HEALTH OF TRIBAL PEOPLE IN INDIA

A linear paper on health for the national tribal human development report 2015

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INTRODUCTION

Concept of health & well-being of tribal people

The World Health Organisation (WHO) definition of health goes far beyond the classical biomedical view of health as being the opposite of disease. It usefully broadens the definition of health to include complete physical, mental and social well-being and not merely the absence of disease or infirmity. Comparison across populations and cultures is a complex enterprise, and usually reduces health and well-being to measurable indices or indicators. At the global level, such comparisons are attempted by going beyond the classical measures of inequality such as the GINI coefficient, to indices of subjective well-being such as the global happiness index. Some of the richer countries have sought to develop measures of subjective well-being and incorporate such measurements in assessing people's well-being.(1) The Declaration of Alma Ata in 1978 stressed that "*primary health care should be sustained by integrated, functional and mutually supportive referral systems, leading to the progressive improvement of comprehensive health care for all, and giving priority to those most in need*".(2) This is most appropriate when talking about health care for tribal communities.

Ideally, a paper on the health of tribal people ought to go beyond medical problems or illnesses/diseases of tribal people to answering questions of their health, quality of life and well-being. In addition the concept of indigeneity is complex and not uniform across countries, the notion of health of indigenous communities proposed by the United Nation's State of the World's Indigenous People comes close to capturing the understanding of health among the Indian tribal communities (see box 1).(3,4) The report states that *for indigenous peoples, health is equivalent to the harmonious co-existence of human beings with nature, with themselves and with others, aimed at integral well-being, in spiritual, individual, and social wholeness and tranquility.*(4) In this paper, we attempt to explore the health status of tribal communities beyond the numbers and beyond the biomedical domain using the WHO health systems framework(5) though an indigenous framework on the understanding of health would have been ideal.

Box 1. Health systems appropriate for the indigenous context. *(extract from the book 'State of the World's Indigenous People')* (4)

Models of health care must take into account the indigenous concept of health and preserve and strengthen indigenous health systems as a strategy to increase access and coverage of health care. This will demand the establishment of clear mechanisms of cooperation among relevant health care personnel, communities, traditional healers, policy makers and government officials in order to ensure that the human resources respond to the epidemiological profile and socio-cultural context of indigenous communities.

Tribal health: where is the data?

In India, little information is available to comprehensively assess the health status of tribal people. The classical sources of health data available are the demographic health surveys conducted periodically by the government. In the case of tribal communities, the current methodology of these demographic surveys (National Family Health Survey (NFHS) or the District level household survey (DLHS)) does not allow for reliable estimates of tribal health to be made even at the state or district level. On the other hand, routine data collected monthly by auxiliary nurse-midwives (ANM) and other health workers through the large network of government primary health centres (PHC) also gives the government little indication of overall tribal health status. Most of the state-level health information coming in through the nationwide digitised health management information systems (HMIS) put in place by the National Rural Health Mission (NRHM), captures information on service utilization and programme outcomes among all but does not allow for vertical disaggregation of this data based on tribal status, thereby not allowing any research of health outcomes or other relevant parameters among the tribal communities, or comparison between tribal and non-tribal communities. Similarly government hospitals and the various national schemes do not separately track utilization and coverage rates by tribal people, thus contributing partially to tribal people falling through the already fragile social security nets. On the other hand, some useful information on social determinants of health is studied and available for tribal communities in certain disciplines like anthropology. However this information is often not available or considered if available by those reflecting on health outcomes in these communities.

At present, putting together information on tribal health seems to be largely a civil society enterprise at the micro-level or through special government reports or initiatives that focus on their health at a given point of time. Currently efforts by local administration at state, district or block levels is grossly lacking. To some extent, the neglect of tribal health could be attributed to poor availability and quality of information to act on. Although state apathy and responsiveness of health services to tribal-specific health problems requires much more than periodic information on health programmes, the availability of such information is the first step.[1]

In the absence of a systematic effort by state institutions to track different aspects of tribal health, information has to be gathered through research studies, reports by government and non-governmental organisations (NGO) and the lay press. The disadvantages of these is that the scope of these studies or reports are often narrow, and do not provide a comprehensive assessment of health status of tribal people. For example, a scan of literature in the last few decades reveals that most of the information we have on tribal health is on health problems, and that too largely focusing on malaria, tuberculosis and HIV/AIDS and demography (mortality and fertility). Health research seldom focuses on the local health system gaps in tribal areas or on the social determinants of poor health status in tribal areas (for example see (6)). Currently tribal health research outputs focus on disease prevalence, health-seeking behaviour, and issues of geographical, financial or cultural barriers to seeking healthcare; there are very few studies that attempt to answer the *why* or *how* questions related to health of tribal people. While epidemiological studies focusing on morbidity and mortality abound, very few studies investigate reasons for the poor health services in such areas. For example, several studies investigate prevalence of falciparum malaria among tribal people in Odisha and discuss improvement and strengthening of health services in their results, but few have begun with the question of why the availability, accessibility or quality of general health services is poorer in tribal areas of Odisha, the realm of health policy and systems research[2].

1 A notable exception has been two recent systematic efforts at putting together available information, analysis and recommendations on health of tribal people, one by the high level committee on the status of tribals and another by WHO country office and Swami Vivekananda Youth Movement. Both reports note the over-reliance on special efforts by committees or reports for status of tribal health, due to lack of routine data coming in from the public services and district administration.

2 Health policy and systems research (or simply health systems research) is an emerging inter-disciplinary field of research that embraces the reality that "health policies and systems are complex social and political phenomena, constructed by human action rather than naturally occurring". In this field, there is a focus on *why* and *how* questions and a much wider set of perspectives from social and political

A discussion on health of tribal people is incomplete without acknowledging the *elephant in the room,* the various social determinants of health which are extremely crucial determinants of health status among tribal people. They are much more stark in their effects on several tribal communities. A tribal family that does not *yet* have legitimate ownership over ancestrally cultivated and owned lands lives in a state of perpetual food and livelihood insecurity, possibly prioritises child health and education lesser than more pressing daily living needs. These stark living conditions and chronic lifelong stress hardly reflect in conventional measures of morbidity and mortality; they affect the family's utilisation and the way they engage with health services, even if services are available and geographically accessible. Unfortunately, assessments of many key social determinants by health researchers are few. More insight into key social determinants of tribal health in India appear in other literature like wildlife conservation and livelihoods debates, human rights discourses, and in print media (newspaper editorials and magazines).

Need for a special focus

Although the term S*cheduled Tribes* (ST) is a catch-all category including several tribal people across the country, it is a heterogeneous group with wide differences in genetic, ethnic, cultural and social differences between them. The category ST although useful for identifying the group for affirmative action, does no justice to understanding their heterogeneity, and hence the need to understand the differences in approaches needed to reach individual tribal communities. However in spite of several differences between them, tribal communities overall lag behind other communities with respect to several health and development indicators (see table 1).

Table 1: Comparison of key health indicators between SC, ST and the national average (8)

Key health indicators	SC	ST	Total
Infant Mortality	66.4	62.1	57.0
Neo-natal Mortality	46.3	39.9	39.0
Pre-natal Mortality	55.0	40.6	48.5
Child Mortality	23.2	35.8	18.4
Under Five Mortality	88.1	95.7	74.3
ANC Checkup	74.2	70.5	77.1
Percentage Institutional Deliveries	32.9	17.7	38.7
Childhood Vaccination (Full Immunization)	39.7	31.3	43.5

** Source: National Family Health Survey (NFHS)-3 (2005-06)*

The persistent poor health outcomes of tribal people, their particular socio-economic and political scenario and decades of marginalisation from the social, economic, political and cultural mainstream necessitate a special approach towards our tribal people, especially their health. Such a focus needs to emerge from below upwards, meaning that districts and local bodies at *taluka* or block levels ought to be sensitised to the need for inclusive processes with respect to tribal health (or for that matter in education, governance or any other public policy making initiatives). A national level synthesis of tribal health can only highlight recurring themes and gaps in tribal health, and identify few areas or region-specific problems to be taken up in national and state policies.

sciences are adopted to ask and answer questions related to strengthening health systems (see Sheikh et al, Plos & WHO Alliance for Health Policy and Systems Research Agenda for Action.)

However the diversity of landscapes and socio-political environment within which tribal people live, necessitates the need for inclusive governance and local level planning and sensitisation at the level of health centres and local governments at district levels and below. *Clubbing these communities in the lowest economic quintile and expecting larger economic reforms to adequately cater to their needs and problems does not suffice.*

The historical behaviour of these communities and their close relationship with the environment in addition allowed for a few distinct health problems to appear in these communities that need special attention. From genetic diseases like haemoglobinopathies to insect/animal-related bites or injuries, *many of these communities need screening and care beyond what the local public services are equipped to provide.*

In this paper

When we talk of the health status of tribal people, this is a one-time snapshot using various indicators of tribal health. However as seen in similar earlier attempts, significant gaps in data exist, making its interpretations fragmented and limited. Applying a social exclusion lens to the available information reveals significant social determinants tied strongly to the context of where the tribal communities exist. A systematic scan of research and documentation revealed that academic focus is on health problems of the community in terms of their morbidity, mortality, fertility problems and key infectious diseases, with some mention of genetic conditions. However challenges faced by these communities are far beyond the availability of health services. The need of the hour is to go beyond describing the gaps in health services, and studying the deeper issues in the health system.

A health systems lens as advocated by WHO helps us provide an understanding of the health system in terms of financing, resource utilisation, and governance, but we recognise that even this is insufficient. We believe that there is a need to explore the inter-linkages of health with other dimensions of human development like education, land tenure, and empowerment, and that these can no longer be neglected particularly in relation with tribal communities across India. In this paper, we attempt to highlight some of these challenges in health, and focus our attention on addressing them keeping in mind the possible underlying reasons for these wider social determinants.

In the rest of the document we discuss tribal health organised under the following headings:

Section 1: Health status – in this section we briefly provide an overview of broad patterns with respect to health status of tribal communities;

Section 2: Health system analysis – in this section, we assess the various health system gaps that possibly explain the patterns described in the earlier section including cross-cutting themes viz. gender, traditional health practices, other social determinants of health and role of NGOs; and

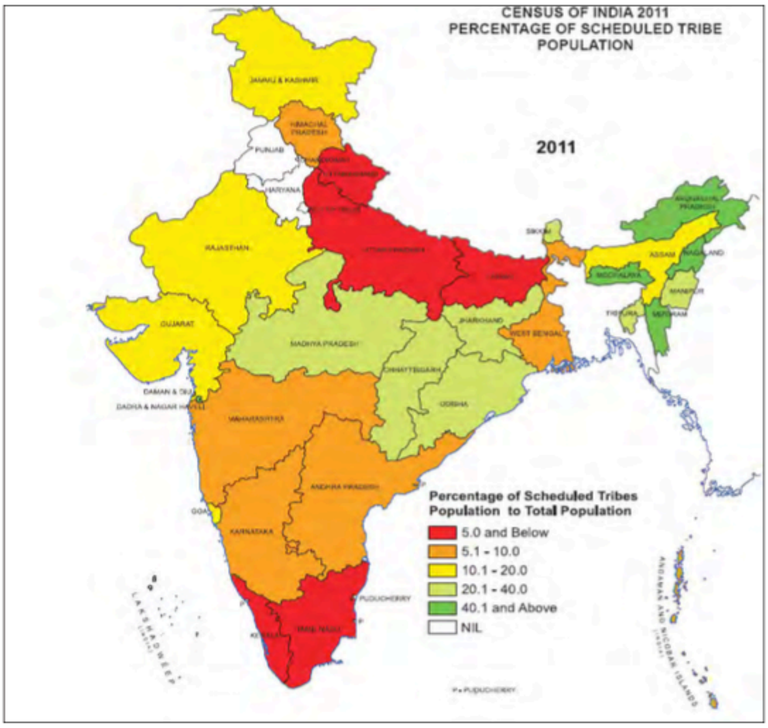
Section 3: Strengthening tribal health - recommendations based on the health system analysis organised by various thematic areas in which gaps exist.

SECTION 1: HEALTH STATUS

The number of constitutionally recognised scheduled tribes (ST) increased from 664 to 705 during the last decade. The ST population as per the recent census constitutes 8.6 percent of the population i.e. 104 million, of which most tribal households (90 percent) are in rural areas.(7) Indian tribal people live across the country (except the states of Punjab and Haryana) with high tribal population proportions in northeastern states and central India (see figure 1).(8) Given the heterogeneity among ST population across different regions of the country, the status of the ST communities was analysed across four different categories mentioned below in addition to the overall issues:

1. ST population in Schedule V area
2. ST population in Schedule VI area and other north-eastern states
3. ST population residing in island territories
4. The remaining ST population residing in other states

Figure 1. ST proportion across states as per Census 2011 (8)



The main health problems in tribal communities are broadly classified into the following categories and presented in this section:

1. **Reproductive and child health:** maternal morbidity and mortality, low birth weight, higher infant and child mortalities, lower immunisation coverage, sexual harassment;

2. **Nutrition:** significant rates of malnutrition especially among children, anaemia, specific micronutrient deficiencies;

3. **Communicable diseases:** malaria and other vector borne diseases, tuberculosis, diarrhoeal diseases, respiratory infections, skin infections, reproductive and sexually transmitted infections including HIV/AIDS;

4. **Non-communicable diseases:** hypertension and diabetes, cancers, mental health issues including substance abuse, conflict:

5. **Environmental and occupational health:** insect and animal bites/injuries, accidents and injuries from other trauma, forced relocation from traditional habitat; and

6. **Genetic diseases** like haemoglobinopathies and glucose-6-phosphate dehydrogenase deficiency.

