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Closing the health and nutrition gap in Odisha, India: A case study of how transforming the health system is achieving greater equity

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ABSTRACT

Health equity is high on the international agenda. This study provides evidence of how health systems can be strengthened to improve health equity in a low-income state. The paper presents a case study of how the Government of Odisha in eastern India is transforming the health system for more equitable health and nutrition outcomes. Odisha has a population of over 42 million, high levels of poverty, and poor maternal and child health concentrated in its Southern districts and among Scheduled Tribe and Scheduled Caste communities. Conducted between 2008 and 2012 with the Departments of Health and Family Welfare, and Women and Child Development, the study reviewed a wide range of literature including policy and programme documents, evaluations and studies, published and grey material, and undertook secondary analysis of state level household surveys. It identifies innovative and expanded provision of health services, reforms to the management and development of human resources for health, and the introduction of a number of cash transfer and entitlement schemes as contributing to closing the gap between maternal and child health and nutrition outcomes of Scheduled Tribes, and the Southern districts, compared to the state average. The institutional delivery rate for Scheduled Tribes has risen from 11.7% in 2005–06 to 67.3% in 2011, and from 35.6% to 79.8% for all women. The social gradient has also closed for antenatal and postnatal care and immunisation. Nutrition indicators though improving are proving slower to budge. The paper identifies how political will, committed policy makers and fiscal space energised the health system to promote equity. Sustained political commitment will be required to continue to address the more challenging human resource, health financing and gender issues.

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1. Introduction

Odisha State in eastern India (formerly known as Orissa) has a population of 42.0 million that includes a large proportion of Scheduled Tribe (23%) and Scheduled Caste (17%) populations (Government of India, 2011). Scheduled Tribes and Scheduled Castes are terms used in the Indian Constitution (1949) to refer to specific tribal and caste groups that face social exclusion and are

granted administrative and welfare privileges to help offset their disadvantage. Scheduled Tribes and Scheduled Castes continue to be among the most socio-economically disadvantaged groups in India and have some of the lowest health outcomes in the country (Balarajan et al., 2011). There are 533 tribal communities in India, of which 62 live in Odisha. Scheduled Castes are the caste groups at the lowest level of the Hindu caste system; the other major caste groups are Other Backward Classes and higher-level castes often referred to as General or Other Castes.

Odisha has an estimated poverty rate of 32.6% (Planning Commission of India (2013)), and the distribution of poverty reflects the social and spatial contours of inequality. Scheduled Tribes and Scheduled Castes are poorer than other social groups. The

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Household Consumption Expenditure Survey (2009–10) of the National Sample Survey Organisation (NSSO) of the Government of India found a rural poverty headcount ratio for Scheduled Tribes in Odisha of 66.03, for Scheduled Castes 47.11, and Others 25.2 (NSSO, 2011).

The Southern belt of 11 districts in the state is known as KBK+ and is made up of the districts of Bolangir, Boudh, Gajapati, Kalahandi, Khandamal, Koraput, Malkangiri, Nabarangpur, Nuapada, Rayagada, and Sonepur. KBK+ is poorer than other regions in Odisha. Rural poverty based on NSSO 2004–05 data is close to 68% in KBK+ districts compared to the state average of 46.9% (Chaudhuri and Gupta, 2009). In 2011 KBK+ had an estimated population of 10.4 million. KBK+ has a larger proportion of Scheduled Tribe and Scheduled Caste populations (56%) than the rest of the state or non-KBK+ districts (35%). KBK+ districts have lower health indicators than non-KBK+ (Annual Health Survey, 2011–12), are more likely to be extremely or severely food insecure than non-KBK+ ones (World Food Program, 2008), have poor road connectivity and dense hilly terrain that inhibits access to health services (de Arjan and Dubey, 2005). Rural poverty in Odisha reaches its highest level in Nabarangpur District in KBK+ at 80.6% (Chaudhuri and Gupta, 2009).

Despite high levels of poverty in the state, there have been notable improvements in health outcomes. The state infant mortality rate has reduced from 112.1 per 1000 live births in 1998–99 (National Family Health Survey (NFHS-2), 1998–99), to 59 in 2011–12 (Annual Health Survey, 2011–12) and likewise under-five mortality has declined from 131 per 100,000 live births in 1998–99 to 79 in 2011–12. Slower progress has been achieved in reducing the maternal mortality ratio, which has declined from 258 per 100,000 live births in 2007–09 (Sample Registration System [SRS], 2011) to 237 in 2011–12 (Annual Health Survey, 2011–12). Inequality in child mortality by socio-economic status, caste and ethnicity, and location persist. The District Level Household and Facility Survey (DLHS-3), 2007–8, found an under-five mortality rate of 119 for Scheduled Tribes compared to 104 for Scheduled Caste and 70 for other caste groups. Das Maitreyi et al. (2010) analysis of tribal child mortality in India found that even after controlling for wealth, the odds of Scheduled Tribe children dying in the age range of 1–4 and under age 5 was more than twice as high as for General Caste children. Gender is also an important health determinant with the National Family Health Survey (NFHS-3), 2005–06, showing women more undernourished than men (18.3% of women moderately or severely thin compared to 12.5% of men) and girls aged 6–59 months more anaemic than boys (66.6% of girls compared to 63.5% of boys).

2. Methods

This case study reviewed various types of literature to examine how government policies and initiatives in Odisha strengthened the health system to deliver more equitable maternal and child health and nutrition outcomes. The study was conducted between 2008 and 2012. The literature reviewed included policy and programme documents, state level household surveys, evaluations and studies of health interventions in Odisha, published and grey material. The research team themselves included government policy makers from the Departments of Health and Family Welfare, and Women and Child Development, and a team of technical experts from multidisciplinary backgrounds working with government, funded by the UK Department of International Development.

