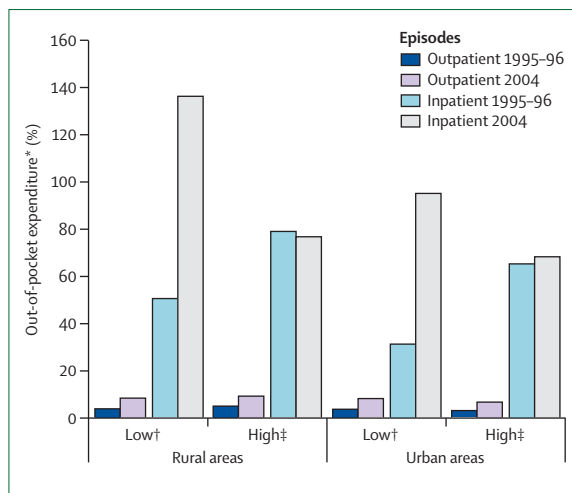


Figure 5: Trends in out-of-pocket health expenditures in households per episode, as a share of income by income group and residence
Data from Yip and Mahal.⁶⁷ Yearly income per person accounts for household size and is standardised to 1993 INR. *As a share of income. †Lowest quintile income group. ‡Highest quintile income group.

The financial burden of inpatient and outpatient care is consistently greater for rural households than for urban households, with rapid increase in expenditures per admission. In 2004–05, about 14% of rural households and 12% of urban households spent more than 10% of their total consumption expenditure on health care.⁴⁵ Treatment in hospital is also expensive, with more than a third of costs paid by borrowing money.⁷² Even for inpatient care, drug expenditures account for the largest burden of this cost.⁷³ Drugs, diagnostic tests, and medical appliances account for more than half of out-of-pocket expenditures.⁷²

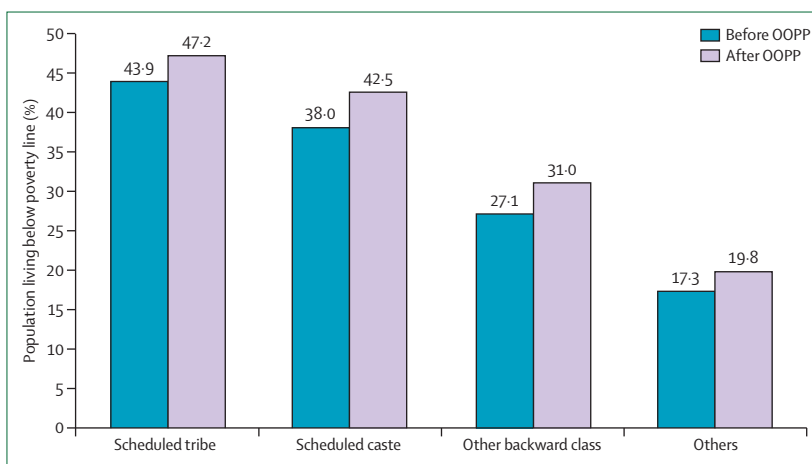


Figure 6: Effect of out-of-pocket payments on poverty ratios in India
Calculations were based on Consumer Expenditure Surveys 1993–94 (50th Round),⁷⁶ 1999–2000 (55th Round),⁷⁷ and 2004–05 (61st Round),⁷⁸ National Sample Survey Organisation. In India, official poverty lines are based on a norm of the cost of 2400 calories per person per day for rural areas and 2100 calories per person per day for urban areas. The proportion of the population with monthly per person expenditure of less than the specified poverty line (calorie norm) are judged to be living below the poverty line. Before out-of-pocket payment (OOPP) is the proportion of the population living below the poverty line without OOPP being taken into account; after OOPP is the proportion of the population living below the poverty line after OOPP was taken into account.

Evidence from several developing countries shows that out-of-pocket expenditures on health exacerbate poverty.⁷⁴ Inadequate protection of financial risk against financial shocks that are associated with the costs of medical treatment have worsened the poverty in many households.⁶⁷ Ill health and health expenditures are contributory factors for more than half of households that fall into poverty.⁷⁵ In 2004–05, about 39.0 million (30.6 million in rural areas and 8.4 million in urban areas) Indian people fell into poverty every year as a result of out-of-pocket expenditures.⁴⁵ These estimates do not take into account the effects on people already living below the poverty line who are pushed further into poverty or those groups who are forced to forego health care as a result of the costs. The absolute and relative effects of out-of-pocket expenditures on poverty have been increasing.⁴⁵ The effect of health expenditures are greater in rural areas and in poorer states, where a greater proportion of the population live near the poverty line, with the burden falling heavily on scheduled tribes and scheduled castes. (figure 6).