REPRODUCTIVE AND CHILD HEALTH

Key findings

- Severe deficiencies exist for access to antenatal, delivery and postnatal services across all tribal communities
- Reproductive and child health programmatic outputs in tribal areas are poorer than elsewhere; programmes are also not adapted to local geographical and socio-cultural settings thereby worsening utilisation and quality of services provided.
- A uniform family welfare approach across the country prevents adaptation to family welfare needs of particularly vulnerable tribal groups and other tribal communities; restrictions currently apply for some groups hindering their reproductive rights, while others are in need of infertility care and/or safe abortion services.
- Appropriate treatment for childhood illnesses in tribal children is poor when compared to their non-tribal counterparts; infant mortalities and under-five mortalities are higher among tribal children in most states.
- Very little information exists on how to deliver adolescent reproductive and sexual health in tribal areas.

Various studies point towards inadequate coverage and quality of reproductive and child health services in tribal areas. (9–11)

Antenatal care: A study across five states in 2009 revealed that early (first trimester) registration for antenatal care (ANC) by health workers happens only in 36 percent of cases. The important aspect of delivery preparedness and information on where to go if there were complications were most often not discussed with the tribal women. While 32 percent of the women were told where to go if they experienced pregnancy-related complications, only 11 to 15 percent of the women were given any information on specific complications.(10) Provision of full antenatal care and safe delivery are considered to be key to reduce maternal mortality. Minimum of three antenatal care check-ups (now four), two doses of tetanus toxoid injection(s) and iron and folic acid supplementation are the basic constituents of a full antenatal care service. Coverage of this service among ST women is poor and the gap in full coverage between ST and non-ST is large possibly linked closely to the overall performance of the health services in the states, and larger socio-economic issues (see table 2). (11)

Figure 2. Full ANC coverage compared between ST and non-ST communities across the states 2007-08 (12)

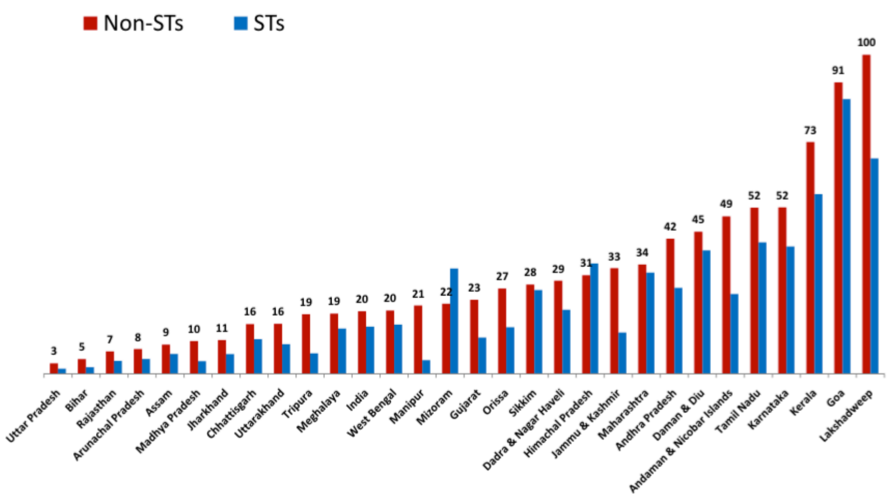


Table 2. Full antenatal checkup coverage in ever-married women aged 15-49years by state (11)

States/UTs	**Scheduled Tribes**	**Non-Scheduled Tribes**
	Percentage (n=39,341)	Percentage (n=1,78,635)
Schedule V		
Andhra Pradesh	26.9	42.4
Chhattisgarh	10.9	15.6
Gujarat	11.4	23.2
Himachal Pradesh	34.6	30.8
Jharkhand	6.2	10.6
Madhya Pradesh	3.9	10.3
Maharashtra	31.7	34.3
Odisha	14.6	26.7
Rajasthan	4.1	7
Schedule VI and other northeastern states		
Arunachal Pradesh	4.7	7.8
Assam	6.2	9.2
Manipur	4.3	21.4
Meghalaya	14.2	18.9
Mizoram	33	21.9
Nagaland*	NA	NA
Tripura	6.4	18.7
Island territories		
Andaman & Nicobar Islands	25	49.4
Dadra & Nagar Haveli	20.1	29.2
Daman & Diu	38.7	44.6
Lakshadweep	67.5	100
Other states		
Bihar	2.1	4.6
Goa	86.1	91.4
Jammu & Kashmir	12.9	33.1

Karnataka	39.9	52.2
Kerala	56.3	72.6
Sikkim	26.3	27.9
Tamil Nadu	41.2	52.1
Uttar Pradesh	1.6	3.3
Uttarakhand	9.3	15.7
West Bengal	15.4	19.8
India	**14.8**	**19.6**

Note: # Women who had their last live/still birth from 01-01-2004.Full antenatal check up: at least three visits from antenatal check-up, at least one TT injection received and 100+IFA tablets/syrup consumed.
*Source: International Institute for Population Sciences (IIPS). District Level Household and facility Survey, (DLHS-3), 2007-08:India. Mumbai. .**
Note: DLHS-3 data for Nagaland not available.

Only in a few tribal groups, there is a severe neglect of maternal and child health services, particularly among tribal groups in Bastar, Kutia Kondhs of Odisha, Santals, Jaunsaris and Kharias in schedule V areas.(13–15) In many of these groups, expectant mothers do not even receive a single dose of tetanus toxoid vaccination putting both mother and child at risk.

Food intake by tribal mothers is inadequate in terms of both protein and calories, as well as in iron, calcium and vitamins, leading to undernourished mothers and children and risk-prone pregnancies (explained in *nutrition*).(16) This is further complicated in few communities by the practice of reducing food intake during pregnancy (Dudh Kharias and Santhals for example) due to the fear of recurrent vomiting, and trying to limit the size of the baby so that the delivery is easier.(13–15) In many areas, high prevalence of communicable diseases like malaria and other significant conditions like sickle cell anaemia further complicate the pregnancy in many cases. Compared to non-ST, a higher proportion of tribal women tend to continue heavy work even in advanced stages of pregnancy.

Delivery: It is often assumed that if a delivery occurs in a health facility, then the chances of responding quickly to delivery-related maternal or childhood complications are higher due to the availability of skilled birth attendants. This may not be true in many tribal areas due to large infrastructure inadequacies (both equipment and human resources); however data shows that only a small proportion of tribal mothers are coming to health facilities for delivery (see figure 3, table 3).(11,17) Only 1 in 5 deliveries in tribal areas is an institutional delivery and *health personnel assisted only 1 in 4 deliveries,* significantly lower than that for other social categories.(8) In some cases, the proportion of deliveries unattended by health workers could be as high as 90 percent.(13–15) In spite of the incentives in the form of schemes like *Janani Suraksha Yojana*, there are difficulties in promotion of institutional deliveries in tribal areas.

Figure 3. Institutional delivery among ST communities across the states 2007-08 (12)

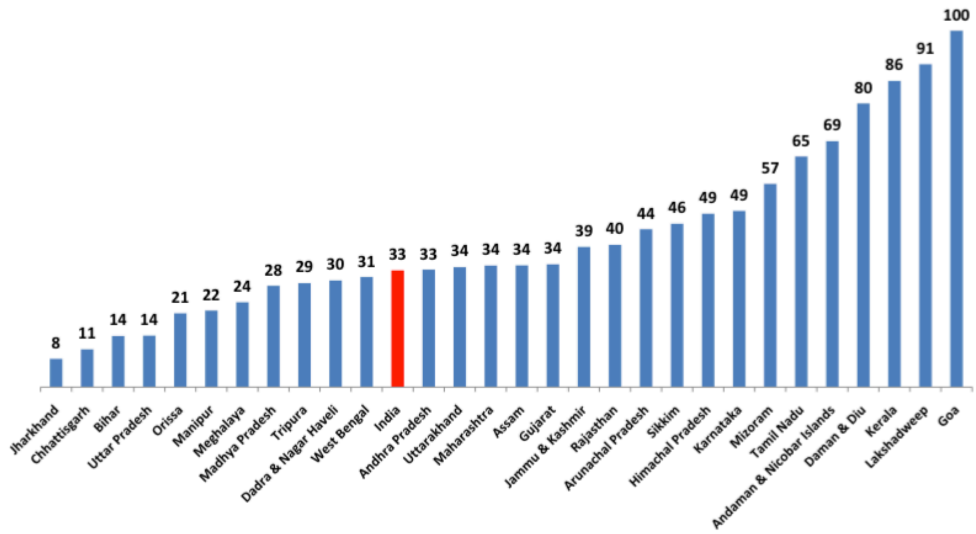


Table 3. Institutional delivery among ever-married women aged 15-49years by state (11)

States/UTs	Scheduled Tribes	Non-Scheduled Tribes
	Percentage (n=39,423)	Percentage (n=1,62,480)
Schedule V		
Andhra Pradesh	32.9	76.7
Chhattisgarh	10.6	23.4
Gujarat	34.4	64.9
Himachal Pradesh	48.6	48.2
Jharkhand	7.9	23
Madhya Pradesh	28.4	53.8
Maharashtra	34.1	71.3
Odisha	20.7	53.2
Rajasthan	39.9	46.5
Schedule VI and other northeastern states		
Arunachal Pradesh	44.3	57.1
Assam	34.2	35.1
Manipur	21.5	63
Meghalaya	23.8	38.3
Mizoram	57	54.2
Nagaland*	NA	NA
Tripura	29.2	59.8
Island territories		
Andaman & Nicobar Islands	68.9	77.2
Dadra & Nagar Haveli	29.9	75.4
Daman & Diu	79.6	61.2
Lakshadweep	90.6	88.9
Other states		
Bihar	14.3	27.8
Goa	100	95.9
Jammu & Kashmir	39.3	58.8
Karnataka	49.5	66.7

Kerala	85.9	99.6
Sikkim	45.8	53
Tamil Nadu	64.7	94.6
Uttar Pradesh	14.4	24.6
Uttarakhand	33.7	29.7
West Bengal	30.9	50.8
India	**32.8**	**49.8**

Note: # Women who had their last live/still birth from 01-01-2004. Percentage is weighed and sample size is un-weighted.
*Source: International Institute for Population Sciences (IIPS). District Level Household and facility Survey, (DLHS-3), 2007-08:India. Mumbai.**
Note: DLHS-3 data for Nagaland not available.

On one hand is the cultural barrier of persuading tribal mothers to deliver in healthcare institutions, but on the other hand is the health services ability to make available competent and skilled birth attendants in remote areas to ensure skilled birth attendance (see table 4). In one study, it was found that SC/ST households had lower odds of institutional delivery even after adjusting for possession of a BPL card, suggesting deeper socio-cultural reasons for low uptake of services among these groups.(17) Both operationally and ethically, it is extremely important to ensure that bringing tribal women to facilities translates to higher quality of care in the field. If the healthcare facility is unable to provide health workers in tribal areas, who are available and competent, then there is no purpose in incentivising tribal women to come and deliver in such facilities through cash transfer schemes. Experiences by NGOs in the Nilgiris area of Tamil Nadu, southern Karnataka and Kerala indicate the role of *local trained tribal health workers* as being very important to acceptability of services in these areas[3].

Table 4. Point of care for delivery and birth attendance across various social groups (8)

Social Groups	**Place of Delivery (Health Institution /Facility)**				**Person Providing Assistance During Delivery**				
	Public Sector	Private Sector	Own Home	Delivered Through Health Facility	Doctor	Midwife, ANM/ Nurse/ LHV	Relatives/ Friends	Dai/ TBA	Delivered by a Skilled Provider
ST	11.6	5.8	70.9	17.7	17.1	7.0	23.0	50.2	25.4
SC	19.4	13.4	56.8	32.9	29.4	10.4	20.7	37.7	40.6
OBC	16.1	21.1	51.8	37.7	33.8	11.7	15.5	37.1	46.7
Others	21.8	28.7	40.5	51.0	47.4	9.3	11.3	30.4	57.8
Total	18.0	20.2	51.3	38.7	35.2	10.3	16.2	36.5	46.6

**Source: NFHS-3 (2005-06)*

In some tribal communities, the difference between home and institutional delivery also includes how the delivery is conducted (see box 2). Today many studies are exploring alternative birth positions. A recent Cochrane review on maternal positions and mobility during first stage of labour found evidence that upright and walking positions in the first stage of labour was associated with reduction in the risk of caesarian section, duration of labour, and not associated with increased need for intervention. However there is a need to study these practices, in greater detail to clarify benefits or harms if any, and accordingly sensitise and even customise local services to improve access to safe deliveries for tribal mothers.(18)

[3] Based on inputs from UNDP multi-stakeholder consultation with Ashwini tribal hospital in Gudalur, Tamil Nadu, Swami Vivekananda Youth Movement, Karnataka, KIRTAIDS, Kerala, & Vivekananda Girijana Kalyana Kendra, Karnataka

Box 2: Squatting position for delivery

In the *Soliga* tribe in Karnataka, traditionally deliveries were performed in a squatting position with the assistance of a *dai* experienced in conducting deliveries in this method. Jalesiddamma, a midwife in this community who died in 2004, had to her credit the experience of conducting more than a thousand deliveries in her lifetime using local traditional methods. In a hospital run by Vivekananda Girijana Kalyana Kendra (VGKK) in southern Karnataka, there are two types of labour rooms available for delivery for the women of the *Soliga* community. One is a typical hospital labour room with a labour bed as prescribed by PHC guidelines, while the adjacent labour room consists only of a thick rope tied to the centre of the ceiling. The latter room is aimed at providing the traditional method of delivery as practiced in the local tribal community. Health workers here are trained to provide both types of delivery based on the woman's comfort.