We undertook secondary analysis of household survey data to identify changes in health and nutrition outcomes over time. To measure changes in household spending on health, data was sourced from various rounds of the Household Consumption

Expenditure Surveys conducted by the National Sample Survey Organisation of the Government of India. This data was converted from nominal values to real Indian rupee values at 2004–05 prices, and then converted to US\$ using an average exchange rate between these two currencies for a period between 2005–06 and 2010–11. We searched the grey and published literature for evidence related to health equity in Odisha, and equity and health systems strengthening. We looked for themes and sub-themes amongst the different information sources, including enablers and barriers to improvements in maternal and child health and nutrition, and triangulated findings where possible. Ethical approval was not required as all data used by the study was taken from secondary sources (Table 1).

3. Findings

In this section of the paper, we review key factors that enabled the equity response of the government, and how equity has been integrated into health system strengthening.

3.1. The enabling environment

Political stability and increasingly broad based economic growth in Odisha since 2003 (World Bank, 2008) underpinned political attention to the social and economic inequalities in the state, particularly the development lag of the predominantly tribal KBK+ districts. The gap between the average per capita net district domestic product in 2009–10 of KBK+ and other districts in Odisha was close to US \$ 80 (or INR 3500) in real prices (Planning and Coordination Department, 2013). Political commitment was reinforced by state and national efforts to address the inequality and exclusion fuelling left wing extremism in the Southern KBK+ districts.

Increased government resourcing of the health sector and more efficient spending accompanied improvements in health outcomes. Between 2005–6 and 2010–11, government aggregate health expenditure rose from US \$ 171 million (INR 7, 580 million) to US \$ 452 (INR 20, 040 million); an average annual growth of 28%. Per capita health expenditure also increased, but at approximately \$10 per capita in 2010, is far below recommended levels to provide basic essential health services in low-income countries (WHO, 2010).

The political ascendancy of social inclusion and equity was met by a health sector readiness to address health inequities. Health policy makers were committed to health sector reform and developed a state health sector plan that included equity objectives to guide the reform agenda. Financial and technical assistance to support implementation of the Odisha Health Sector Plan created institutional space for action and innovation. Increasing global and national attention to child under-nutrition also placed pressure on the state's political and administrative leaders to address the gaps in the government's flagship nutrition programme. The political and policy environment, evidence of the magnitude of health inequity (NFHS-3, 2005–06; DLHS-3, 2007–08) and institutional analysis that found limited attention to equity in government programming (Gopalan, 2008; C-TRAN, 2008a; C-TRAN, 2008b; C-TRAN, 2008c) led the government to develop the Health Equity Strategy (2009–12) and the Nutrition Operational Plan (2009–15).

The Health Equity Strategy (2009–12) aims to improve the health of the most disadvantaged people in the State, and recognizes the particularly poor health status of Scheduled Tribes and Scheduled Castes and the KBK+ districts. The strategy sets out to mainstream equity into the health system, forge cross-sectoral support on tackling the determinants of health, and to scale up investments in KBK+ districts to fast-track improvements in

Table 1
Major policy documents, surveys and studies.

Document title	Authors	Date
<i>Policy documents</i>		
Orissa Health Equity Strategy, 2009–2012	Department of Health and Family Welfare, Government of Orissa	2009
Nutrition Operational Plan, 2009–2015	Department of Women and Child Development, Government of Orissa	2009
<i>Household surveys</i>		
National Family Health Survey (NFHS-3), 2005–06, Orissa, India	International Institute for Population Sciences (IIPS) and Macro International	2008
District Level Household and Facility Survey (DLHS-3), 2007–08, Orissa, India	International Institute for Population Sciences (IIPS)	2010
Concurrent Monitoring of Village Level Health and Nutrition Services in Odisha	Nielsen	2011a
Nutrition Baseline Survey in 15 High Burden and 5 Non-High Burden Districts of Orissa	Nielsen	2011b
Annual Health Survey Bulletin 2010–11, Odisha	Office of the Registrar General & Census Commissioner, India	2012
Annual Health Survey Bulletin 2011–12, Odisha	Office of the Registrar General & Census Commissioner, India	2013
<i>Studies and reviews</i>		
Rapid Review of Janani Express in Orissa	C-TRAN	2009
Public Health Beneficiary Survey	Orissa Technical and Management Support Team	2010
Evaluation of Long Lasting Insecticide Nets (LLIN) for Pregnant Women in Odisha	Orissa Technical and Management Support Team	2011a
Impact assessment of the Mobile Health Units (MHUs) in Orissa	D-Cor Consulting Private Limited	2011
A Rapid Assessment of Factors Affecting ASHA Roles and Incentives in KBK Region of Odisha	D-Cor Consulting Private Limited	2010
A Study to Assess the Functioning of Frontline Workers in KBK+ and their Potential for Improved Coordination and Convergence in Odisha	Sambodhi	2012

service delivery.

The Nutrition Operational Plan (2009–15) aims to achieve maximum nutritional health of all children below six years of age, especially for the poorest and the most disadvantaged, through effective inter-sectoral coordination. The Plan identifies Scheduled Tribe and Scheduled Caste children as the most socially vulnerable population, focuses on the first 1000 days of life, and targets 15 high burden districts in the state of which nine belong to KBK+.

3.2. Geographical focus on the poorest districts (KBK+)

As Gilson et al. (2007) point out, an essential element of increasing equity in health is the development of context specific approaches tailored to the equity landscape and the political context. In Odisha a strong focus of the Health Equity Strategy and the Nutrition Operational Plan was closing the health and nutrition gap between state level outcomes and those of Scheduled Tribes and Scheduled Castes and the underserved KBK+ districts. The

Table 2
District specific expenditure trends under National Rural Health Mission across KBK+ and other districts of Odisha (US\$ million).