Inflation in health spending is another major factor that constrains access to health services and equity in financing. Between 1986–87 and 2004, the absolute expenditures per outpatient and inpatient visit in rural and urban areas increased,⁴⁵ affecting the access to services for the poorest individuals. Although costs have increased in the public and private sectors, the increase has been much faster (>100% between 1986–87 and 2004) in the private sector.⁴⁵ Increase in expenditures has been fastest for inpatient services in rural areas.⁷⁹

Expenditure on drugs has been increasing with time, and drug costs constitute a greater proportion of out-of-pocket expenditures for people who are poor than for those who are not (webappendix pp 3–4). Inefficient control of drug prices, regulation of the pharmaceutical market, and procurement and distribution mechanisms exacerbate inequitable access to affordable good-quality drugs.^{80,81} The proportion of drugs that are price controlled has decreased greatly—about 90% of drugs were price controlled in the 1970s, but now only about 10% are.⁸⁰ Furthermore, analysis of changes in drug prices shows that between 1996 and 2006, the cost of a selected group of drugs rose by 40%, whereas the prices of drugs on the list of essential drugs rose by 15% and those not on the list and not price controlled rose by 137%.⁸¹

These financial health-care constraints do not include the additional costs associated with seeking care, such as costs of foregone wages, transportation, child care, or the loss of earnings due to ill health.^{70,82} Corruption is common in the health sector.⁸³ In one study of the government sector in India, 20% of respondents reported irregular admission processes, and 15% reported corruption after admission, with doctors (77%) and hospital staff (67%) most often being the perpetrators.⁸⁴ Corruption is usually in the form of bribes that are directly paid (55%) to receive proper treatment during admission.

Factors that affect access to knowledge, education, and information can alter the appropriate demand for and compliance with health services⁸⁵ by affecting health beliefs, perceptions of health and illness, health-seeking behaviour, and compliance with treatment.⁸⁶ These can be further affected by sociocultural factors, such as gender, religion, and cultural beliefs. The creation of a health consciousness and health literacy among socially disadvantaged individuals is a necessary step to encourage appropriate demand for available health services.⁸⁷ For example, 72% of women who did not give birth in a health facility reported that they did not believe that such care was necessary.¹⁰

Principles for achievement of equity

The heterogeneity in the scale and interplay of the substantial challenges to health care in the states and districts needs contextually relevant solutions. India has made much progress in the past few years, with several innovative pilot programmes and initiatives in the public and private sectors, and the establishment of the National Rural Health Mission in 2005 being the most noteworthy government-led initiative (panel 2).^{41,51,91} This initiative has signalled the repositioning and rejuvenation of the public health system and in doing so has resulted in the inclusion of the health needs for the disadvantaged individuals, and health equity on the agenda.^{88,89} However, whether the National Rural Health Mission, Rashtriya Swasthya Bima Yojana, and state-government-funded health insurance schemes (such as Rajiv Aarogyashri Scheme in Andhra Pradesh, Kalainger Life-Saving Health Insurance Scheme in Tamil Nadu, Yesheshwini Scheme in Karnataka, Chief Minister's Life Saving Health Insurance Scheme in Rajasthan) will achieve their claims and overcome the challenges to achieving equity in health care remain to be seen.⁸⁸⁻⁹⁰

We propose the following principles to help achieve equity in health care. Equity metrics, as applied to data for health and health systems, needs to be integrated into all health-system policies and implementation strategies, and at every stage of any reform process. Recommended by the Commission on Social Determinants of Health and others,^{16,25,92} an equity-focused approach is needed to gather, use, and apply data for health outcomes and processes of health care, and during monitoring and assessment of health-systems performance. To achieve this integration, an intelligence system should be created that works across the health-system network, spanning the public and private sectors, and allopathic and non-allopathic medicine (ayurveda, yoga and naturopathy, unani, siddha, and homoeopathy), and that is aligned with international principles and standards for health metrics.⁹³ For example, in Thailand strengthening partnerships between organisations that gather data and the Ministry of Public Health encouraged the development of health-equity monitoring.⁹⁴ Although India has good sources of data, these could be better applied to monitoring

Panel 2: National Rural Health Mission

Goals

- To improve the availability of and access to health care, particularly for individuals living in rural areas, people who are poor, women, and children, with emphasis on 18 states with inadequate health indicators or infrastructures