Recently, a lot of international focus has emerged on the theme of disrespect and abuse during institutional delivery. Although no direct evidence exists on such practices by health workers on tribal women specifically in India, there is widespread indirect evidence of disrespectful practices during childbirth, poor emotional support, hygiene and privacy to tribal women in facilities. While some of this is related to infrastructure and human resources gaps, in several instances, this is also related to the health system's responsiveness and governance gaps in identifying these practices as requiring urgent redress.(19)

The national health mission however dictates that 100 percent institutional deliveries must be aimed for, rather than providing a phased plan to help shift towards safe deliveries in a realistic manner given the various factors that influence access as seen in this section among tribal communities. Given the relatively higher proportions for home deliveries in this population, the difficulties in accessing safe health services in general (*explained later*) and the preference of traditional methods/institutions, a more suitable policy shift advocated is the introduction of a transition plan for these communities to phase out unsafe deliveries in the coming decade, and meanwhile prepare the local institutions to act as safe delivery points keeping the focus on safe mother and child. An additional module is needed in NRHM training for skilled birth attendants to help equip local health centres and health workers to provide services using traditional birthing positions.

Postnatal care: In tribal areas, only 1 in 4 woman gets postnatal care (PNC) within 48 hours of delivery according to the NFHS survey. There are also important gaps in the way data is collected in the HMIS. Since reporting of actual numbers is not always in the interest of the health worker, inconsistencies are often seen between routine health department data and reality.(10) For example, in Odisha in the tribal districts of Koraput and Mayurbanj, the DLHS 3 (2007-8) report states that the PNC within 48 hours of delivery is 100 percent and 95.7 percent respectively, though the percentage of institutional deliveries is only 11.6 percent and 40.3 percent. It is difficult to hence accept the claim of high PNC coverage given the context of poor access to services in these areas.

Maternal mortality is showing a decreasing trend across the country perhaps due to a mix of improvement in services availability and other societal factors. However, disaggregated maternal mortality data for tribal mothers is not available. Both the NFHS and DLHS do not assess this. Sepsis, postpartum haemorrhage and anaemia continue to be the most common delivery-related complications in tribal areas. However, there is no special investment in upgrading facilities in such areas. In the last few years, few clusters of maternal deaths in tribal areas were followed by investigative reports both by the government and civil society, that revealed the influence of various social determinants on health outcomes and the poor health system response at all levels (see box 3).

Box 3: Extract from 'Dead women talking' – a civil society report on maternal deaths in 2014 (20)

The death of Heena (S No 58) - Heena was a 22 year old tribal woman who lived in Kedhujhar district of Odisha. Both she and her husband were illliterate. They did not own any land, were certified to be below the poverty line, and according to her husband, often did not have enough to eat. They lived in a remote hamlet where the nearest motorable road was 10km away, and the nearest ambulance pick up point was 40km away. This was Heena's second pregnancy. Her first child died at athe age of 6 months due to an infected abscess. The nearest sub-centre was 6km away and though the ANM did visit once a month, the hamlet could not be reached in inclement weather. Heena did not seek or receive any care during this pregnancy. While Heena's labour pains startedm her husband tried to arrange for some form of transport to take her to a health facimilty. It took him about 8 hours to do so - they did not have the number of Janani express, nor did they receive any help form the ASHA or ANM. They set out to the nearest CHC that was 50km away, but Heena delivered on the way and died soof after, probably due to excessive bleeding.

These stories of deaths of these women show how multiple social determinants interacted to produce adverse heath outcomes – the relationship between rural residence, migration, food security, tuberculosis, pregnancy outcome, neonatal outcome, are all starkly visible in these narratives. The health system could have responded in multiple ways in mitigating some of the problems these women were facing. Instead we find that it miserably failed in doing so... Similarly in Heena or Dhani's cases, systemic neglect of their hamlets over several decades is obvious from the lack of roads and connectivity – these definitely do need to be corrected – however, in the short term, the health system could have made special arrangements.. that would have ensured that they received timely emergency care.

Family welfare services: Contraceptive use among ST couples is comparable to non-ST couples (41 percent versus 49 percent), although knowledge of temporary methods of contraception among tribal women was lower than their non-tribal counterparts (see table 4). Among the temporary methods available at government health services, one study found that the oral pill was the most popular modern temporary method among tribal women (76 percent), followed by condom (60 percent) and intra-uterine devices (56 percent). In the same study, they found that women in Jharkhand had relatively low knowledge of most contraceptive methods than the women of Madhya Pradesh and Chhattisgarh.(21) Additionally, the level of knowledge about all contraceptive methods was very poor among tribes than the non-tribes in Jharkhand. The nation-wide data on uptake of contraceptive services by tribal people indicates relative improvements in access to contraception services. However, several demographers caution that the Indian family welfare program's increasing focus on financial incentive-driven sterilization could be driving this shift.(11)

Table 4. Proportion of currently married tribal women aged 15-49years currently using any modern contraceptive methods across states (11)

States /UT's	Scheduled Tribes	Non Scheduled Tribes
	Percentage (n=1,03,835)	Percentage (n=5,00,969)
Schedule V		
Andhra Pradesh	57.9	67.5

Chhattisgarh	40.1	54.1
Gujarat	52.4	57.7
Himachal Pradesh	68.1	69.6
Jharkhand	17.2	38.7
Madhya Pradesh	48	56.9
Maharashtra	60.4	64.8
Odisha	27.1	44.1
Rajasthan	53.5	55.6
Schedule VI and other northeastern states		
Arunachal Pradesh	47.3	51.2
Assam	34.3	29.8
Manipur	15.8	23.4
Meghalaya	15.8	26.2
Mizoram	57.3	39.8
Nagaland*	NA	NA
Tripura	33.3	45.5
Island territories		
Andaman & Nicobar Islands	62.4	67.5
Dadra & Nagar Haveli	51.9	54.4
Daman & Diu	57.8	53.6
Lakshadweep	16.2	32
Other states		
Bihar	19.2	29.6
Goa	40.5	36.5
Jammu & Kashmir	38.9	43.3
Karnataka	60	62.4
Kerala	57.7	55.8
Sikkim	63	57
Tamil Nadu	43.5	59.4
Uttar Pradesh	28.1	27
Uttarakhand	57.3	58.9
West Bengal	45.3	54
India	41.9	49.3

Note: Percentage is weighed and sample size is un-weighted.
*Source: International Institute for Population Sciences (IIPS), District Level Household and facility Survey, (DLHS-3), 2007-08. *Note: DLHS-3 data for Nagaland not available.*

In tribal population, as in the general population, the uptake of permanent female sterilisation methods (abdominal or laproscopic tubectomies) is considerably higher according to NFHS-3 data. In 2014, a cluster of deaths and morbidities following a female sterilisation camp in Chhattisgarh brought back the focus on the persistent push of the government on achieving family planning goals despite the presence of inadequate and poor quality health services in tribal areas (see box 4). The tragedy revealed systemic issues in the local health system, with poor accountability of the government in view of violation of its own policies and norms, and failure of the public health system to provide care as reported in a civil society report on the deaths. The camp approach was also strongly criticised by civil society and the need to shift the family planning policy from population control towards informed safe family welfare services was emphasised on.(22) In the rest of the country, the target-based family planning approach is now replaced with a more comprehensive need-based family welfare approach. This is particularly needed for tribal communities as well, locally customised based on the demands of the families. Until the public health services are able to guarantee primary health care services to these families to ensure that two children born to each family will not succumb to mortality under the age of five due to pneumonia or diarrhea, the family planning strategies need to be put on the back burner.

Box 4: Extract from 'Camp of wrongs: the mourning afterwards' (22)

One of the gravest facts about this camp was the conduct of 83 sterilisation surgeries within a few hours. By some accounts, the surgeries were conducted in merely 2 1/2 hours. This has serious implications for the maintenance and use of sterile equipments, instruments like the laparoscope and other reusable items. Given the limited duration in which all 83 sterilisations were conducted, the time for each procedure and the time between procedures was evidently minimal, suggesting serious compromises with regard to the safety and the quality of the procedures. Furthermore, the use of a single laparoscope for 83 women in the limited time as was done in this camp is undeniably appalling and a gross violation of standards of asepsis.(The OT remained sealed at the time of the visit and hence could not be observed.)

Following the surgeries, the women, some with their children as young as 3 1/2 months were made to lie down on durries that were placed in the corridors, immediately outside the operation theatre. Following surgery, the post operative area must be necessarily restricted to prevent post operative infections, which was entirely overlooked here. There were no designated post operative recovery rooms where the women could be shifted. The corridor was also unclean filled with cobwebs. The processes in the camp thus caused tremendous risks to the health of all the women who underwent the sterilisation procedures in the camp.

The discharge of the women within an hour or two of the surgeries, which is the routine practice in such camps, is responsible for many of them losing their lives. The quick discharge does not take into account that the villages from where the women may have come do not have proper transport facilities, except emergency ambulances (108/102). Discharging women within a few hours of the surgeries took them far away from health care services, reducing the chances of the adverse symptoms being picked up early and delaying the emergency response. Their early discharge delayed their access to critical health care; women could not access transportation on time when they started having complications, and experienced delay in reaching health care facilities, where they either died within a short while after reaching.or required prolonged and intensive care.

Another aspect of family welfare services to be considered is provision of infertility care for tribal couples. States like Andaman & Nicobar and Nagaland reported a negative decadal growth in the recent census with most of the Andaman tribes having small populations and belong to particularly vulnerable tribal groups.(8) The government also has in place a policy that disallows permanent family planning methods to be accessed by PVTGs. The high level committee in its recent report on tribal communities reviewed this policy and termed it as a denial of reproductive rights of the community (see box 5).

Box 5: Particularly vulnerable tribal groups and their 'preservation' (11)

"Their (particularly vulnerable tribal groups' (PVTG)) socio-economic vulnerability and low population levels has led them to be treated as *endangered* and 'on the verge of extinction' - terminology which denies them their full humanity. Rather than granting them their autonomy and rights to address historical injustices, this perception has led to disastrous state Government interventions in the name of their *preservation*. One such scheme has been the State policy-disallowing members of PVTGs from availing of sterilisation schemes in government hospitals. Tribes such as the Paharias, Baigas, Kamars and Pahari Korvas of central India have been denied permanent methods of contraception in an attempt by the

State to encourage population growth in the face of their apparently dwindling numbers. This policy originated in an order passed by the Madhya Pradesh government in 1979 to exclude vulnerable tribal communities from the wave of sterilisation drives taking place across north India. However, even decades later, this order continues to be followed.

Such a policy denies members of PVTGs the autonomy to make free and informed reproductive choices, and particularly denies any agency and bodily autonomy to women of these communities, who have to bear the burden of the denial of access to sterilisation facilities. Moreover, it sidesteps the real factors contributing to high mortality rates such as chronic malnutrition, starvation and lack of access to adequate health facilities. On the other hand, in the Wayanad district of Kerala, Kattunayakan tribal communities are sometimes coerced or intimidated into undergoing sterilisation in order for health workers to meet necessary sterilisation targets. Both practices need to be condemned and it is necessary that the reproductive rights and autonomy of PVTGs be respected by the State. The real issue for PVTGs is the non-provision of health facilities as well as denial of their right to sufficient, nutritious food."

Safe abortion services: There is little information on the demand for abortion services and the status and methods of abortions being conducted in the community. This is worrisome given that the nearest healthcare facility that can provide formal safe MTP services for tribal women is likely to be difficult to access.

Health of children under-five

In 2001, the life expectancy at birth of 60.3 years was significantly lower than that of the general population (67.8), while mortality rates in childhood are significantly higher among tribal communities with significant variation across states.(8,11)

Only one in three tribal children receive newborn care within 24 hours of birth, as opposed to one in two children among non-ST population (see table 5). Within a tribal setting in eastern Maharashtra with relatively poor acccess to neonatal care, the Society for Education, Action and Research in Community (SEARCH, an NGO in Gadchiroli) conducted a trial on effective home-based neonatal care. They demonstrated a near two-third reduction in neonatal mortality in the intervention area, thereby sparking a series of research. This approach was adapted to the existing government health structure and programmes and was subsequently adopted by the National Rural Health Mission.(23)

Table 5. Newborns who received care within 24 hrs of birth among ST and non-ST communities across different Indian states (percent) (11)

States/UTs	**Rural**		**Urban**		**Total**	
	ST	Non-ST	ST	Non-ST	ST	Non-ST
Schedule V						
Andhra Pradesh	39.2	76.8	73.7	86.2	43.9	81
Chhattisgarh	28.1	43.1	52.8	64.3	29.9	50
Gujarat	36.6	59.7	72.2	81.8	39.1	67.6
Himachal Pradesh	49.6	48	72.7	68.6	50.4	51.1
Jharkhand	17	32.7	45.2	60.9	18.6	38.3
Madhya Pradesh	24.6	36.2	52.8	59.6	26.7	44.8
Maharashtra	54.1	75.9	82.6	89.5	56.8	80.9
Odisha	15.8	34.5	30.8	45.8	16.8	36.9
Rajasthan	33.6	34	40.3	58.2	34	41.7
Schedule VI and other northeastern states						