Period	KBK+	Other districts	Odisha (all districts)
2008–09	11	32	43
2009–10	25	57	82
2010–11	28	62	90
2011–12	33	65	98
2012–13	41	79	120
Average expenditure	28	59	87
Average annual growth (%)	45%	28%	32%

Source: Financial Management Reports, State National Rural Health Mission, various years. Note: Expenditure values are presented in the above table after converting Indian rupees to US\$ using the exchange rate 1 US\$ = INR 44.295, an average of exchange rates for 2005–06 to 2010–11.

prioritization of KBK+ resulted in targeted health and development investment in these areas, and service delivery innovations tailored to the KBK+ context, as presented later. Expenditures of the National Rural Health Mission, which was a Government of India initiative to address the health needs of underserved rural areas, reflect this prioritization, as shown in Table 2. National Rural Health Mission expenditure grew by 45% in KBK+ districts between 2008–09 and 2012–13, in comparison to 28% in other districts.

3.3. Improving service delivery

Multiple service delivery initiatives were undertaken to improve access to services in KBK+. This included the construction and renovation of health facilities, training of community health workers known as Accredited Social Health Activists (ASHAs) and the introduction of mobile health units. Mobile health units have become the major source of health care in the remote and inaccessible villages they serve. They meet almost 80% of the health care needs of families reporting illness in the past 6 months (D-Cor, 2011), and saved families US\$ 4–6 on travel costs to the nearest primary health care centre or district hospital.

3.3.1. Tackling malaria

The interaction between poverty and incidence of communicable diseases is well known (WHO, 2012). Odisha accounts for nearly 25% of malaria deaths in India though is home to only 3.5% of India's population, and Odisha contributes 0.4 million of the 1.5 million malaria cases in the country recorded annually (Dhingra et al., 2010). KBK+ districts contribute 66% of reported malaria deaths in Odisha though the population of KBK+ accounts for only 25% of the state population (National Vector Borne Disease Programme, 2010). Only 11% of people who died from malaria had any contact with the health system (Dhingra et al., 2010).

Malaria morbidity and mortality is highest where the penetration of health service is weakest, and where the majority of the population is from tribal communities.

Community-based diagnosis using rapid diagnostic tests for *P. falciparum* malaria (85% of cases are caused by this parasite) with immediate treatment, and the training of community health workers to diagnose and treat suspected malaria cases has been a major plank of the control strategy. Hussain et al. (2013) found that more than 20,000 ASHAs have been trained to treat malaria at the village level though gaps in supply chain management weaken their effectiveness.

A second major effort has been distribution of Long Lasting Insecticide Treated Nets (LLIN) in villages where the incidence of malaria is highest; high coverage levels have been achieved. An evaluation of a pilot scheme to provide LLIN to all pregnant women in five of the KBK+ districts found that 91% of all LLIN recipients had slept under the net during the night prior to the survey. In the pilot, 43% of the LLIN recipients were Scheduled Tribe women and 32% Scheduled Caste. Comparison of intervention and control households in areas where no LLINs were distributed found that incidence of malaria among pregnant women in intervention households was 2% and in control households 4%, and incidence of anaemia among pregnant women was 48.5% in intervention households and 68.5% in control ones (Orissa Technical and Management Support Team, 2011a).

3.3.2. Increasing women's access to health services

Women's and girl's low social status and their lack of empowerment impact on their health and well-being (WHO, 2008, 2009). In Odisha, the NFHS-3 (2005–06) found that 42% of women (15–49 years) were subjected to either physical or sexual violence. The Annual Health Survey (2010–11) found that a third of the currently married women age 20–24 years were married before the legal age of 18. Deep-rooted gender discrimination requires multi-sectoral and broad societal efforts. More modestly, health efforts in Odisha have focused on increasing women's and girl's access to health and nutrition services, and responding to their specific health needs. Making facilities more gender-sensitive through the construction of female toilets, partitions in labour rooms for privacy and dignity, and waiting rooms have been relatively easy improvements. Increasing the availability of female doctors in rural areas is more challenging and faster progress has been made in strengthening the capacity of female frontline workers.

New programmes have been started to address adolescent anaemia, and new ways of delivering services, through for example Village Health and Nutrition Days where health and nutrition frontline workers deliver services together, aim to increase reach and female access. Implementation challenges however persist with gaps in the quality of service (Orissa Technical and Management Support Team, 2011b) aggravated by the discrete institutional structures and systems of the two government departments responsible for health and nutrition respectively. The Government of India conditional cash incentive scheme for institutional deliveries, Janani Suraksha Yojana, has increased access to services by providing pregnant women cash for transportation to a health facility at the time of delivery, and contributed to the increase in institutional deliveries from 35% in NFHS-3 (2005–06) to 79.85% in the 2011 Concurrent Monitoring Survey (CCM) (Nielsen, 2011a).

New social protection programmes, such as Mamata which is a state conditional cash transfer scheme for rural pregnant women and their infants, and Janani Sishu Suraksha Karyakram, a Government of India programme to provide cashless deliveries and the treatment of sick neonates, will further contribute to increased access to maternal and neonatal care. However, an evaluation of

Janani Suraksha Yojana shows that increased take-up of institutional deliveries has not impacted on maternal mortality, pointing to the need for more attention to improving the quality of care in addition to access (Randive et al., 2013).

Despite these efforts, much more is needed to tackle the gender discrimination and disempowerment that underpins the gender inequalities in health, to stop violence against women and girls, and the negative personal and public health consequences that result. India's Annual Health Surveys show girls have missed out on reductions in state infant and under-5 mortality. Added to this, there has been a decline in child sex ratios in the more developed belt of the state. There is clearly a need for much greater attention to gender in the future (Table 3).