Key features

- Increased commitment to health (scale up of public spending to 2–3% of gross domestic product by 2012), aimed at vulnerable populations in key geographical areas
- Increased flexibility of central and state funds, with flexibility of untied monies available to health facilities that involve Panchayat Raj institutions
- System restructuring and strengthening, with financial, institutional, and management reforms
- Focus on primary health care, particularly in rural areas, with improved secondary and tertiary referral facilities, and increased opportunities for referral
- Public-private partnerships to address shortfalls in service delivery
- Outreach strategies for remote populations, such as mobile health clinics, e-health, and telemedicine
- Implementation of a conditional cash transfer scheme to scale up facility-based births (Janani Suraksha Yojana) so as to reduce infant and maternal mortality rates
- Investment in community health workers or accredited social health activists, and integration of ayurveda, yoga and naturopathy, unani, siddha, and homoeopathy
- Integration of intersectoral responses to health, and integration of responses to address the social determinants of health education, knowledge, and health-seeking behaviours
- Specific time-dependent goals with investment in planning, monitoring, and capacity for assessment; internal and independent assessment of specific programmes and specific states⁸⁸⁻⁹⁰
- Regulation and accreditation of medical facilities; regulation of education and training of human resources for health, regulation of drug quality; application of guidelines for standard of care, provision of 24-h care; and assurance of an improved supply of drugs, consumables, and infrastructure

the changing equity gaps and quantification of progress among disadvantaged groups of people. Furthermore, equity-based targets need to be fully integrated into the national, state, and local goals.

A concerted effort is needed to improve the knowledge base of health-systems research and health-equity research.⁹⁵ India is in a position to take a leading role in improving our global knowledge of health-systems research. Since much of the implementation and many of the decisions are made by the states and locally, an opportunity is available for active learning from the many different reforms. However, optimum data management systems and research design are imperative from the outset so as to obtain the best knowledge from these interventions, and understand which programmes and interventions work and how they affect equity in health care to guide where resources should be most effectively directed to improve the likelihood of success.⁹⁵ Although independent and internal assessments of aspects of the National Rural Health Mission have been done,^{88-90,96} for specific programmes and in specific states, further independent large-scale assessments are urgently needed.⁸⁹

For more on the **National Rural Health Mission** see <http://mohfw.nic.in/NRHM.htm>

Mexico's use of evidence-based assessment during its health-sector reforms allowed the world to learn from its experience.⁹⁷ India needs to adopt such an approach of rigorous assessment of the effect and implementation research, ideally with a specific organisation commissioned to coordinate and disseminate the knowledge that was developed through an active sharing of best practices between and within states, and internationally. The National Health Systems Resource Centre is well equipped to provide the necessary structure to support this approach, and help the continued development of the health-management information systems. Partnership with research and academic institutions to objectively assist with this process and apply their expertise in the methodological aspects of the assessment of effect will create the knowledge base to effectively work towards equity in health care. Such a commitment has to be supported by an increase in resources and research funding.^{91,98} In this way, India can contribute to the small knowledge base of operational research in health systems in developing countries and help close the knowledge-action gap for strengthening health systems.^{99,100}

The decision-making process for the achievement of health equity needs more thought and development. We have only touched on some of the challenges for the achievement of health-system equity in India, yet the main issue is not only what needs to be done, but also how it should be achieved. The challenge of how to prioritise and implement health policies for the achievement of equity when resources are scarce requires a deliberative process—ie, assessment of the implications and risks of those decisions, with monitoring of how such decisions will affect health equity. For example, epidemiological differences and the emerging burden of chronic diseases mean that choices are needed for the allocation of resources between subpopulations with different disease patterns. Furthermore, with India's ageing population, deliberation of intergenerational equity is needed in the allocation of scarce resources between different age groups.

We suggest review and formalisation of the process for decisions about allocation of resources and service-delivery planning, which involves decisions about the balance between central, state, and local financing, and vertical and horizontal allocation efficiency, on the basis of best available evidence, and is guided by equity concerns. Perhaps a framework such as Benchmarks for Fairness, which has been successfully adapted for use in several developing countries, including Colombia, Pakistan, and Thailand, could also be used in India.¹⁰¹ In Mexico, a more transparent decision-making process to prioritise coverage of specific health disorders, with inputs from an ethics working group, created a forum in which decisions could be revised and enforced, thus increasing their legitimacy.²⁴ Such a process is important to address the supply and allocation of the few resources to different service inputs. Such an approach requires all stakeholders to take

responsibility and engage in the process of reducing inequities in health care and health in India.⁹¹

Multilateral organisations, national and local governments, non-governmental organisations, private sector, pharmaceutical industry, civil society, and research and academic institutions all have responsibilities and parts to play in ensuring the successful achievement of equity in health and improved health governance.¹⁰² Accountability, transparency, and improved leadership and partnerships are needed within the health system, with systematic assessment and analysis of health-system governance. Since health policy and its implementation operate within the broad political context, iterative strategies have to be defined for key players to maintain political priority for the equity in health agenda. Importantly, these strategies should be defined because the potential beneficiaries represent a group that is not powerful and well organised, and which is therefore not readily able to influence reforms.¹⁰³ We specifically draw attention to the role of civil society, and the need to engage, empower, and build capacity within this group to attain equity in health and improved quality health care at reasonable costs. In China, public dissatisfaction with the fairness of its health system showed how civil society can influence change in health reform.¹⁴ Case studies commissioned by the Commission on Social Determinants of Health also emphasise the role of civil society in promoting health equity.¹⁰⁴