Arunachal Pradesh	35	42.7	46.9	54.8	37.2	47.9
Assam	28	27.3	54.9	61.9	30.5	33.1
Manipur	23	54.4	36.2	76.1	23.3	64.4
Meghalaya	22.7	29.4	55.3	70.7	26.3	42.9
Mizoram	36.5	30.6	68.5	84.1	49.2	44.6
Nagaland*	NA	NA	NA	NA	NA	NA
Tripura	14.4	29.1	0	44.6	14.3	32
Island territories						
Andaman & Nicobar Islands	65.7	74.4	89.5	82.6	74.1	76.5
Dadra & Nagar Haveli	41.6	58.6	69.2	89.6	42.4	70.2
Daman & Diu	88.1	80.9	87.3	84.5	87.8	82.9
Lakshadweep	92.1	75	96.5	100	94.6	89.5
Other states						
Bihar	12.2	24.5	44.9	42.3	15.4	27.4
Goa	100	97.6	100	95.3	100	95.9
Jammu & Kashmir	37.9	53.6	61.4	84.3	40	59.9
Karnataka	47.7	64.6	77.6	80.5	54.6	70.4
Kerala	85	99.5	100	99.2	86	99.4
Sikkim	38.8	47.4	88	74	39.9	49.1
Tamil Nadu	68.2	83	91.2	91.5	71.7	87.1
Uttar Pradesh	20.6	29.4	43	49.9	23.7	34.5
Uttarakhand	30.2	26.1	28	57.3	29.9	32.3
West Bengal	31.3	52.5	48.4	78.4	32.5	58.1
India	30.4	43	63	69.8	34.4	51.4

*Source: International Institute for Population Sciences (IIPS). District Level Household and facility Survey, (DLHS-3), 2007-08: India. Mumbai. .*Note: DLHS-3 data for Nagaland not available.*

Possibly due to various socio-cultural factors, exclusive breastfeeding practices are better-off among tribal communities overall (61 percent among ST as opposed to 41 percent among non-ST) (see table 6). However, this national figure hides a wide regional variation; exclusive breastfeeding was reported by 80 percent of tribal mothers in Tamil Nadu while many states in the north-east showed relatively poorer prevalence of exclusive breastfeeding (see table 6). Only a few tribal communities appear to have cultural practices that are harmful either to the mother or child, such as discarding of colostrum, giving pre-lacteal feeds, delayed introduction of breast feeding and delayed introduction of complementary feeds. (13–15)

Table 6. Proportion of children aged 0-5 months who received exclusive breast feeding (11)

States/UTs	Scheduled Tribes	Non Scheduled Tribes
	Percentage (n=6,207)	Percentage (n=27,099)
Schedule V		
Andhra Pradesh	58.8	42.7
Chhattisgarh	65.5	76.7
Gujarat	56	37.8
Himachal Pradesh	65.1	57.7
Jharkhand	51.3	72.7
Madhya Pradesh	78.8	49
Maharashtra	63.2	51.8
Odisha	79.3	47.9
Rajasthan	NA	64.9

Schedule VI and other northeastern states		
Arunachal Pradesh	31.3	54.7
Assam	47.8	62.6
Manipur	50.4	73.1
Meghalaya	42.6	50
Mizoram	67.9	63.6
Nagaland*	NA	NA
Tripura	55.5	33
Island territories		
Andaman & Nicobar islands	58.8	54.6
Dadra & Nagar Haveli	66.7	13.3
Daman & Diu	50.4	39.7
Lakshadweep	100	NA
Other states		
Bihar	27.5	37.8
Goa	80	39.3
Jammu & Kashmir	66.7	72.3
Karnataka	47.8	66.8
Kerala	73.6	67.9
Sikkim	53.9	47.5
Tamil Nadu	80	63.4
Uttar Pradesh	67.4	18.9
Uttarakhand	NA	51.1
West Bengal	79.7	42.3
India	**61.1**	**43.3**

Note: Table based on youngest living child born since 01.01.2004. Percentage is weighed and sample size is un-weighted.
Source: International Institute for Population Sciences (IIPS). District Level Household and facility Survey, (DLHS-3), 2007-08: India. Mumbai.
*.*Note: DLHS-3 data for Nagaland not available.*

Immunisation coverage of tribal children is also poorer than other children and hence contributes to increased burden of infectious diseases as well as stunting and wasting among these children (see figure 5, table 7). Only one-third of tribal children received full primary immunization; worse still, they found that an alarming 1 in 8 (12 percent) tribal child did not receive immunization at all (national – 5 percent, rural – 7 percent) as per the NFHS-3 data. In general, immunisation coverage of tribal children is lower than the national and rural Indian averages. There appears to be little improvement in this trend from the 80s till mid 2000s.

Figure 5. Complete childhood vaccination in ST children 2007-08 (12)

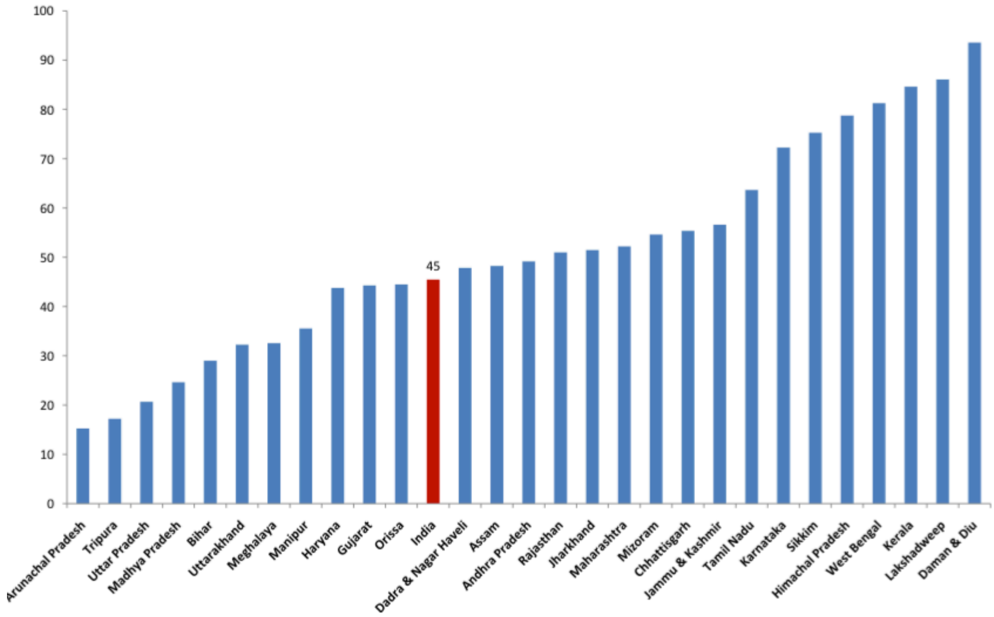


Table 7. Proportion of children aged 12-23 months who are fully immunised by state by ST status (11)

States/UTs	Scheduled Tribes	Non Scheduled Tribes
	Percentage (n=11,076)	Percentage (n=52,826)
Schedule V		
Andhra Pradesh	49.2	68.9
Chhattisgarh	55.3	62.2
Gujarat	44.3	59.1
Himachal Pradesh	78.8	82.6
Jharkhand	51.5	55.3
Madhya Pradesh	24.6	40.1
Maharashtra	52.2	73.8
Odisha	44.5	69.4
Rajasthan	50.9	48.3
Schedule VI and other northeastern states		
Arunachal Pradesh	15.2	7.05
Assam	48.2	51.4
Manipur	35.6	59.2
Meghalaya	32.5	40
Mizoram	54.6	36.4
Nagaland*	NA	NA
Tripura	17.2	54.9
Island territories		
Andaman & Nicobar islands	85.7	83.5
Dadra & Nagar Haveli	47.8	79.4
Daman & Diu	93.6	84.1
Lakshadweep	86.1	100
Other states		
Bihar	29	41.7
Goa	100	88.6
Jammu & Kashmir	56.6	63.5

Karnataka	72.3	77.2
Kerala	84.6	79.5
Sikkim	75.3	77.9
Tamil Nadu	63.6	81.9
Uttar Pradesh	20.8	30.3
Uttarakhand	32.3	63.6
West Bengal	81.3	75.1
India	45.5	55

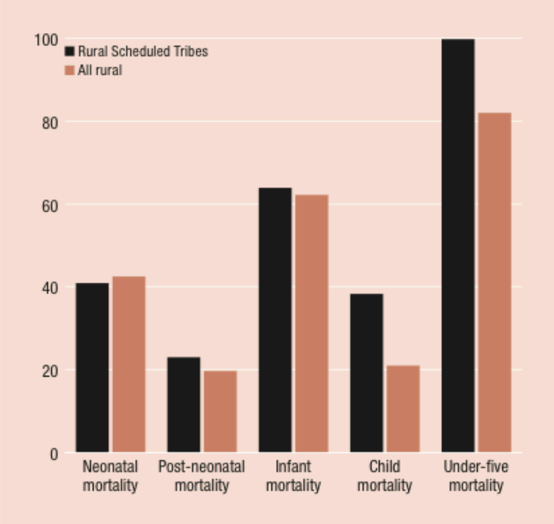
Note: Table based on youngest living child born since 01.01.2004
 # BCG, three injections of DPT, three doses of Polio (excluding Polio 0) and measles. Percentage is weighed and sample size is un-weighted.
Source: International Institute for Population Sciences (IIPS). District Level Household and facility Survey, (DLHS-3), 2007-08: Mumbai India.
*.*Note: DLHS-3 data for Nagaland not available.*

Inadequate immunisation coverage of tribal children could be related to difficulties in availability, procurement, storage, maintenance of cold chain of vaccines and accessibility of the target population, but also because of poor management, agenda-setting and prioritisation of tribal health problems within district and state administration. Coverage of Vitamin A supplementation too was poor; only 15 percent of the tribal children received Vitamin A in the 6 months in one.(10) It is imperative therefore that the routine immunisation of existing vaccines be focused on, while introduction of newer vaccines be put on the backburner in such areas. The immunisation programme takes a different route when dealing with PVTGs in Andaman & Nicobar islands as the expert committee has recommended against routine immunisation against diseases that are yet to be seen among them.(*explained later*) This reminds us again that a 'one-size fits all' approach does not work when dealing with health policies and relevant programmes for tribal communities.

Childhood under-nutrition is higher among tribal children at the national and the rural figures. 57 percent of tribal children are underweight (rural 50 percent, national 39 percent), 55 percent stunted (rural 50 percent, national 45 percent), 29 percent wasted (rural 25 percent, national 19 percent) and 78 percent anaemic (rural 71 percent, national 67 percent).(10) The causes for the poor nutritional status are related to lack of access to appropriate quantity and quality of food due to poverty, lack of livelihood security and secure land tenure for agriculture or harvesting non-timber forest products, as the case may be locally. The reasons go beyond the purview of health services delivery but a systematic coordination and convergence across various schemes and departments at the district level is crucial to achieving good healthy children. The a*nganwadi* centres established under the Integrated Child Development Services (ICDS) have a significant limitation; they do not cater to the nutritional needs of children between 6 months to 2 years of age. The tribal children of this age group are particularly vulnerable due to lack of food, income and livelihood security for their households. Nutrition is further explored in the next sub-section.

In India, the percentage of children who receive appropriate treatment for important childhood illnesses is low across the country, and worse-off in tribal areas.(24) Among tribal people, only 1 in 8 children gets appropriate treatment for acute respiratory infections and malaria and 1 in 3 for diarrhoea. Only 60 percent of ST women were aware of the importance of oral rehydration solutions in diarrhoea.(10) In addition to various other societal disadvantages, poor delivery, quality and access to appropriate primary health care for tribal children contributes to the high risk of death under five tribal children (see figure 6).

Figure 6. Infant mortality rates across rural population by ST status (24)



Source: National Family Health Survey 2005–06.

The high level committee report reveals that the mortality rates increase with age among tribal children with the underfive mortality being three times that of neonatal mortality, and is nearly double that among non-tribal children (see table 8). A study on infant deaths in Andhra Pradesh revealed an infant mortality rate in tribal areas that was ten times more than that reported for the district as a whole – a third of deaths occuring on the first day and two-thirds within the first week.(25) This reveals both the importance and urgency of close monitoring using disaggregated data that must be made available for decision-makers. Health workers, including doctors were lacking in awareness of the extent of the mortality among tribal people and were unable to identify a need for specific interventions to decrease these deaths.

Table 8. Mortality rates for ST children compared with non-ST children across Indian states (11)

States /UT's	Neonatal mortality rates		Infant mortality rates		Under five mortality rates	
	ST	Others *	ST	Others *	ST	Others *
Schedule V						
Andhra Pradesh	63.4	46.3	94.1	54	112	63.2
Chhattisgarh	67	63.3	90.6	83.1	128.5	109.3
Gujarat	53	35.9	86	47.3	115.8	55.7
Himachal Pradesh	*	24	*	28.2	*	33.1
Jharkhand	64.3	60.7	93	75.5	138.5	92.7
Madhya Pradesh	56.5	39.6	95.6	66.8	140.7	79.9
Maharashtra	32.5	34.3	51.4	40.5	69.8	47.4
Odisha	54	31.7	78.7	53.1	136.3	64.2
Rajasthan	38.4	44.7	73.2	58.1	113.8	69.9
Schedule VI and other northeastern states						
Arunachal Pradesh	34.9	28.8	67.6	48.7	100.9	78.6
Assam	43.9	48.1	59	74	83.2	100.9
Manipur	34.2	18.2	51.2	25.8	71.4	37.9
Meghalaya	23.9	*	49.3	*	74	*
Mizoram	--	--	--	--	--	--
Nagaland	20.9	17.2	45.8	33.8	65.8	53.5

Tripura	44.8	29	*	53.4	*	56.9
Other states						
Bihar	--	51.6	--	82.2	--	108.9
Goa	*	15	*	22.2	*	29.2
Jammu and Kashmir	11.2	34	34.3	44.7	*	9
Karnataka	36	29	45.8	43.5	77.9	60.4
Kerala	*	13.9	*	19.9	*	20.7
Sikkim	14.3	37.3	28.9	48.7	35.9	59.9
Tamil Nadu	*	*	*	*	*	*
Uttar Pradesh	--	38.1	--	71.4	--	87.7
Uttarakhand	*	27.3	*	43.8	*	52.2
West Bengal	*	42.9	*	56.6	*	70.4
India	**39.9**	**34.5**	**62.1**	**48.9**	**95.7**	**59.2**

*Note: * -Others exclude Scheduled Castes and Other Backward Castes*

Adolescent health: Not much is available about adolescent health in tribal communities in literature. Some communities used traditional methods like organising separate huts for girls when they mensturated. From this the transition to cloth and of late, the trend of using sanitary pads is apparent, and even facilitated by primary health centres in some areas. This transition needs to be complemented by awareness sessions for the adolescent girls regarding their use and disposal to ensure that reproductive tract infections are prevented given the absence of peer education. Most reports indicate that early marriage is common to varying extents among tribal communities. This age group is a priority group for promoting positive health messages from nutrition to reproductive health to substance abuse (*discussed later*).