3.4. Human resources for health

While the focus on KBK+ has been a mobilizing force behind the equity agenda, the Department for Health and Family Welfare seized the opportunity to integrate gender and social equity concerns into on-going health system strengthening. The challenge of bringing and keeping qualified health staff in rural underserved areas of India where working and living conditions are difficult is well known (Mohan et al., 2011). Inequities in the availability of health staff in Odisha underpin the uneven provision of services. To address the gaps, the government introduced the posting of newly appointed doctors to KBK+ for a minimum of three years. Financial incentives for peripheral (US\$ 180 per month) and district hospital doctors (US\$ 90 per month) in KBK+ are being tested and evaluated. Contract doctors prepared to work in peripheral institutions also receive higher incomes than those in district facilities (US\$ 677 compared to US\$ 564). Experience from other states and countries suggest that monetary incentives for doctors may need to be supplemented by non-monetary ones, such as rural tenure linked to postgraduate training as in Tamil Nadu (India), to incentivize rural postings and increase doctor retention. Odisha also has a policy of preferential entrance to post-graduate training for doctors who have served in KBK+. There is however concerns that in the absence of a strong performance appraisal system, young doctors use compulsory rural postings more as 'time-out' for textbook study rather than serving patients.

The limitations of a clinician-driven approach have led the Government to focus on strengthening its public health professionals in size, capacity and performance, and to introduce a public health cadre. The government plans to double the number of nurses in the state by 2017 and invest in the professionalization of nursing. Scholarships for female nursing students from Scheduled Caste and Scheduled Tribe backgrounds at US\$ 340 and US\$ 1130 per annum for non-KBK+ and KBK+ districts respectively were introduced in 2011.

The recent creation of a Human Resource Management Information System has been a vital step towards more rational deployment. Various approaches are being tried to improve the motivation and performance of frontline workers, such as financial incentives for paramedics working in difficult areas; enhanced incentives for ASHAs working in vulnerable geographical pockets; and the creation of rest homes in the vicinity of hospitals for the use of ASHAs accompanying pregnant women. Addressing the deeper and more difficult institutional and socio-cultural factors that disadvantage women health workers are challenging agendas for the future.

Declines in the state vacancy rates of doctors and staff nurses from 29.1% and 21.8% in 2008–09 to 6.9% and 13.1% in 2012–13 respectively, are indicative results of these multifaceted efforts.

Table 3

Infant and under-five mortality rate by sex.

	Infant mortality rate				Under 5 mortality rate		
	NFHS3 (2005–6)	AHS (2010–11)	SRS (2011)	AHS (2011–12)	NFHS3 (2005–6)	AHS (2010–11)	AHS (2011–12)
Boys	75	59	60	56	103.7	80	76
Girls	59.4	66	61	63	84.4	84	81
Total	67.7	62	61	59	90.6	82	79

NFHS = National Family Health Survey; AHS = Annual Health Survey; SRS = Sample Registration System (Register General of India, 2013).

3.5. Vulnerability mapping and context specific planning

Sub-district or block level vulnerability mapping based on a composite index has been introduced as part of the National Rural Health Mission planning process, and is a step towards district and block wise analysis of health inequity. Based on the assessed level of vulnerability, flexible funding is being provided to block and district managers to reach vulnerable populations. This is fostering local solutions, such as local contracting of paramedics, raising management attention to equity, and making budget allocations more equitable. Categorizing health sub-centres, the lowest level of health facility in the state, according to composite indicators of vulnerability is also being used to prioritize their development.

3.6. Health financing

Low public spending on health in India results in high private expenditure that hurts the poor the hardest; more than three-quarters of health spending in the country is paid for privately (Balarajan et al., 2011). In India, few people have financial protection against medical expenditure and out of pocket spending on health is a major cause of poverty. Non-treatment also results; 28% of ailments in rural India were reportedly not treated because of cost in 2004–5 (Ministry of Health and Family Welfare, 2009).

Representative sample surveys from 1999 to 2000 and 2007 to 08 show that monthly per capita household spending on health in Odisha increased from US\$ 0.30 to US\$ 0.54 in rural areas and US\$0.42 to US\$ 1.00 in urban areas (National Sample Survey Organisation, 2001, 2005). Hospitalization costs are often impoverishing; in 2004 the average annual amount spent per household on hospitalization was US\$ 104 in rural Odisha (National Sample Survey Organisation, 2006). Set against an average per capita annual consumption close to US\$ 135 (National Sample Survey Organisation, 2005), over 50% of hospitalization costs were financed by the sale of assets or loans.

In 2010, the Government of Odisha commissioned a study in 8 districts to take stock of the current level of out-of-pocket spending (OOPS) on health in public facilities (Orissa Technical and Management Support Team, 2010). The Public Health Beneficiary Survey collected data on OOPS from three types of users: (i) hospitalized treatment or indoor patient care, (ii) outpatient medical consultation, and (iii) child delivery (see Table 4). As found in earlier National Sample Survey Organisation studies, the 2010 Public Health Beneficiary Survey found that the biggest share of OOPS on health was spent on medicines. More than half of the

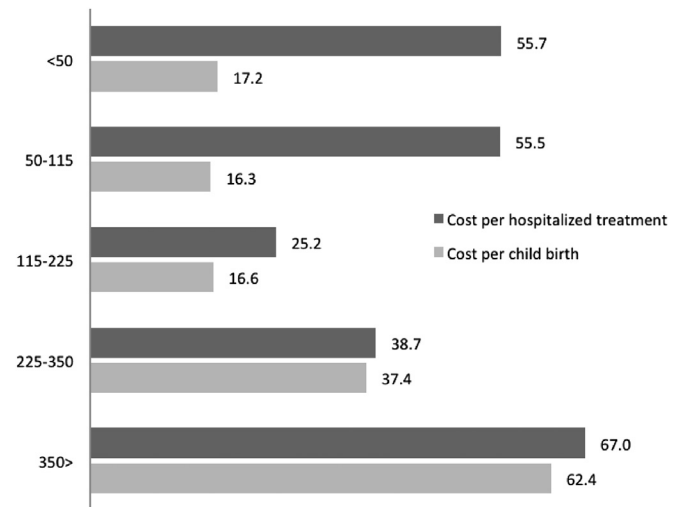


Fig. 1. OOPS (US\$) on hospitalized treatment and child delivery by monthly household income categories, Odisha, 2010.