Importantly, India's ineffective regulatory mechanisms and legal processes urgently need to be reformed, with effective implementation strategies.⁹¹ The growth of the private sector and pharmaceutical industry has outpaced the capacity of the government and other stakeholders to implement the necessary and appropriate regulatory processes. Incentives, rules, and strategies are needed to engage and persuade the industry to ensure that its obligations and responsibilities to population health and equity are upheld. In this way, an organised civil society might have a role in influencing the political agenda, partly through dissemination of knowledge and improvements in education to generate increased health consciousness and address the factors that affect the demand-side challenge of appropriate health-seeking behaviour—eg, engagement of accredited social health activists as part of the National Rural Health Mission to generate increased awareness within communities of the available services. This programme should be complemented by improved awareness of the right to health and the right to health care, with more accountability of the government and other stakeholders to deliver their obligations fairly.

These principles have to be complemented by and built on a strong foundation of public health and primary care. Improvement of the existing fragmented approach to public health services through creation of a solid foundation in public health that is matched by a strengthened primary-care network would greatly

Search strategy and selection criteria

We searched a wide range of sources, including academic literature, government reports, multilateral-agency reports, and commissioned reports relating to inequalities, inequities, health, and health systems in the Indian context that were published in English. Search terms included "health systems" "health sector", "equity", "inequity", "inequalities", "access", "utilization", "financing", "regulation", "service delivery", "expenditures", "out of pocket", and "quality". Data were obtained from the Census of India, Central Bureau of Health Intelligence, the Indian Government's Ministry of Health and Family Welfare, and the National Health Accounts of India from 2001–02 and 2004–05. We also used data from the National Family Health surveys of India for 1992–93, 1998–99, and 2005–06, Consumer Expenditure Surveys 50th Round (July, 1993, to June, 1994), 55th Round (July, 1999, to June, 2000) and 61st Round (July, 2004, to June, 2005), and the 52nd Round (July, 1995, to June, 1996) and 60th Round (January to June, 2004) National Sample Survey Organisation surveys. We also included several analyses that were done by use of these data sources.

contribute to ensuring increased equity in health and health care in India.¹⁰⁵ With improved capability and capacity to plan and implement public health services from within the Ministry of Health and Family Welfare, a more coordinated approach would be possible.¹⁰⁵ Strengthened engagement and partnerships, within and outside government, are needed to improve public health infrastructure and protect the most vulnerable individuals from unnecessary exposure to adverse risks. Such investment in public health, with strengthened primary-care services and targeted programmes for individuals in most need, is a fundamental step towards redressing the health inequities in India.¹⁰⁶ Creation of a responsive integrated primary-care service that assures universal coverage is also a means to contain costs.¹⁰⁷ The foundation of primary care that is complemented with a holistic approach to intersectoral responses is emphasised in the 11th Five Year Plan,⁷⁶ and the National Rural Health Mission.¹⁰⁸

Conclusion

A cogent moral, social, and economic argument exists for investment in the achievement of health-care equity for Indian people. Recent rapid economic growth provides a unique opportunity to increase financial commitments to support the public health system and health-systems research. India can also draw from its booming technology sector to innovate and strengthen the development of health information systems, which has already begun. Furthermore, an opportunity exists to harness the capability of the domestic pharmaceutical industry by encouraging it to take greater responsibility for delivering equity in health care. We have suggested principles to

guide this vision. The next step is translation of these principles into real and practical policies and their effective implementation. Yet, this focus on the role of the health system needs to be placed within the broader and bigger context of the social determinants of health, and tackling the root causes of social disadvantage. In this way, a health system built on a strong foundation of public health and primary care has to be synergised with public policies that promote crucial intersectoral approaches. Improved water and sanitation, food security, poverty reduction, and changes to other structural factors, complemented by an equitable health system, will help ensure greater equity in health for more than 1 billion people.

Contributors

YB and SVS conceptualised, wrote, and critically revised the report. SS contributed to critical revisions of the report. All authors have read and approved the report.

Conflicts of Interest

We declare that we have no conflicts of interest.