NUTRITION

Key findings:

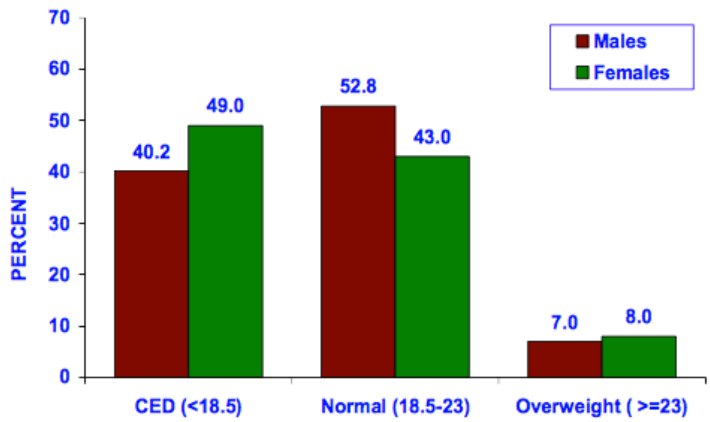
- Tribal nutritional intake varies from one region to another; sub-optimal protein, calorie and micronutrient intake is a problem in several tribal communities.
- Prevalence of under-nutrition among school children is generally poorer than non-tribal counterparts.
- Anaemia and other nutritional deficiency disorders is higher among tribal women and children contributing to adverse pregnancy outcomes and increased vulnerability of tribal children.
- Food security schemes have lesser coverage and poor quality in most tribal areas (cf. ICDS).

Nutrition is an important issue in several tribal areas. Adequate nutrition is inseparable from health, but is closely related to food availability and food security.

Tribal diets and nutrition

The nutrition problems of tribal communities is variable from one region to another and there is a lack of comprehensive information on the dietary habits and nutritional status of tribal communities, save for a few studies.(15) However, most malnutrition among tribal groups implies undernutrition; only 7 percent malnutrition among tribal women is contributed by over-weight or obesity as opposed to 38 percent for non-tribal women (see figure 7).(26) The nutritional status of pregnant women is also crucial for the infant's chances of survival and subsequent growth and development. It directly influences the reproductive performance of the women and the birth weight of their children. Nutrition also affects lactation and breast feeding which are key elements in the health of infants and young children and a contributory factor in birth spacing. Malnutrition

Figure 7. Distribution of BMI of adult men and women in tribal communities (28)



lowers the ability of newborns and infants to resist infection, leads to infections and chronic illnesses and in the post-weaning period could leads to long-standing or permanent cognitive and intellectual impairment.(15) Even among adults, severe malnutrition has persisted in several areas. Four tribal communities in Odisha namely Bondo, Didayi, Juang and Kutia Kondh showed severe malnutrition. In Odisha, chronic energy deficiency in adult women was nearly 50 percent.(27)

The National Institute of Nutrition (NIN), National Nutrition Monitoring Bureau (NNMB) and previous Planning Commissions have looked into the composition of diets of various tribal communities.(11,28) The latest available report based on data from the NNMB 2007-8 survey in several tribal areas also provides a lot of information on food and nutrient intake, blood pressure, waist and hip circumference, and knowledge and practices about Diabetes and Hypertension.[4] The NNMB data shows an across the board reduced intake of food compared to the recommended daily allowance. Cereals and millets formed the bulk of the diets in all the states. The intake of protective / income-elastic foods such as green leafy vegetables, milk and milk products, fats and oils were well below the recommended levels. The inadequacy was greater among younger age groups. Moreover, the NNMB data shows a reduction in the intake of most nutrients in tribal areas even in otherwise nutritionally better-off states such as Tamil Nadu. The trend was also similar in tribal communities in other states (Karnataka, Andhra Pradesh, Odisha and West Bengal).(11,28)

There is generally a sub-optimal protein and calorie intake among the rice-eating belts and in several south Indian tribal communities.(15,28) Among tribal children, malnutrition continues to be a problem. Stunting and underweight children are more among tribal communities; 53 percent are stunted and 29 percent are severely stunted and 55 percent are under-weight with little gender variation.(26,29) Some studies have found that the

[4] A report on the Diet and nutritional status of tribal population and prevalence of hypertension among adults was released by the National Nutrition Monitoring Bureau in 2009. It reported marginal improvements in the general nutrition status from its analysis on the time trends in diet and nutritional status. Interestingly it reported the improvement in status despite no significant improvement in dietary intakes in the last decade, attributing the improvement to non nutritional factors like sanitation, safe water, access to health services, etc.

odds of being underweight were nearly twice as high for tribal people compared to non-tribal members, independent of their household poverty status.(17) There is evidence of severe wasting and stunting emerging as early as the first 10 months of birth in a large proportion of tribal children.(29)

While proportion of underweight children has declined over the last two NFHS rounds, wasting and stunting among tribal children has shown an increase.(30) The tribal children in India are perhaps less unequal as a group when compared to SC children; tribal children within the highest quintile show 35 percent nutritional deprivation while 46 percent of SC children of the highest quintile show nutritional deprivation. This has been attributed to the relatively better-off urban tribal population when compared to the SC population. However, tribal children in general have a high degree of nutritional deprivation.(30)

The NNMB survey data however shows a marginal improvement in the weight and height of individuals of different age groups and both the genders over the last few decades, but it continued to be lower than the standards required.(11,28) The report has attributed the marginal improvement in nutritional status, despite a decline in food and nutrient intake to improvements in access to safe drinking water, relatively better access to health services and possible improvements in socio-economic conditions.(11) However, under-nutrition is a serious problem in tribal children and an overall strengthening of nutrition interventions and food security in tribal areas is an urgent need on one hand, while improving the immediate response to malnutrition through better health promotion, primary health care services and effective nutritional rehabilitation services located within communities.

Another aspect of dietary pattern that is seldom explored is the changing lifestyles of many of these communities, in particular those influenced by the forest policy like relocation outside forest reserves, banning of wildlife hunting, migration for work to unfamiliar environments. Given the intimate relationship of these communities with forests/environment also for food, the influence of alienation from their traditional habitats and its influence on their dietary patterns, with an emerging reliance on public distribution systems, theoretically will lead to significant change in their dietary patterns. Questions of nutritional differences between communities still relying on forests for their subsistence and on markets/ration systems must be thereby explored.

Nutrition related disorders

Anaemia is a major problem in women and children in India, and is more pronounced among tribal women and children.(11,14,27) As per NFHS-3, the prevalence of anaemia is significantly higher among women in ST communities than the national average (68 percent ST, 55 percent total). Anaemia is a significant problem across all age-groups, and based on the many studies in tribal communities, the most common type appears to be nutritional anaemia. In many surveys, nearly all of the tribal women examined were anaemic; other studies in Odisha, Rajasthan and elsewhere report very high anaemia prevalences in several tribal communities.(11,14,31) Anaemia not only diminishes the capacity for physical activity, but also increases susceptibility to infections, and is a risk factor for complications during pregnancy and childbirth. 76.8 percent of tribal children are anaemic – 26.3 percent mild, 47.2 percent moderate and 3.3 percent severe.(11) While diet and nutritional intake play a major role in iron deficiency, prevalence of long-term hookworm infestation also contributes substantially to the anaemia.(27) Maternal malnutrition is a serious health problem among the tribal women especially for those who have closely spaced multiple pregnancies. With the prevalence of haemoglobinopathies in these communities to varying extent (*explained later)* along with the nutritional anaemia*,* a mixed picture of anaemia is seen making it a challenge to overcome. However there is no comprehensive work exploring and managing the profile of anaemias in tribal areas despite known prevalence of haemoglobinopathies, and a relatively higher prevalence of anaemia.

Surveys on the nutritional deficiencies among the tribals show a high incidence of goitre among several tribal communities (Baigas and Bharias of Madhya Pradesh for example), angular stomatitis among the Mompas of Assam and Vitamin A deficiency among the Onges.(15) There are several micronutrient deficiencies in tribal children. Tribal diets are poor sources of Vitamin A and further only one tribal child in every five receives vitamin A supplements.(26) Diets in tribal communities is deficient in calcium, iron, vitamins (A, C, B1) and proteins, thus affecting the mother and the child.(11,14)

Food security and related government schemes in tribal areas

In many tribal areas, the implementation of social welfare and other schemes is lagging. In view of relatively smaller numbers and fragmentation across various districts, tribal people seldom constitute a significant political group that can push their priorities within district administration. Their issues do not emerge into the national or sub-national media discourse until they are of very serious nature. For instance, it takes starvation deaths, malnutrition deaths and extreme violence for tribal health and nutrition issues to attain the importance for discussion in print and electronic media or in district or state administration.(29) For instance as a consequence of higher degree of protection given to the forests where the Chenchu people live, the confrontations with the forest department, poor implementation of the ration card schemes and the resulting poor realisation of various entitlements are somewhat typical of the situation of several forest dwelling tribal communities in the country.(32) The inimical effects on tribal health due to lobbying against their presence inside forests by relatively more powerful and better organised conservation groups has been acknowledged as being a part of the problem.(11) The restrictions imposed on access to roads and transport facilities due to the rules governing conservation of protected areas are sometimes adversely affecting tribal health through limiting access to anganwadis, primary health centres and other services.

The lack of secure livelihoods and reliance on collection of non-timber forest produce or daily wages in nearby villages further adds to the problem of food security. Child deaths usually cluster around periods of seasonal stress like drought when household food supplies are low and employment dries up, or during the monsoon when remote communities are rendered incommunicado.(29) Public interest litigations have been filed on behalf of families that lost their children, and state governments have been repeatedly directed by the courts to take remedial action.(29) Governments have undoubtedly become more vigilant on this issue than they were before, but serious problems in service delivery continue to exist and instances of starvation and malnutrition deaths may continue to come unless the core issue of food and livelihood security in tribal areas is solved.

In the interim, the lack of adequately staffed and resourced nutrition rehabilitation centres to identify and treat malnourished children is also a big challenge; very few tribal areas have *functional* nutritional rehabilitation centres that are able to respond effectively to the severe malnutrition in tribal children. The a*nganwadi* centres under ICDS do not cater effectively to the crucial age-group, 6 months to 2 years; an assessment of their performance showed that only for 13 percent of children received services in compliance with three recommendations of the Infant and Young Child Feeding Practice recommended by WHO.(10)

Anganwadi centres (AWC) are crucial to mitigating the effects of food shortage and calorie gap in tribal areas. Among tribal children, only 50 per cent children are registered in AWCs and 38 per cent of them are weighed regularly for monitoring their nutritional status. Only 48 per cent of mothers whose children are weighed receive some form of nutrition related counselling. Thus the benefit of growth monitoring goes only to a very small fraction of tribal children. In a study in five states, the overall hygiene and level of functionality of the AWCs visited and the health status of the children was very poor.(10) In some states there were no buildings for the centre and the worker managed by cooking in her home. None of the AWCs that they visited had a toilet. The quality of the food grains that were stocked was poor. Many of the centres had no weighing scale. In conflict-prone areas such as Jharkhand, the study authors' report that they were told that one-third of the budget is siphoned away under duress.

Anganwadi workers (AWW) face various barriers to their work: they are overburdened with documentation, people not having faith in AWC services, poor infrastructure, irregular supply of provisions and difficulty in transporting the provision to the AWC. The long-standing problem of retaining the AWW as a part-time honorary worker has led to a lot of frustration among them, and is a hindrance to their full involvement with the program. Their honorarium is poor and its disbursements are irregular and erratic.(10) Moreover, the AWC role of a pre-school is reduced to being an inadequately resourced supplementary nutrition centre; the component of pre-school education for tribal children is absent.

Revival of utilisation of locally available resources from forest areas is another key strategy to help improve nutrition of these communities. Using traditional knowledge and focused studies on nutritional content on locally available green leafy vegetables, fruits and other vegetables, is recommended to bridge the gaps in access to markets and nutritious diet. This strategy will also help overcome various nutrition related disorders apart from under nutrition rather than reliance on iron tablets and biscuits. Some tribal communities like in the northeast rely on local pig rearing to overcome the protein gaps in their diet.

COMMUNICABLE DISEASES

Key findings:

- Incidence of infectious diseases such as malaria are more frequent and have higher morbidity and mortality in most tribal areas.
- Malaria takes a higher toll in tribal areas than elsewhere; access to awareness material, preventive measures and appropriate treatment is lacking in most tribal areas.
- Prevalence of HIV/AIDS is comparatively higher in the northeast Indian tribal areas.
- Disease surveillance and epidemiological data on infectious diseases are lacking.