OOPS incurred during hospitalisation was on medicines, and almost half of the OOPS for outpatient consultation.

OOPS incurred by the poor on health care remains high. As can be seen from Fig. 1, families with a monthly income of less than US\$ 50 (i.e. INR 2000) or an income between US\$ 50 and US\$ 115 (i.e. INR 2000 and 5000) incurred comparable, if not more, OOPS on hospitalisation than richer sections of society.

Comparison of data from the Public Beneficiary Household Survey (2010) with the National Sample Survey Organisation data of 2004 shows the average OOPS on institutional deliveries in 2004 at 2010 prices stood around US\$ 41 for rural areas and US\$ 27 for urban areas respectively. In comparison, the level of spending on institutional deliveries has fallen to US\$ 18 as per 2010 Public Beneficiary Household Survey data. This significant drop in cost to the family has contributed to the rapid increase in institutional deliveries in rural areas. Encouragingly, the Public Health Beneficiary Survey found that the burden of OOPS for institutional deliveries is lower for poorer families compared to middle and high income ones. Nevertheless, the out of pocket cost for institutional deliveries are still too high for some, especially where this is inflated by poor physical access and low service availability. Notably, poorer, more underserved and vulnerable women have

Table 4

Out of pocket spending (OOPS) on health in Odisha (US \$).

Type	Average	Median
Per day expenditure for hospitalised treatment (for in-patients)	26	17
Expenditure per medical consultation in out-patient department	4	2
Child delivery	18	15

Source: Public Health Beneficiary Survey, 2010. Note: OOPS data was collected in Indian Rupees and converted to US\$ using average exchange rate for a period between 2005–06 and 2010–11.

lower take up rates of Janani Suraksha Yojana (conditional cash incentive for institutional delivery) (Lim et al., 2011).

The national insurance scheme for the poor, Rashtriya Swasthya Bima Yojna, provides health insurance close to US\$ 700 per year for families below the poverty line, and has been rolled out across the state. It will potentially reduce high OOPS for hospitalisation of families living below the poverty line, but it is too soon to comment on impact. National evidence that shows that outpatient costs are the major cause of catastrophic spending rather than hospitalisation costs, suggests that the insurance scheme as currently configured will have limited impact on reducing medical impoverishment in Odisha (Shahrawat and Rao, 2011). The Government's decision to introduce Biju Krushak Kalyan Yojana a complementary health insurance scheme for farmers that covers primary and secondary care, and a statewide Emergency Medical Ambulance Service are steps in the right direction. However, in Odisha as in India more widely, financial protection is piecemeal and greater policy coherence at the state and national level is needed (Shiva Kumar et al., 2011).

3.7. The importance of evidence

International experience shows the importance of evidence to frame the health equity challenge, mobilize political support, and inform the design of the equity response. In Odisha, evidence of inequity has been key to leveraging political commitment and informing State action. It has become standard to include measurement and analysis of programme performance from an equity perspective in evaluations. For example, a study into the functioning of ASHAs in various zones across the state provided the evidence to increase financial incentives for women serving small populations, such as in KBK+ (D-Cor, 2010). An evaluation of Janani Express, a transport system for pregnant women, found that lack of incentives for private operators to station vehicles in distant places gave women living in remote areas poorer access to vehicles (C-TRAN, 2009). This has led to the testing of a transport voucher scheme to correct design faults of Janani Express.

The Commission on the Social Determinants of Health stresses the importance of an equity-focused approach to monitoring and evaluating health outcomes, health care processes and health system performance. State level household surveys such as National Family Health Surveys which include data disaggregated by sex, poverty, caste and tribal status, and those led by the National Sample Survey Organisation are important planks of an equity evidence base but insufficient to provide regular outcome data needed to guide state programming. In Odisha, concurrent monitoring at the request of the two Departments of Health and Family Welfare, and Women and Child Development is providing independent sex, caste, and tribal disaggregated information on health, nutrition and water and sanitation service coverage, and outcomes. Concurrent monitoring provides the only source of sex and socially disaggregated data down to the sub-district level and is helping to forge convergence between services and strengthen the evidence base for programme management.

Table 5
Institutional deliveries in KBK+ districts and Odisha State, DLHS-3 (2007–08) and Concurrent Monitoring (2011).

	DLHS-3 (2007–08)	Concurrent Monitoring (2011)
KBK+ districts	26.45	64.8
Odisha State	44.3	79.8
Low/high ratio	0.59	0.81

4. Results: early signs of more equitable service coverage

Since the launch of the Health Equity Strategy and Nutrition Operational Plan in 2009, there are early signs of more equitable service coverage in the state with greater improvements in KBK+ coverage compared to the state average, as well as among Scheduled Tribes compared to other social groups. Comparison of institutional delivery coverage between the District Level Household and Facility Survey (DLHS-3) (2007–08) and concurrent monitoring data in 2011, shows coverage has grown at a faster rate in KBK+ districts compared to the state average; resulting in a declining gap (Table 5).

State-wide concurrent monitoring data shows that significant gains have been made in reducing the social gradient of key health indicators. The gap between Scheduled Tribe women and children and all women and children in Odisha for utilisation of maternal and child health services has declined remarkably (see Fig. 2).

The wealth gradient of institutional deliveries has also declined with the poorest women experiencing the fastest rate of increase between 2005–06 (NFHS3) and 2011 (Concurrent Monitoring) (see Fig. 3).