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References

- 1 WHO. Disease and injury country estimates. Death and DALY estimates for 2004 by cause for WHO Member States. Department of Measurement and Health Information. 2009. http://www.who.int/healthinfo/global_burden_disease/estimates_country/en/index.html (accessed Oct 13, 2010).
- 2 Reddy SK, Shah B, Varghese C, Ramadoss A. Responding to the threat of chronic diseases in India. *Lancet* 2005; **366**: 1746–51.
- 3 UNICEF. The state of the world's children 2009: maternal and newborn health. New York: United Nations Children's Fund, 2009.
- 4 UNICEF. The state of the world's children 2008: child survival. New York: United Nations Children's Fund, 2008.
- 5 WHO. World health statistics 2010. Geneva: World Health Organization, 2010.
- 6 Subramanian SV, Ackerson LK, Subramanyam MA, Sivaramakrishnan K. Health inequalities in India: the axes of stratification. *Brown J World Aff* 2008; **14**: 127–39.
- 7 Subramanian SV, Nandy S, Irving M, Gordon D, Lambert H, Davey Smith G. The mortality divide in India: the differential contributions of gender, caste, and standard of living across the life course. *Am J Public Health* 2006; **96**: 818–25.
- 8 Subramanian SV, Davey Smith G, Subramanyam M. Indigenous health and socioeconomic status in India. *PLoS Med* 2006; **3**: e421.
- 9 Office of the Registrar General and Census Commissioner. Census atlas of India, 2001. New Delhi: Office of the Registrar General and Census Commissioner, India, Ministry of Home Affairs, 2008.
- 10 National Family Health Survey (NFHS-3), 2005–06: India. International Institute for Population Sciences (IIPS) and Macro International. 2007. http://www.measuredhs.com/aboutsurveys/search/metadata.cfm?surv_id=264&ctry_id=57&SrvyTp=available (accessed Aug 22, 2010).
- 11 National Family Health Survey (MCH and family Planning) India 1992–3. International Institute for Population Sciences (IIPS) and Macro International. 1995. http://www.measuredhs.com/aboutsurveys/search/metadata.cfm?surv_id=50&ctry_id=57&SrvyTp=available (accessed Aug 22, 2010).
- 12 National Family Health Survey (NFHS-2), 1998–99: India. International Institute for Population Sciences (IIPS) and Macro International. 2000. http://www.measuredhs.com/aboutsurveys/search/metadata.cfm?surv_id=156&ctry_id=57&SrvyTp=available (accessed Aug 22, 2010).