Good quality epidemiological data on the national prevalence and incidence of various diseases among ST population is almost non-existent.(11) The Indian Council of Medical Research (ICMR), through its various national institutes and centres, collects data on some diseases in certain states and among some tribes. Along with these data, qualitative impressions of the stakeholders, experts and the doctors/NGOs working in tribal areas are some of the other sources utilized to make conclusions by ICMR and the various government task forces and committees.(11) Among the communicable diseases of importance in tribal areas are many of the well-known global diseases also identified as being *infectious diseases of poverty* and the so-called neglected tropical diseases because of their close association with poverty and other social determinants of health and neglect in terms of disease control strategies and drug development. The major ones in tribal areas include malaria, filaria, tuberculosis, leprosy, skin infections, sexually transmitted diseases, HIV/AIDS, typhoid, cholera, diarrhoeal diseases, hepatitis, and viral fevers.

Malaria and other vector borne diseases

Malaria is a particular problem among tribal people taking a toll on several young people. It is an important cause of preventable deaths among tribal people, especially because of its strong association with thick and inaccessible forest areas, where many tribal people live. The analysis carried out on district level malaria incidence shows that districts with 30 percent or more tribal population (comprising about 8 percent country's population) contribute to 46 percent of total malaria cases and 47 percent malaria deaths in the country.(33) Distribution of the incidence of malaria across the country is shown in figure 8.

Figure 8. Distribution of malaria incidence in 2004 (39)

There is some evidence to show that the prevalence of malaria may be *increasing* in some areas in central and northeast India. In Madhya Pradesh, nearly half of the malaria incidence is among tribal people, while over 60 percent of the *P. falciparum* incidence is among tribal people. In Chhattisgarh, over 90 percent of malaria occurs in tribal people. A similar high trend of *P. falciparum* incidence is seen in northeast India as well. The particular links between local temperature and rainfall variation and malaria burden in and around forest areas makes tribal people particularly vulnerable to the micro-effects of global climate change. Malaria has also been shown to hinder achievements in providing healthcare services by affecting frontline health, education and conservation workers and thus hindering all development outcomes (see box 6).(34,35)

Box 6: Malaria and deforestation

In several areas of Northeast India, large-scale deforestation may be driving increased incidence of malaria and other vector-bourne disease. For example, in Sonitpur district of Assam, "the spatial distribution of different forest types from 1994 to 2001 shows that forest cover is undergoing massive reduction with time. The district may be devoid of its forest cover in another 10 to 15 years if such a high rate of deforestation goes unchecked. This will of course lead to immense biodiversity loss." In spite of a ban by the Supreme Court of India on all clear-felling in the northeastern region from 1996 onwards, with a view to protect the remnant forests, illegal felling like the one in Sonitpur, still continues, as shown by satellite imagery studies from the last 2 decades.(36) In the backdrop of such deforestation in Sonitpur, Assam a more recent analysis using remote sensing to assess deforested areas in the district and to study the impact on malaria vectors shows rising prevalence of vectors for malaria in the deforested regions.(37) Very little monitoring of the widespread ecological changes and their environmental and health implications is being done.

In many tribal areas in Central and northeast India where malaria is most severe, the *P. falciparum* proportion is 30–90 percent; in the rest of the country, it is between 10 percent and 30 percent. Most of the severe malaria and malaria-related deaths occur in Odisha. Here it is important to remember that it is falciparum malaria that leads to severe complications like cerebral malaria, leading to deaths especially in childhood. Although Odisha has only 3.5 percent of Indian population, it contributes to nearly one-fourth of the total of 1.5–2 million reported annual malaria cases according to the national programme figures.(38)

Similarly, in the other states with large areas under forests, malaria continues to be hyper-endemic with a high proportion of *P. falciparum* to the extent of 90 percent or even more. This is the case in most of the remote tribal areas in northeast India bordering Bangladesh and Myanmar.(39) The higher incidence of malaria is clearly in most of the forest areas with high tribal populations. The recent reports of increasing multi-drug resistance in pockets in the thickly forested areas in Myanmar across the northeast Indian border areas, puts several tribal communities at risk.

Sunderajan and others have identified barriers to malaria control in tribal areas based on an analysis of primary qualitative data. They have categorised these barriers into six broad categories 1) tribal knowledge about malaria, 2) reliance on traditional healers and informal providers for management of fevers, 3) surveillance, diagnosis, and treatment of malaria, 4) adherence to anti-malarial medications, 5) and malaria prevention with insecticide treated nets and residual spraying. They identified cultural, social and geographic factors that create barriers to malaria control among tribal communities in Gadchiroli district of Maharashtra (see table 9). Such context-specific studies that address local barriers to achieving malaria control are few and are helpful in designing locally relevant malaria control programmes. However, such studies also require a responsive district health team that is able to incorporate such practitioner-relevant research evidence into their programme implementation. Their study shows that culturally appropriate delivery of health information could improve people's understanding about malaria as well as the understanding among traditional healers and informal providers of care.(40)

Table 9. Barriers to malaria control with contributing socio-cultural factors (40)

Barriers	Socio-cultural Factors	Economic Factors	Geographical Factors
1. Tribal knowledge about malaria is poor.	1. Culturally inappropriate health education material. 2. CHWs do not understand or speak tribal language.	1. Lack of access to education due to poverty predisposes to poor knowledge about malaria.	1. Residence in remote locations prevents access to schools. 2. CHWs may not be able to reach villages on a regular basis and provide health education.
2. Heavy reliance on traditional healers and informal providers for evaluation of fevers.	1. Belief in spiritual cause of physical symptoms. 2. Prior experience of rapid symptomatic relief with treatments from informal providers. 3. Prior experience of physicians not being present at the PHCs.	1. Lack of mechanized transport due to poverty creates difficulties in accessing the PHCs or other formal providers.	1. Difficulty accessing the PHCs due to remote area of residence.
3. Surveillance and diagnosis of malaria is inadequate.	1. Delays in malaria diagnosis due to treatments from traditional healers first. 2. Vacant posts of NVBDCP officials due to insurgency factors in the disctrict.	1. Preferring locally available treatments to save costs of travel and lost wages.	1. Health workers cannot make timely visits for surveillance especially during rainy seasons. 2. Delays in the diagnosis of malaria due to longer time needed to transport slides to a laboratory and get the results. 3. Stock-outs or other supply chain difficulties create medication shortages in rural areas.
4. Adherence to antimalarial medications is poor.	1. Practice of stopping anti-malarials as soon as there is symptomatic relief. 2. Counseling by traditional healers not to take anti-malarials. 3. Oral medications are perceived as ineffective.	1. Lack of education due to poverty predisposes to illiteracy, poor knowledge about malaria and poor adherence to medications.	

5. Malaria prevention with ITNs and IRS is inadequate.	1. ITN use affected by cutural practices e.g. only males using ITNs due to their higher social status. 2. Use of ITNs for other purposed such as fishing. 3. Reluctance to IRS due to concern for contamination of belongings. 4. Not allowing IRS in rooms where household alters or deities are located.	1. Poor purchasing capacity due to poverty decreases use of ITNs.	1. Need to travel longer to purchase ITNs as they are not easily available in local markets.

The lack of effective surveillance and reporting systems means that we will miss the early opportunities to respond early on. This also indicates that a rigorous referral mechanism is needed for malaria-related complications as primary level of health services will not suffice. Need for surveillance for not only case detection and treatment but also inter-state coordinated interventions, targeting high risk foci of transmission and additional research into parasite resilience, drug resistance and large community scale interventions is imperative for malaria control in such difficult terrains.(41)

The other vector-borne diseases include dengue, chikungunya, lymphatic filariasis (mainly Andhra Pradesh), kala-azar (restricted mainly to Bihar, Jharkhand and West Bengal), japanese encephalitis (Assam, Uttar Pradesh, West Bengal, Jharkhand, Bihar and Tamil Nadu) and scrub typhus. Among these dengue is widely prevalent in several tribal areas in Madhya Pradesh, Chhattisgarh and Odisha. Some recent outbreaks of dengue have had infection rates as high as 46 percent while in Odisha, 20 districts are endemic for filariasis.(31)

A comprehensive monitoring of outbreaks and rapid response system is still lacking, although all of these diseases are tracked under the Integrated Disease Surveillance Project as well as the National Vector-borne diseases control programme. Some of these deficiencies are because of poorly resourced district response teams and laboratories. In addition to this while formulating strategies for malaria control, biological and environmental methods of control must be preferred, studied and encouraged in comparison to use of chemical insecticides as possible.

Tuberculosis, HIV/AIDS and reproductive tract & sexually transmitted infections

Most states do not make available disaggregate data for the prevalence of tuberculosis among their tribal population. The percentage of tribal people aware of the Directly Observed Treatment Short course (DOTS) treatment for tuberculosis is 60 percent. The Revised National Tuberculosis Control Programme maintains data on several programme indicators for tuberculosis in tribal districts across the country. Although the targets are mostly met, field visits conducted in one study found several barriers to achieving these indicators in tribal areas. A thorough re-look at the Tuberculosis programme coverage data for tribal areas may be needed.(10) In a few tribal groups like the *Saharia* tribe, a PVTG of Madhya Pradesh, significantly high prevalence of tuberculosis is reported with possible risk factors of smoking and high alcohol intake.(42) Hence there is a need for more focused studies on these tribal communities along with focused interventions under the larger national programme.

The overall prevalence of Human Immune deficiency Virus (HIV) infection among tribal people is not available. Although most tribal communities have probably relatively lesser proportion of HIV infection because of their relative geographical isolation, this is not generalizable to all tribal people. For example, Manipur and Nagaland are grappling with an epidemic of HIV infection in view of a different context in these areas (see box 7). That said the prevalence of HIV infection might not be comparable with other sexually transmitted infections. Disaggregated data on RTI/STI prevalence among tribal people is lacking.

Box 7: HIV/AIDS issues in northeast India (43)

The last decade has seen an increase by 16 percent of annual new HIV infections as per recent NACO estimates. The maximum number of cases reported and registered for HIV care are in Manipur and Nagaland. The states' figures from 2010-11 report a relatively different picture of high risk groups for the disease in these two states (>10 percent prevalence among MSM and IDU with <5 percent in FSW) defining a localised targeted approach for NACP in these states. The proportion of those ever started on anti-retroviral therapy varies from 42.2 percent in Arunachal Pradesh to 89.8 percent in Manipur.

The existing package of services provided for HIV/AIDS under NACP rightly involves long term compliance and followup of patients. This poses a challenge in these states given social issues related to drug abuse, sex work and migrating groups. In the background of poor access to health services in general, late detection, loss to follow up and non-compliance to treatment are the other issues with provision of anti-retroviral treatment.

Awareness indicators for the ST show that only 8 percent of women and 20 percent of men have comprehensive knowledge about HIV. Specific measures to address this problem have not been implemented at the state level except in Maharashtra and Karnataka. Though HIV screening in pregnant women is recommended in the country there are no facilities for screening in all secondary care facilities in most of the states with high ST population.(10) Integrated Counselling and Treatment Centre (ICTC) facilities are not easily available in the PHCs or FRUs and people need to go the District hospitals for these services. Incidental reports in newspaper articles reveal that there are certain areas apart from the northeast where the tribal communities are struggling with HIV but the challenges appear to be due to their issues with accessing health services.

In contrast to TB programme, disaggregate data for most other neglected infectious diseases that are relatively higher among tribal people are unavailable through routine data.

NON-COMMUNICABLE DISEASES INCLUDING MENTAL HEALTH

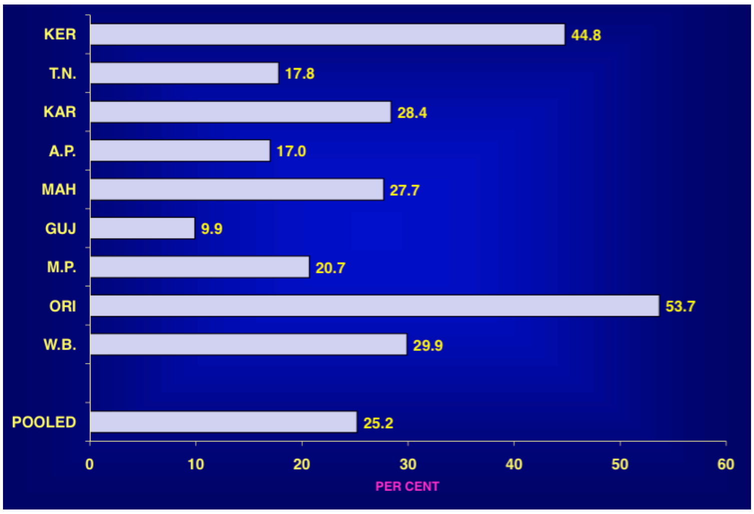
Key findings:

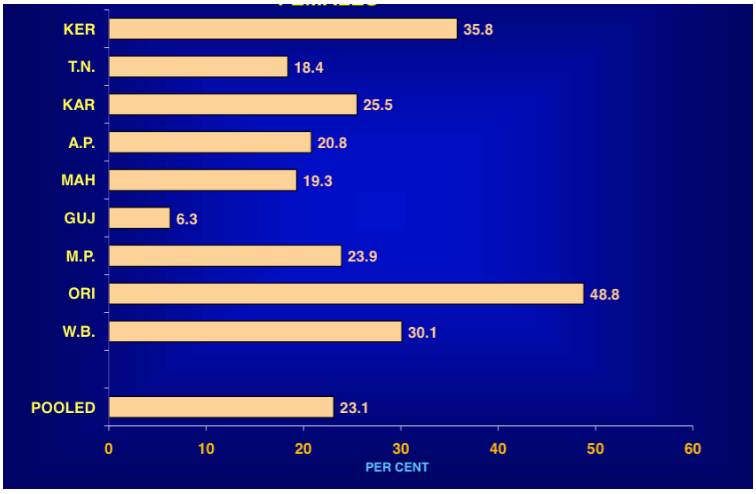
- Focus on infectious diseases control in tribal areas has not been accompanied by a systematic approach to non-communicable diseases in tribal areas; very few organisations work on NCDs care.
- Certain tribal communities are reported to have significantly high prevalence of NCDs (such as hypertension among tribes of Assam working in tea-gardens); the epidemiology features of these conditions among tribal communities appears to be different from other areas.
- Mental health illnesses and substance abuse are poorly studied in these communities; the latter is emerging to be a serious social concern in many tribal communities across the country.