Evidence from an independent Nutrition Baseline Household Survey (NBL) (2010), in 15 High Burden districts (9 of which are KBK+ districts) and 5 Non-High Burden districts (all non-KBK+ districts) compared to NFHS-3 aggregate rural state level data, suggests that Odisha has made some progress in reducing the number of children who are underweight and stunted but that much more needs to be done (see Table 6).

There are also signs that the nutrition disparities between Scheduled Tribes and other social groups are starting to reduce. There has been a faster decline in the percentage of child stunting among Scheduled Tribes than other social groups (see Fig. 4), and a greater decline in the prevalence of child anaemia among Scheduled Tribes compared to other social groups (see Fig. 5).

While the nutritional gains are encouraging, more aggressive efforts are needed to tackle persistent and high anaemia across social and income groups, improve infant and young child feeding practices, and mobilize multi-sectoral efforts to reduce child, adolescent girls and maternal under-nutrition.

5. Discussion and conclusion

This case study of Odisha shows how political will and committed policy makers can energise the health system to promote equity in health and nutrition through equity-oriented policy, targeted investments, health system reforms that prioritize underserved geographical areas and target groups, and innovative service delivery tailored to the needs of disadvantaged populations. Flexible budget support from Government of India and development partners, and the availability of technical assistance were further enabling factors. Use of maternal and child health services have become more equitable in Odisha. However, as in the case of institutional deliveries, quality of care remains a major challenge to translating improved access into reduced maternal mortality. Nutrition indicators though improving are proving slower to budge.

Evidence has played an important role in framing the equity response, though this has often been opportunistic, as pathways for mainstreaming gender and social equity have intertwined into ongoing areas of health systems strengthening and political push. The geographical focus of the Odisha response provided a widely accepted entry point for tackling inequity, and an uncomplicated focus to prioritizing investments and challenging norm based programming in favour of context specific solutions. The early focus on KBK+ is in fact now developing into a more sophisticated and

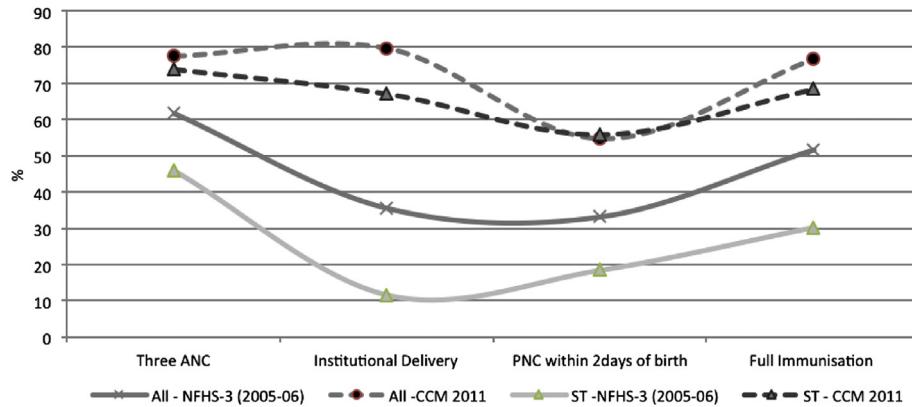


Fig. 2. Percentage utilisation of MCH services by Scheduled Tribe (ST) women and children and all women and children in Odisha (All): NFHS (2005–06) and Concurrent Monitoring (CCM) (2011).

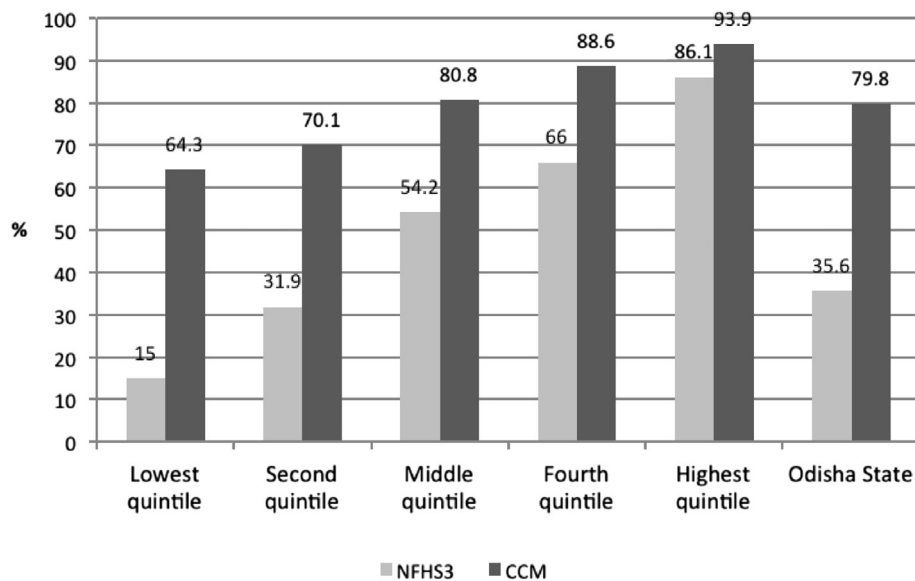


Fig. 3. Institutional deliveries by wealth quintile, NFHS3 (2005–06) and Concurrent Monitoring (CCM) (2011).

more disaggregated analysis of vulnerability that incorporates a number of demand and supply side factors related to geographical remoteness, socio-economic factors, left wing extremism and availability of health workers.

The beginning of the journey has gone well. Some approaches and initiatives have moved at speed while others have been more difficult to tackle. The establishment of a State Level Cross Sector Equity Taskforce provides high-level policy direction, and the creation of a Gender and Equity Cell in the Department of Health and Family Welfare provides the institutional base to maintain momentum. More challenging systemic and institutional issues related to health financing and human resources are long term agendas which the state will need the support of the Centre and

continuing political will to address. Recent development of a free drug distribution policy and a sharp increase in the state government's per capita drug budget, rising ten fold between 2007–08 and 2013–14 are important steps to addressing the high OOPS on drugs.