- 13 Government of India. State Domestic Product (State series). National Accounts Division. Central Statistical Organisation of India. Ministry of Statistics and Programme Implementation. Government of India, Kolkata, 2009. http://mospi.nic.in/mospi_cso_rept_pubn.htm (accessed Sept 29, 2010).
- 14 Tang S, Meng Q, Chen L, Bekeidam H, Evans T, Whitehead M. Tackling the challenges to health equity in China. *Lancet* 2008; **372**: 1493–501.
- 15 Burd-Sharps S, Lewis K, Martins EB. The measure of America: American human development report, 2008–09. New York: Columbia University Press, Social Science Research Council, 2008.
- 16 WHO. Commission on social determinants of health. Closing the gap in a generation: health equity through action on the social determinants of health: final report of the commission on social determinants of health. Geneva: World Health Organization, 2008.
- 17 Kawachi I, Subramanian SV, Almeida-Filho N. A glossary for health inequalities. *J Epidemiol Community Health* 2002; **56**: 647–52.
- 18 Harper S, King NB, Meersman SC, Reichman ME, Breen N, Lynch J. Implicit value judgments in the measurement of health inequalities. *Milbank Q* 2010; **88**: 4–29.
- 19 Gwatkin DR. Health inequalities and the health of the poor: what do we know? What can we do? *Bull World Health Organ* 2000; **78**: 3–18.
- 20 Whitehead M. Concepts and principles of equity in health. Copenhagen: WHO Regional Office for Europe, 1990.
- 21 WHO. The world health report 2000: health systems: improving performance. Geneva: World Health Organization, 2000.
- 22 Roberts MJ. Getting health reform right: a guide to improving performance and equity. New York: Oxford University Press, 2008.
- 23 Rawls J. A theory of justice. Cambridge, MA: Belknap Press of Harvard University Press, 1999.
- 24 Daniels N. Just health: meeting health needs fairly. Cambridge, NY: Cambridge University Press, 2008.
- 25 Evans T, Whitehead M, Diderichsen F, Bhuiya A, Wirth M. Challenging inequities in health: from ethics to action. New York: Oxford University Press, 2001.
- 26 Bhore J, Amesur R, Banerjee A. Report of the Health Survey and Development Committee. Delhi: Government of India, 1946.
- 27 MoHFW. National health policy. Delhi: Ministry of Health and Family Welfare, Government of India, 1983.
- 28 WHO and UNICEF. Primary health care: report of the International Conference on Primary Health Care, Alma-Ata, USSR, Sept 6–12, 1978.
- 29 MoHFW. National health policy. Delhi: Ministry of Health and Family Welfare, Government of India, 2002.
- 30 MoHFW. The national health bill. Delhi: Ministry of Health and Family Welfare, Government of India, 2009.
- 31 Pritchett L. Is India a flailing state?: detours on the four lane highway to modernization. 2009. <http://ssrn.com/abstract=1404827> (accessed Oct 25, 2010).
- 32 Hart JT. Three decades of the inverse care law. *BMJ* 2000; **320**: 18–19.
- 33 Sen G, Iyer A, George A. Structural reforms and health equity: a comparison of NSS surveys, 1986–87 and 1995–96. *Econ Polit Wkly* 2002; **37**: 1342–52.
- 34 Singh CH, Ladusingh L. Correlates of inpatient healthcare seeking behavior in India. *Indian J Public Health* 2009; **53**: 6–12.
- 35 Gaudin S, Yazbeck AS. Immunization in India 1993–1999: wealth, gender, and regional inequalities revisited. *Soc Sci Med* 2006; **62**: 694–706.
- 36 Goddard M, Smith P. Equity of access to health care services: theory and evidence from the UK. *Soc Sci Med* 2001; **53**: 1149–62.
- 37 NSSO. Morbidity and health care and condition of the aged. New Delhi: National Sample Survey Organisation, Ministry of Statistics and Programme Implementation, Government of India, 2006.
- 38 Peters DH, Yazbeck AS, Sharma RR, Ramana GNV, Pritchett LH, Wagstaff A. Better health systems for India's poor: findings, analysis, and options. Washington DC: World Bank, 2002.
- 39 NSSO. Morbidity and health care and condition of the aged (NSS 52nd Round: 1995–96). New Delhi: National Sample Survey Organisation, Ministry of Statistics and Programme Implementation, Government of India, 1998.
- 40 Mahal A, Yazbeck A, Peters D, Ramana G. The poor and health service use in India. Washington, DC: World Bank, 2001.