Increasing reports by several NGOs, civil society organisations and research studies undertaken by the Regional Medical Research Centre for tribals (an Indian Council of Medical Research centre) indicate a high prevalence of various lifestyle-induced and non-communicable diseases among tribal communities as well. Various historical studies have suggested a lesser prevalence of these conditions among tribal people, possibly due the general perception that forest-dwelling tribal people have better access to healthy food, lead stress-free lives and are less prone to occupational health and environmental health conditions. However, these are not universally true. Several tribal areas today are in the midst of areas facing drought, deforestation, mining, large dams and infrastructure-building projects and also face income poverty, malnutrition, food insecurity and migration in search of jobs. Although the type of non-communicable diseases and mental health problems may vary in their presentation and type, there is little reason to expect a substantial difference in their prevalence in tribal communities. For example, hospital run by *Jan Swasthya Sahyog* reported a few years ago similar numbers of cancers, hypertension and Diabetes, as for Tuberculosis.(44) Even globally, the increased prevalence of diabetes among tribal people has been highlighted by the United Nations forum for indigenous peoples (UN forum for IP). However, there is very little research or secondary data on NCDs and mental health problems in India and much less on these conditions in tribal areas apart from occasional cross-sectional surveys conducted in tribal areas and primary research by the RMRCT, Jabalpur.

Elevated levels of blood pressure have been recognized as a public health problem among tribal people (see figure 11).(31) Surveys have reported higher proportions of hypertension among the urban area exposed and migratory tribal communities than the more remote and non-migratory tribal communities. In some of the ST communities in Madhya Pradesh, the prevalence of hypertension was similar to the prevalence in non-ST population. In some communities, such as the tea-garden tribes of Assam, the prevalence of hypertension is significantly high, with one study reporting 60 percent prevalence in adults about thirty years of age attributed to risk factors of high intake of salt, alcohol intake and tobacco chewing.(45)

Figure 9. Prevalence of hypertension among tribal people in some states (percent) a) Among tribal men b) Among tribal women (16)





Some of the NCDs are related to the relatively high use of alcohol and tobacco (both inhaled as well as other forms) among tribal men and women. High prevalence of alcohol intake and tobacco use is reported among several tribal communities.(46) Over half of those surveyed reported unhealthy diets with inadequate consumption of fruits and/or vegetables. One in four adults in this survey had hypertension with the blood pressure being in control in less than 3 percent. Alcohol-related liver damage leading eventually to cirrhosis, oropharyngeal or lung cancers, chronic respiratory diseases complicate the already poor levels of nutrition among tribal communities. Incidence of cancers of the lung, stomach, nasopharynx and oesophagus were relatively high among tribal communities in northeast India (see table 10).

Table 10. Prevalence of some types of cancer in some northeastern states (31)

Site of Cancer	Manipur AAR/100000		Mizoram AAR/100000		Nagaland AAR/100000		Assam AAR/100000	
	M	F	M	F	M	F	M	F
Lung	14.1	11.9	28.3	28.7			14.8	
Stomach	6.5		47.6	22.7				
Nasopharynx	4.5		6.8		19.4			
Oesophagus	6.7		26.0				32.5	18.0
Breast		9.1						
Cervix		8.2		17.1				

Mental health problems, including substance abuse among tribal communities are an important issue. On one hand, there is the challenge of providing trained mental health workers in remote areas. On the other hand, the socio-cultural and political factors behind the particular manifestations of mental health problems in tribal people are closely related to the social determinants of their health. The United Nations Forum for Indigenous people identifies possible links between various mental health problems such as depression, suicide and substance abuse among indigenous people with "the historical colonization and dispossession of indigenous peoples, which has resulted in the fragmentation of indigenous social, cultural, economic and political institutions." In India, tribal communities living in conflict zones (as in most schedule V areas), tribal communities in famine/drought-prone areas, forest-dwelling tribal communities and others are exposed to a variety of extraordinary life stresses (large-scale migrations and dislocation, poverty) that necessitates access to primary health care level mental health services including counseling, identification and treatment of mental health problems and rehabilitation service. All of these are a challenge even in urban areas due to the lack of trained mental health care workers (including, but not limited to psychiatrists, but also psychologists, occupational therapists, nurses trained in mental health etc.). In remote regions where tribal communities live, this is a far greater challenge. Very few tribal communities in India have access to any formal mental health care service today.

At the biomedical level, mental health problems of tribal people are not well understood. Epidemiological studies on tribal mental health problems including estimates of disease burden are not available. Also, the diagnosis and treatment of mental health disorders is a challenge given the socio-cultural barriers that influence mental health diagnoses. From the first author's experience, the stigma of mental illness appears to be significantly lower in tribal communities when compared to non-tribal communities thereby offering better social support for the ill. Cross-cultural psychiatry is a larger problem wherein there is a need to evolve locally valid diagnostic categories so that the mental health care provided is also locally relevant. Several international studies on the interrelationships between culture and depression conclude that a better understanding of the phenomenology of depression must not only encompass symptoms but take into consideration the social contexts and cultural forces that shape one's everyday world, that give meaning to interpersonal relationships and life events.(47) However, this kind of research work that explores the particular social and cultural contexts of Indian tribal communities and their implications for the particular manifestations of mental health problems such as depression in Indian tribal communities is lacking. For instance, advances in cultural psychiatry have improved our understanding of how depression is likely to be more somatic in its manifestation rather than psychological, "the implication being that diagnostic categories are, to a great extent, culturally constructed and their symptom profiles are not universal".(47)

Substance abuse and its manifestations in Indian tribal people are also very poorly studied. Very few tribal area specific programmes exist, save for the opium de-addiction programmes in the northeast. In some communities, tobacco and cannabis use is part of the cultural practices and present a challenge for engaging with these communities on substance abuse related issues (see table 12). Alcohol dependence is rampant in many tribal communities (see table 11). This is further complicated by the particular micro-economic situation in which tribal communities live. Annual income is often obtained episodically once or twice a year in several tribal communities that depend on harvesting and sale of non-timber forest produce. Poor access to banking and other savings instruments further adds to the problem. In many such communities, a large proportion of the income is often spent on alcohol. Cannabis use is also noted among some tribal communities as a part of their social-cultural practices, thereby few cases of cannabis abuse are also documented. Prevalence and impact of cannabis use on their socio-economic situation is yet to be determined but its ill effects and abuse potential appear to be relatively lower than alcohol.

Table 11. Prevalence of alcohol consumption among tribal and non-tribal men aged 15-54years (percent) (11)

States/UTs	Scheduled Tribes	Non Scheduled Tribes
Schedule V		
Andhra Pradesh	65.9	46.2
Chhattisgarh	66.8	46.6
Gujarat	31.3	14.1
Himachal Pradesh	30	31.1

Jharkhand	66.9	29.3
Madhya Pradesh	48.6	26.7
Maharashtra	30.1	23.7
Odisha	69.1	29.7
Rajasthan	30.6	17.7
Schedule VI and other northeastern states		
Arunachal Pradesh	66	55.6
Assam	70.1	34.5
Manipur	47.2	47.8
Meghalaya	51.6	41
Mizoram	41	50
Nagaland	42.9	25.8
Tripura	61.9	36.1
Other states		
Bihar	56.5	34.5
Goa	44.4	40.7
Jammu & Kashmir	3.2	13.4
Karnataka	35.8	28.5
Kerala	53.1	44.8
Sikkim	50	43.3
Tamil Nadu	53.6	41.3
Uttar Pradesh	36.2	25.3
Uttarakhand	46.7	39.8
West Bengal	69.7	31.6
India	50.5	30.4

** Cannot be estimated due to limited no. of cases.*
Source: International Institute for Population Sciences (IIPS). National Family Health Survey, (NFHS-3), 2005-06: India

Chronic tobacco use in the form of chewing or smoking is also known to be associated with peripheral arterial disease like Buerger's disease and certain forms of cancer. In some communities like the *Soligas,* the former has been documented while the latter is seen in the northeastern tribes. However the relative incidence of these conditions need to be studied further given their chronic tobacco use in these communities from teenage itself. The national tobacco control programme needs to also reflect on targeting such practices, and to strive to provide oral health services at the primary health centre level.

Table 12. Prevalence of tobacco consumption among tribal and non-tribal men aged 15-49years (per cent)(11)

States/UTs	Scheduled Tribes	Non Scheduled Tribes
Schedule V		
Andhra Pradesh	63.4	42.6
Chhattisgarh	76.3	65.8
Gujarat	64.6	59.5
Himachal Pradesh	28.6	41.5
Jharkhand	74	58.1
Madhya Pradesh	74.1	67.7
Maharashtra	63.4	47.5
Odisha	80.4	65.7
Rajasthan	75.2	59.4

Schedule VI and other northeastern states		
Arunachal Pradesh	55.5	73.1
Assam	75.6	72.4
Manipur	74.7	68.3
Meghalaya	70.2	69.6
Mizoram	83.8	78.3
Nagaland	67.5	67.2
Tripura	79.2	77
Other states		
Bihar	84.2	67.7
Goa	34.1	27.1
Jammu & Kashmir	46.6	53.7
Karnataka	55.3	44.5
Kerala	73.7	43.4
Sikkim	55.5	66.4
Tamil Nadu	61.8	40.8
Uttar Pradesh	83.2	64.8
Uttarakhand	80.9	53.7
West Bengal	87.8	70.1
India	71.7	56.3

** Cannot be estimated due to limited no. of cases.*
Source: International Institute for Population Sciences (IIPS). National Family Health Survey, (NFHS-3), 2005-06: India.

ENVIRONMENTAL AND GENETIC DISEASES

Key findings:

- Environmental health is a neglected area in general but in these communities, it is a key social determinant of health.
- Tribal areas are undergoing rapid transition due to pressures of mining, resource extraction and often adverse impacts of other policies (cf. Forest conservation laws); tribal health systems are not prepared to deal with health problems arising out of such transitions.
- Relatively rare hereditary and genetic diseases are prevalent in higher proportions among tribal communities (cf. Haemoglobinopathies); health services in tribal areas lack specific programmes and guidelines to organise care and referral for these conditions.

Environmental and occupational health

Apart from the non-communicable diseases, various other health problems such as animal bites and injuries are specific to tribal areas. For example, snake, scorpion and insect bites are much more prevalent in tribal areas, but little has been done in terms of ensuring timely and widespread availability of anti-venom serum. Health workers posted in these areas are also not specifically trained in identification and treatment protocols that are well adapted for local implementation. In fact, very few locally adapted protocols (both in terms of language and relevance in local setting) are available among health workers in tribal areas.

Tribal communities bear the brunt of wildlife protection and conservation laws; their living in and around forest areas predisposes them to man-animal conflict (elephant raids, tiger/leopard encounters, bear mauling etc.).

While there is a larger issue on pursuing conflict mitigation strategies ranging from barriers between tribal settlements and forests, early warning systems and compensation for wage or crop loss, the more direct problem of dealing with first-aid and referral for poly-trauma in cases of animal-inflicted injuries needs to be dealt with. Referral to hospitals with trauma care facilities, blood storage units, intensive care and life support facilities are lacking within a reasonable distance from many tribal areas. A comprehensive mapping of distance and time taken to reach such facilities from tribal areas reporting such injuries is needed. Such a comprehensive effort is also needed to respond to incidents of violence and armed conflict in some tribal areas. The situation for instance of pesticide poisoning and burns is similar to those of animal injuries; burns wards and emergency medical care at large hospitals in tribal areas needs to be strengthened.

The weakening of environmental and land alienation laws over time affects tribal health much more than others. Many tribal areas are located in environmentally sensitive areas with rich natural resources and forests. While the forests and forest protection laws often disadvantage tribal people in terms of access to services, the rich natural resources on the other hand make them vulnerable to rapid land conversion and industrialisation leading to sudden alienation from their customs, traditions, food and agricultural practices. Large-scale mining and the related deforestation pre-disposes many tribal communities to various environmental health hazards including pollution of soil, air and water (see box 8). Shifting agricultural practices from traditional methods to adopting modern agricultural methods including use of insecticides must be carefully studied and monitored to limit its possible impact on their health. In schedule five areas of late, there has been much discussion about the industrialisation of these areas particularly mining and its influence on the livelihood, at times even displacement of tribal households, witnessing many protests from communities and civil society. While few civil society reports have attempted looking at the influence of these factors on the health of these communities, they are often limited to short term or immediate consequences only. There is an urgent need for a comprehensive and systematic effort to monitor, document and address both short and long term impacts on the health of the local communities, majority of whom are tribal people.

Box 8: Edited extract from 'Equitable sharing of benefits arising from coal mining and power generation of among resource rich states' (48)

Certain statements related to health of tribal people affected by mining and power plants are shared below.

Social externalities

Displacement - Displacement is a very serious issue both for coal mining and thermal power plants (TPPs). Between 1950 and 2000, according to conservative estimates, the coal mining sector is reported to have displaced between two and two and a half million people. As per the MoC (2005), a minimum of 1, 70, 000 families involving over 8, 50, 000 people are likely to be affected by future coal projects. Discussions with different experts and state officials highlighted the fact that managing displacement is one of the biggest challenges in the case of coal mining. The displaced people not only lose their natural livelihood options and safety nets, but they also suffer from significant health diseases due to air and water pollution.