Odisha has taken steps towards a social determinants of health approach. While increasing collaboration between the two focal departments is encouraging, broader intersectoral collaboration and policy making will require high level political leadership. Looking to the future, we see that sustained political attention to inclusive development, continued economic growth, expansion of equity approaches to other vulnerable districts where indicators are lagging, and increasingly loud demands for universal health

Table 6 Trends in nutrition outcomes.

Nutrition outcomes	High burden districts, NBSL (2011)	Non-high burden districts, NBSL (2011)	NFHS III (rural) (2005–6)
% Children who are underweight	39.3	32.4	42.3
% Children who are stunted	40.6	35.5	46.5
% Children who are wasted	22.8	24.7	20.5

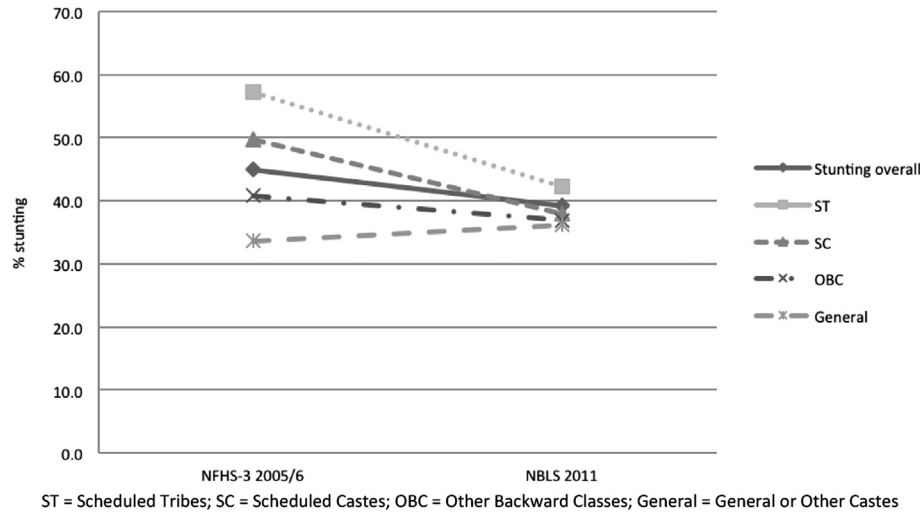


Fig. 4. Trends in child stunting in Odisha between NFHS3 (2005–06) and Nutrition Baseline Survey (2011) by social group.

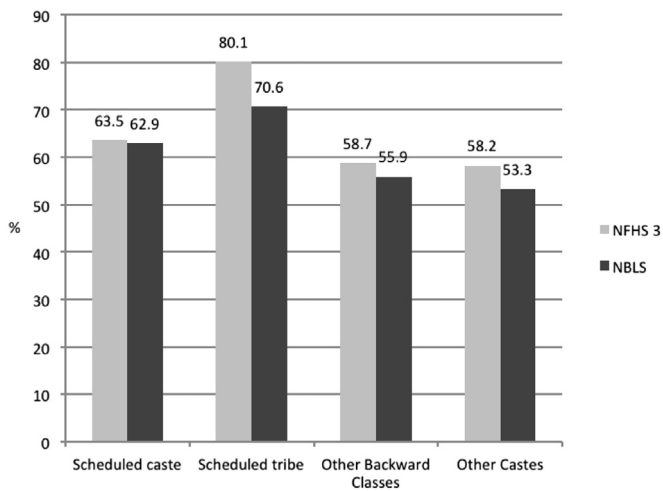


Fig. 5. Prevalence of anaemia in children (6–59 months), NFHS3 (2005–06) and Nutrition Baseline Survey (NBSLS) (2011).

coverage (Reddy et al., 2011; Planning Commission of India, 2011) will be key influences in further shaping the Odisha equity response.

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References

Balarajan, Y., Selvaraj, S., Subramanian, S.V., 2011. Health care and equity in India. *Lancet* 377 (9764), 505–515.
 C-TRAN, 2008a. An Analysis of Health Status of Orissa with Specific Reference to Health Equity.
 C-TRAN, 2008b. Study on the Perceptions of Marginalised People about Health Equity in Orissa.