- 41 Shiva Kumar AK, Chen LC, Choudhury M, et al. Financing health care for all: challenges and opportunities. *Lancet* 2011; published online Jan 12. DOI:10.1016/S0140-6736(10)61884-3.
- 42 Government of India. National Health Accounts–India (2004–05)–with provisional estimates from 2005–06 to 2008–09). National Health Accounts Cell. New Delhi: Ministry of Health and Family Welfare, 2009.
- 43 Government of India. National Health Accounts–India. National Health Accounts Cell. Ministry of Health and Family Welfare, Government of India. New Delhi. 2009.
- 44 Peters DH, Rao KS, Fryatt R. Lumping and splitting: the health policy agenda in India. *Health Policy Plan* 2003; **18**: 249–60.
- 45 Selvaraj S, Karan A. Deepening health insecurity in India: evidence from national sample surveys since 1980s. *Econ Polit Wkly* 2009; **44**: 55–60.
- 46 CBHI. Health Infrastructure, national health profile (NHP) of India–2008. New Delhi: Central Bureau Of Health Intelligence, Government of India, 2008.
- 47 De Costa A, Al-Muniri A, Diwan VK, Eriksson B. Where are healthcare providers? Exploring relationships between context and human resources for health Madhya Pradesh province, India. *Health Policy* 2009; **93**: 41–47.
- 48 Lavy V, Germain JM, World Bank. Quality and cost in health care choice in developing countries. Washington, DC: World Bank, 1994.
- 49 Acharya LB, Cleland J. Maternal and child health services in rural Nepal: does access or quality matter more? *Health Policy Plan* 2000; **15**: 223–29.
- 50 Vissandjee B, Barlow R, Fraser DW. Utilization of health services among rural women in Gujarat, India. *Public Health* 1997; **111**: 135–48.
- 51 Rao M, Rao KD, Shiva Kumar AK, Chatterjee M, Sundararaman T. Human resources for health in India. *Lancet* 2011; published online Jan 12. DOI:10.1016/S0140-6736(10)61888-0.
- 52 Rohde J, Viswanathan H. The rural private practitioner. *Health Millions* 1994; **2**: 13–16.
- 53 Das J, Hammer JS. Strained mercy: the quality of medical care in Delhi. Washington, DC: World Bank, 2004.
- 54 Peters DH, Muraleedharan VR. Regulating India's health services: To what end? What future? *Soc Sci Med* 2008; **66**: 2133–44.
- 55 Das Gupta M, Rani M. India's public health system: how well does it function at the national level? Washington, DC: World Bank, 2004.
- 56 Banerjee A, Deaton A, Duflo E. Health care delivery in rural Rajasthan. *Econ Polit Wkly* 2003; **39**: 944–49.
- 57 Banerjee A, Duflo E. Addressing absence. *J Econ Perspect* 2006; **20**: 117–32.
- 58 Chaudhury N, Hammer J, Kremer M, Muralidharan K, Rogers FH. Missing in action: teacher and health worker absence in developing countries. *J Econ Perspect* 2006; **20**: 91–116.
- 59 Das J, Hammer J. Location, location, location: residence, wealth, and the quality of medical care in Delhi, India. *Health Aff* 2007; **26**: w338–351.
- 60 Das J, Hammer J. Money for nothing: The dire straits of medical practice in Delhi, India. *J Dev Econ* 2007; **83**: 1–36.
- 61 Sreevidya S, Sathiyasekaran BWC. High caesarean rates in Madras (India): a population-based cross sectional study. *BJOG* 2003; **110**: 106–11.
- 62 Kent Ranson M, John KR. Quality of hysterectomy care in rural Gujarat: the role of community-based health insurance. *Reprod Health Matters* 2002; **10**: 70–81.
- 63 Gupta I, Dasgupta P. Demand for curative health care in rural India: choosing between private, public and no care. *Inst Econ Growth* 2000; **14**: 1–35.
- 64 Planning Commission, Government of India. Eleventh Five Year Plan 2007–12. New Delhi: Oxford University Press, 2008. http://planningcommission.nic.in/plans/planrel/fiveyr/11th/11_v1/11th_vol1.pdf (accessed Oct 25, 2010).
- 65 Bhat R. Regulating the private health care sector: the case of the Indian Consumer Protection Act. *Health Policy Plan* 1996; **11**: 265–79.
- 66 Baru RV. Private health sector in India—raising inequities. In: Gangolli LV, Duggal R, Shukla A, eds. Review of healthcare in India. Mumbai: Centre for Enquiry into Health and Allied Themes, 2005.
- 67 Yip W, Mahal A. The health care systems of China and India: performance and future challenges. *Health Aff* 2008; **27**: 921–32.

- 68 MoHFW. National health accounts India, 2001–2. New Delhi: Ministry of Health and Family Welfare, Government of India, 2005.
- 69 Devadasan N, Ranson K, Van Damme W, Acharya A, Criel B. The landscape of community health insurance in India: An overview based on 10 case studies. *Health Policy* 2006; **78**: 224–34.
- 70 O'Donnell O. Access to health care in developing countries: breaking down demand side barriers. *Cad Saude Publica* 2007; **23**: 2820–34.
- 71 Bonu S, Bhushan I, Rani M, Anderson I. Incidence and correlates of 'catastrophic' maternal health care expenditure in India. *Health Policy Plan* 2009; **24**: 445–56.
- 72 Mahal A, Karan A, Engelgau M. The economic implications of non-communicable disease for India. Health, nutrition and population (HNP) discussion paper. Washington, DC: World Bank, 2010.
- 73 Garg CC, Karan AK. Reducing out-of-pocket expenditures to reduce poverty: a disaggregated analysis at rural-urban and state level in India. *Health Policy Plan* 2009; **24**: 116–28.
- 74 van Doorslaer E, O'Donnell O, Rannan-Eliya RP, et al. Effect of payments for health care on poverty estimates in 11 countries in Asia: an analysis of household survey data. *Lancet* 2006; **368**: 1357–64.
- 75 Krishna A. Escaping poverty and becoming poor: who gains, who loses, and why? *World Dev* 2004; **32**: 121–36.
- 76 Eleventh Five Year Plan (2007–2012) Social Sector. Volume 2. Planning Commission, Government of India. Oxford University Press. New Delhi. 2008. http://planningcommission.nic.in/plans/planrel/fiveyr/11th/11_v2/11th_vol2.pdf (accessed Oct 25, 2010).
- 77 NSSO. Household consumer expenditure (NSS 55th Round: 1999–2000). New Delhi: National Sample Survey Organisation, Ministry of Statistics and Programme Implementation, Government of India, December, 2000.
- 78 NSSO. Household consumer expenditure (NSS 61st Round: 2004-05). New Delhi: National Sample Survey Organisation, Ministry of Statistics and Programme Implementation, Government of India, December, 2006.
- 79 Rao S. Financing of health in India. Financing and delivery of health care services in India. New Delhi: Ministry of Health and Family Welfare, Government of India, 2005.
- 80 Selvaraj S, Nabar V. Access to medicines in India: issues, challenges and response. In: Mahal A, Debroy B, Bhandari L, eds. India Health Report–2010. New Delhi: Business Standard Limited, 2010: 83–96.
- 81 Sengupta A, Joseph RK, Modi S, Syam N. Economic constraints to access to essential medicines in India. New Delhi: Centre for Technology and Development, Society for Economic and Social Studies, 2008. <http://www.healthpolicy.cn/rdfox/jbywzd/gjy2/yd/yjwx/201002/P020100227571385215688.pdf> (accessed Oct 25, 2010).
- 82 Ensor T, Cooper S. Overcoming barriers to health service access: influencing the demand side. *Health Policy Plan* 2004; **19**: 69–79.
- 83 Lewis M. Governance and corruption in public health care systems. Washington DC: Center for Global Development, 2006.
- 84 Thampi GK. Corruption in south Asia: insights and benchmarks from citizen feedback surveys in five countries. Berlin: Transparency International, 2002. <http://unpan1.un.org/intradoc/groups/public/documents/APCITY/UNPAN019883.pdf> (accessed Oct 25, 2010).
- 85 Cleland JG, van Ginneken JK. Maternal education and child survival in developing countries: The search for pathways of influence. *Soc Sci Med* 1988; **27**: 1357–68.
- 86 Griffiths P, Stephenson R. Understanding users: perspectives of barriers to maternal health care use in Maharashtra, India. *J Biosoc Sci* 2001; **33**: 339–59.
- 87 Nutbeam D. Health literacy as a public health goal: a challenge for contemporary health education and communication strategies into the 21st century. *Health Promot Int* 2000; **15**: 259–67.
- 88 MoHFW. National Rural Health Mission. Meeting people's health needs in partnerships with states. The journey so far. 2005–10. New Delhi: Ministry of Health and Family Welfare, Government of India, 2010. http://mohfw.nic.in/NRHM/Documents/5_Years_NRHM_Final.pdf (accessed Oct 25, 2010).
- 89 Gill K. A Primary Evaluation of service delivery under the National Rural Health Mission (NRHM): findings from a study in Andhra Pradesh, Uttar Pradesh, Bihar and Rajasthan. Working paper 1, 2009. New Delhi: Planning Commission of India, 2009.
- 90 Bajpai N, Sachs JD, Dholakia RH. Improving access, service delivery and efficiency of the public health system in rural India. New York: Earth Institute at Columbia University, 2009.
- 91 Reddy KS, Patel V, Jha P, Paul VK, Shiva Kumar AK, Dandona L, for The Lancet India Group for Universal Healthcare. Towards achievement of universal health care in India by 2020: a call to action. *Lancet* 2011; published online Jan 12. DOI:10.1016/S0140-6736(10)61960-5.
- 92 Gwatkin DR, Bhuiya A, Victora CG. Making health systems more equitable. *Lancet* 2004; **364**: 1273–80.
- 93 Chan M, Kazatchkine M, Lob-Levyt J, et al. Meeting the demand for results and accountability: a call for action on health data from eight global health agencies. *PLoS Med*; **7**: e1000223.
- 94 Tangcharoensathien V, Limwattananon S, Prakongsai P. Improving health-related information systems to monitor equity in health: lessons from Thailand. In: McIntyre D, Mooney G, ed. The economics of health equity. New York: Cambridge University Press, 2007: 222–46.
- 95 Frenk J, Horton R. Evidence for health-system reform: a call to action. *Lancet* 2006; **368**: 3–4.
- 96 Lim SS, Dandona L, Hoisington JA, James SL, Hogan MC, Gakidou E. India's Janani Suraksha Yojana, a conditional cash transfer programme to increase births in health facilities: an impact evaluation. *Lancet* 2010; **375**: 2009–23.
- 97 Frenk J, Sepúlveda J, Gómez-Dantés O, Knaut F. Evidence-based health policy: three generations of reform in Mexico. *Lancet* 2003; **362**: 1667–71.
- 98 Fryatt R, Mills A, Nordstrom A. Financing of health systems to achieve the health Millennium Development Goals in low-income countries. *Lancet* 2010; **375**: 419–26.
- 99 Frenk J. The global health system: strengthening national health systems as the next step for global progress. *PLoS Med*; **7**: e1000089.
- 100 Reich MR, Takemi K, Roberts MJ, Hsiao WC. Global action on health systems: a proposal for the Toyako G8 summit. *Lancet* 2008; **371**: 865–69.
- 101 Daniels N, Light D, Caplan RL. Benchmarks of fairness for health care reform. New York: Oxford University Press, 1996.
- 102 Siddiqi S, Masud TI, Nishtar S, et al. Framework for assessing governance of the health system in developing countries: gateway to good governance. *Health Policy* 2009; **90**: 13–25.
- 103 Olson M. The logic of collective action: public goods and the theory of groups. Cambridge, MA: Harvard University Press, 1971.
- 104 WHO. Gilson L, Loewenson R, Francis V. Challenging inequity through health systems. Final report. Knowledge network on health systems. WHO Commission on the Social Determinants of Health. Geneva: World Health Organization, 2007. http://www.who.int/social_determinants/resources/csdh_media/hskn_final_2007_en.pdf (accessed Oct 25, 2010).
- 105 Das Gupta M, Shukla R, Somanathan TV, Datta KK. How might India's public health systems be strengthened? Washington DC: World Bank, 2009.
- 106 WHO. The world health report 2008: primary health care now more than ever: introduction and overview. Geneva: World Health Organization, 2008.
- 107 Lawn JE, Rohde J, Rifkin S, Were M, Paul VK, Chopra M. Alma-Ata 30 years on: revolutionary, relevant, and time to revitalise. *Lancet* 2008; **372**: 917–27.
- 108 MoHFW. National Rural Health Mission (2005–12) mission document. New Delhi: Ministry of Health and Family Welfare, Government of India, 2009.