C-TRAN, 2008c. Study on the Perceptions of Service Providers about Health Equity in Orissa.
 C-TRAN, 2009. Rapid Review of Janani Express in Orissa.
 Chaudhuri, S., Gupta, N., 2009. Levels of living and poverty patterns: a district-wise analysis for India. *Econ. Polit. Wkly* XLIV (9), 94–110.
 D-Cor Consulting Private Limited, 2011. Impact Assessment of the Mobile Health Units (MHUs) in Orissa.
 D-Cor Consulting Private Limited, 2010. A Rapid Assessment of Factors Affecting ASHA Roles and Incentives in KBK Region of Odisha.
 de Arjan, H., Dubey, A., 2005. Poverty, disparities, or the development of underdevelopment in odisha. *Econ. Political Wkly* 2321–2329.
 Das Maitreyi, B., Kapoor, S., Nikitin, D., 2010. A Closer Look at Child Mortality Among Adivasis in India. World Bank Policy Research Working Paper (5231).
 Department of Health and Family Welfare, 2009. Orissa Health Equity Strategy 2009–12. Government of Orissa, Bhubaneswar.
 Department of Women and Child Development, 2009. Nutrition Operational Plan 2009–13. Government of Orissa, Bhubaneswar.
 Dhingra, N., Jha, P., Sharma, V.P., Cohen, A.A., Jotkar, R.M., Rodriguez, P.S., Bassani, D.G., Suraweera, W., Laxminaryan, R., Peto, R., 2010. Adult and child malaria mortality in India: a nationally representative mortality survey. *Lancet* 376 (9754), 1768–1774.
 Gilson, L., Doherty, J., Loewenson, R., Francis, V., 2007. Challenging Inequity through Health Systems. Final Report Knowledge Network on Health Systems, WHO Commission on the Social Determinants of Health. WHO.
 Gopalan, S.S., 2008. Health Equity Review Orissa.
 Government of India, 2011. Census of India Primary Census Abstract – Odisha – 2011.
 Hussain, M.A., Dandona, L., Schellenberg, D., 2013. Public health system readiness to treat malaria in Odisha State of India. *Malar. J.* 12 (351) <http://dx.doi.org/10.1186/1475-2875-12-351>.
 International Institute for Population Sciences (IIPS) and Macro International, 2008. National Family Health Survey (NFHS-3), India, 2005–06: Orissa. IIPS, Mumbai.
 International Institute for Population Sciences (IIPS), 2010. District Level Household and Facility Survey (DLHS-3) 2007–08, Orissa, India. IIPS, Mumbai.
 Lim, S., Dandona, L., Hoisington, J.A., James, S.L., Hogan, M.C., Gakidou, E., 2011. India's Janani Suraksha Yojana, a conditional cash transfer programme to increase births in health facilities: an impact evaluation. *Lancet* 375 (9730), 2009–2023.
 Ministry of Health and Family Welfare, 2009. National Health Accounts India – 2004–05. Government of India, New Delhi.
 Mohan, R., Krishna, D.R., Shiva Kumar, A.K., Chatterjee, M., Sundaraman, T., 2011. Human resources for health in India. *Lancet* 377 (9765), 587–598. [http://dx.doi.org/10.1016/S0140-6736\(10\)61888-0](http://dx.doi.org/10.1016/S0140-6736(10)61888-0).
 National Sample Survey Organisation, 2001. Household Consumption Expenditure in India. July, 1999–June, 2000 (NSS 55th Round). Government of India, New Delhi.
 National Sample Survey Organisation, 2005. Household Consumption Expenditure in India. January–June, 2004 (NSS 60th Round). Report No 505. Government of India, New Delhi.
 National Sample Survey Organisation, 2006. Morbidity, Health Care and Condition of the Aged, January–June, 2004 (NSS 60th Round). Report No 507. Government of India, New Delhi.
 National Sample Survey Organisation, 2011. Employment and Unemployment Survey. NSS 66th Round. July 2009–June 2010. Eighth Quinquennial Survey. Government of India, New Delhi.
 National Vector Borne Disease Programme, 2010. Epidemiological Data 2010.

- Government of Orissa.
- Nielsen, 2011a. Concurrent Monitoring of Village Level Health and Nutrition Services in Odisha.
- Nielsen, 2011b. Nutrition Baseline Survey in 15 High Burden and 5 Non-high Burden Districts of Orissa.
- Office of the Registrar General & Census Commissioner, India, 2012. Annual Health Survey Bulletin 2010–11, Odisha. Government of India, New Delhi.
- Office of the Registrar General & Census Commissioner, India, 2013. Annual Health Survey Bulletin 2011–12, Odisha. Government of India, New Delhi.
- Orissa Technical and Management Support Team, 2010. Public Health Beneficiary Survey.
- Orissa Technical and Management Support Team, 2011a. Evaluation of Long Lasting Insecticide Nets (LLIN) for Pregnant Women in Odisha.
- Orissa Technical and Management Support Team, 2011b. VHND Assessment.
- Planning and Coordination Department, 2013. Economic Survey 2012–13. Government of Odisha, Bhubaneswar.
- Planning Commission of India, 2011. High Level Expert Group Report on Universal Health Coverage for India. Government of India, New Delhi.
- Planning Commission of India, 2013. Press Note on Poverty Estimates, 2011–12. Government of India, New Delhi.
- Randive, B., Diwan, V., de Costa, A., 2013. India's conditional cash transfer programme (the JSY) to promote institutional birth: is there an association between institutional birth proportion and maternal mortality? *PLoS One* 8 (6), e67452. <http://dx.doi.org/10.1371/journal.pone.0067452>.
- Reddy, K.S., Patel, V., Jha, P., Paul, V.K., Shiva Kumar, A.S., Dandona, L., 2011. Towards achievement of universal health care in India by 2020: a call to action. *Lancet* 377 (9767), 760–768.
- Register General of India, 2013. SRS Bulletin. Sample Registration System. Government of India, New Delhi.
- Sambodhi, 2012. A Study to Assess the Functioning of Frontline Workers in KBK+ and Their Potential for Improved Coordination and Convergence in Odisha.
- Shahrawat, R., Rao, K.D., 2011. Insured yet vulnerable: out-of-pocket payments and India's poor. *Health Policy Plan.* 1–9.
- Shiva Kumar, A.K., Chen, L.C., Choudhury, M., Ganju, S., Mahajan, V., Sinha, A., Sen, A., 2011. Financing health care for all: challenges and opportunities. *Lancet* 377 (9766), 668–679.
- UN World Food Program and India Institute of Human Development, 2008. Food Security Atlas of Rural Orissa. India Institute of Human Development, New Delhi.
- WHO Commission on Social Determinants of Health, 2008. Closing the Gap in a Generation: Health Equity through Action on the Social Determinants of Health. WHO, Geneva.
- WHO, 2009. Women and Health: Today's Evidence Tomorrow's Agenda. WHO, Geneva.
- WHO, 2010. The World Health Report. Health Systems Financing. The Path to Universal Coverage. WHO, Geneva.
- WHO, 2012. Global Report for Research on Infectious Diseases of Poverty. WHO, Geneva.
- World Bank, 2008. Orissa in Transition. Challenges for 2006–10. World Bank, New Delhi.