Health impacts - Health impacts seem to be high and rising. During stakeholder consultations in Odisha and Jharkhand, adverse health impacts on the people living in the vicinity of mines were pointed out as a serious cause of concern. Studies do agree that there are many adverse health impacts of mining. However, there is insufficient empirical evidence of the number of people who have worked in coal mines and are affected by coal dust, and even less of those impacted who live in the neighbourhood or in transportation corridors. Thermal power plants are associated with adverse health impacts including pre-mature deaths from lung cancer, respiratory illnesses, and heart diseases. The increased emissions of particulate matter and other pollutants have led to increased health problems. A study by Cropper et al (2012) estimated pre-mature deaths per tonne of particulate matter, SO_2 and NO_x for 89 thermal power plants in India for the year 2008. Their estimates suggest that

SO2 causes an average of 500 deaths per plant, NOx roughly 120 and PM2.5 around 30.

Fund utliisation - A special concern in all coal mining areas which is often not sufficiently addressed is the health of communities (other than coal mine workers) living in the region. While clearly improved oversight and enforcement of environmental laws and rules is necessary, there should be mechanisms in place to ensure that mining communities have access to medical insurance and well-functioning facilities for treatment in case they are affected. Companies and the state government can jointly support the medical care.

Recommendation 7: Improving health in coal mining regions

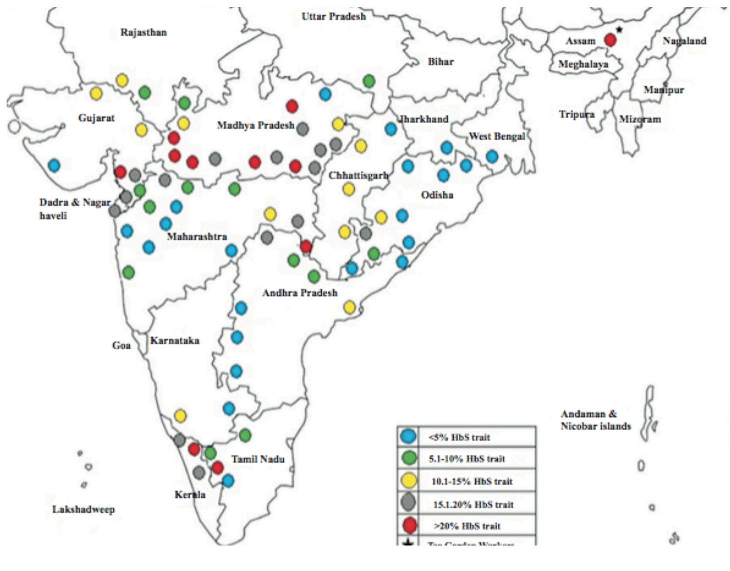
- Improve surveillance and monitoring of diseases and disorders in the mining regions in the states
- Get coal mining and power industry to partner with Panchayats and primary health centres to provide both diagnostics and treatments that are industry linked
- Reduce air pollution in road and freight corridors. Greater control of sulphur dioxide as a pollutant is required.
- More careful assessment of health risks of arsenic and radioactivity in fly ash is required to ensure more informed decisions on fly ash utilization.
- Set up hospitals with speciality facilities on coal related diseases and mechanisms in place to ensure that local communities have access to medical insurance and well- functioning facilities for treatment in case of ill health due to degraded environment

Due to lack of long-term environmental monitoring and poor understanding of the provisions of environmental laws among tribal communities, hence unforeseen and unknown effects of people, often requiring research and documentation by independent civil society. The recent calls globally for pursuing health in all policies is urgent for tribal areas as a variety of policies related to land, environment, health, agriculture, industry, labour and social welfare have implications for tribal health.(49)

Genetic diseases and other rare health issues

Tribal people are prone to few rare health problems, many of them being genetic and hereditary in origin. Some of them like sickle cell anaemia, thalassemia and G6PD deficiency add to the already prevailing nutritional and hookworm infestation related anaemia among them. The incidence of sickle cell mutation among tribal people

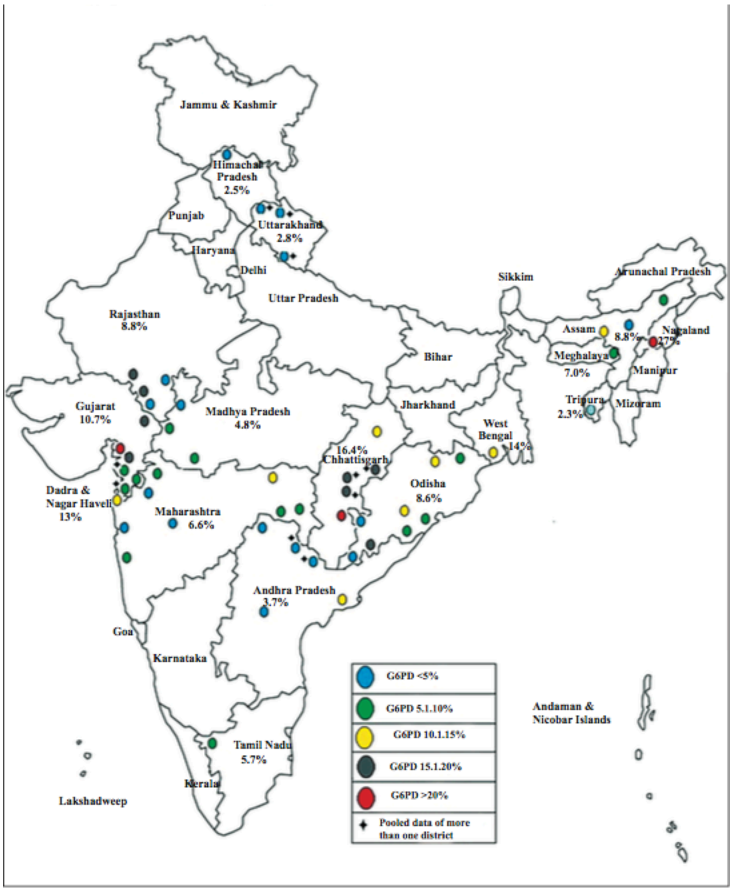
Figure 10. Distribution of sickle cell gene in tribal communities in India (50)



varies from one tribe to another from 1-40 per cent with the highest proportion based on screening in Madhya Pradesh (see figure 11).(50) Beta-thalassemia is also identified in some tribal populations with prevalence as high as 6 to 14 per cent. Other haemoglobinopathies like HbE has been reported at relatively high frequency among northeastern states and high frequency of HbE variant is reported among certain tribes from the area like the *Rabhas* (Assam and West Bengal).(51)

Many of the epidemiological studies done on reporting haemoglobinopathies across the country vary widely in their study area, targeted tribal community, study designs and even methodology, making it difficult to provide accurate numbers in terms of prevalence of these conditions among different tribal communities. A wide variability is noted in the reported prevalence of these conditions across tribal communities in India as seen in figures presented.

Figure 11. Distribution of G6PD deficiency among tribal communities in India (54)



A common reported theory is that these haemoglobinopathies are selected in areas due to malarial endemicity in certain regions. However our understanding of the implications of these conditions on prevalence and/or treatment of common conditions is still inadequate.(27,50,52–54) For example, a high incidence of a particular variant of G6PD deficiency (see figure 12) in Odisha requires caution in the prescription and use of anti-malarial drugs like primaquine and many other compounds such as sulphonamides and acetyl salicylic acid (aspirin), which may have harmful or even fatal consequences for individuals carrying the mutation. (55)

Box 9: Sickle cell disease and experience in few states

In Ashwini hospital, in Gudalur, Tamil Nadu, sickle cell screening and comprehensive management programme is in place at their hospital for local tribal communities. They have developed a sickle cell control programme and have implemented it for more than a decade with a combination of clinical and community based strategies.

Vivekananda Girijana Kalyana Kendra, an NGO hospital in southern Karnataka, has been providing health services to the soliga community for more than three decades now. Hospital records report that of 1099 patients screened between 1995-2005, prevalence of heterozygous AS genotype was 23.6 percent while homozygous SS genotype was 1.9 percent with slight female predominance (Varekar SS et al 2013). The hospital has been providing screening and diagnosis using haemoglobin electrophoresis, health awareness about the condition, folic acid therapy, and referral and management for sickle cell crisis as identified. VGKK has been simultaneously advocating for the adoption of sickle cell screening and management at the local primary health centres by the health and family welfare department in districts with tribal communities.

In Gujarat, a sickle cell anaemia control programme was launched in 2006 and was extended to all tribal districts by 2008. This programme is implemented using public private partnership approach with a comprehensive strategy of screening (including antenatal, prenatal, newborn screening), counselling and treatment as per a standard treatment guideline proposed.

Medical colleges and hospitals near tribal areas are often unaware of the specific laboratory and diagnostic requirements for identification of these conditions.(50,54,56) Two main weaknesses in studies on haemoglobinopathies are namely absence of a haemoglobinopathy registry and of integrated diagnostic and management facilities for these conditions in areas where tribal communities reside (see box 10).(56)

Box 10: Haemoglobinopathies in India (56)

Several centres in India are engaged in haemoglobinopathy research in tribal areas. Certain key areas are being looked at or need to be looked at in future with a view to better understand the disease in the Indian context. These areas are:

a. newborn screening for haemoglobinopathies in tribal areas;
b. Follow up of newborn cohorts in a multicentric fashion for atleast five years to understand the nature of early mortality and morbidity in these populations;
c. Developing a registry on haemoglobinopathies for tribal populations;
d. Study the interaction of gastrointestinal parasitism, iron deficiency, nutritional intake with haemoglobinopathies and finally deciding whether these components should be routinely assessed and what remedial measures should be undertaken;
e. Evaluation of various ethno- pharmacological products for management of the condition;
f. Prevalence and cause of hypersplenism in sickle cell anaemia patients in tribals;
g. Interaction of various genetic factors for epistatic interaction in modulation of the disease;
h. Interaction of malarial infection with haemoglobinopathy; and
i. Prenatal diagnosis for severe haemoglobinopathies.

While some states (or districts within) (Gujarat, Maharashtra, Chhattisgarh, Odisha and Madhya Pradesh) have implemented specific programmes for identification and counseling for people affected by these genetic diseases like newborn screening programmes, most other states do not have any systematic planned mechanism for identification of people with these conditions let alone their management. The Ministry of Tribal Affairs has initiated systematic screening for sickle cell anaemia in the last two years. Overall 30 percent of the estimated population has been screened so far with 9 percent (8.75 lakh cases) cases of sickle cell trait and disease being identified so far. The exercise was completed in Gujarat and Kerala with 8.8 and 1.4 per cent of cases with sickle cell trait/disease identified so far as reported by the Ministry. The screening process is ongoing in another ten states while soon to begin in another three soon. While more information on the process and next steps are yet to be made available, this is an opportunity for intersectoral convergence of different ministries to tackle the challenges of haemoglobinopathies and setup a systematic screening, diagnosis and management programme.

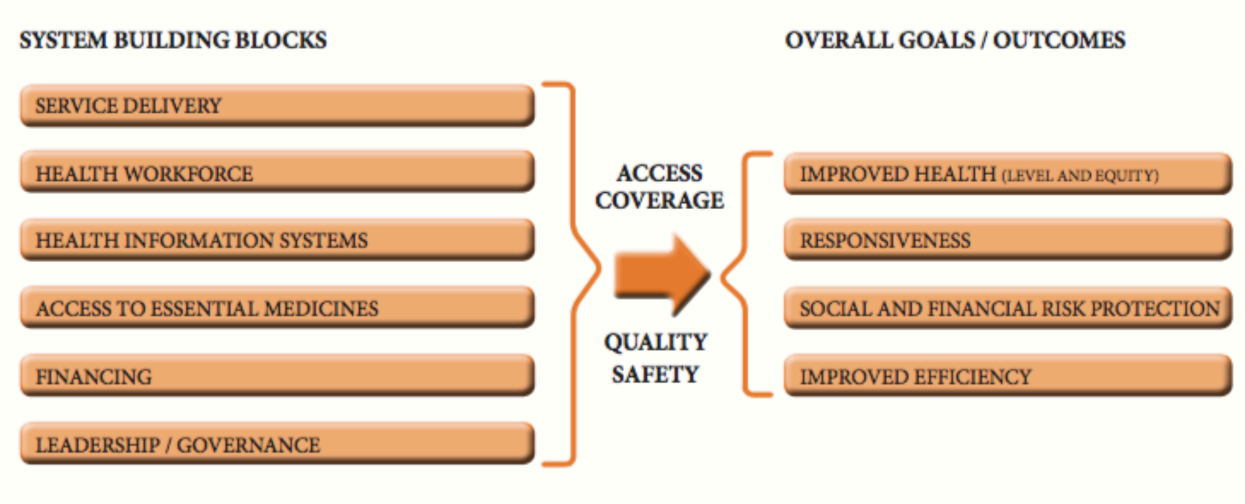
SECTION 2: HEALTH SYSTEMS IN TRIBAL AREAS

Key findings:

- Poor governance in tribal districts accounts for various deficiencies in delivery of health programmes, schemes and services
- Tribal health services are severely under-financed and need higher allocations to improve equitable growth; uniform per capita across tribal and non-tribal areas contributes to poor performance.
- There is a disproportionate shortage of health workers in tribal areas; moreover tribal representation in the health workforce is considerably inadequate further hampering adaptation and implementation of health programmes in these areas.
- Restrictive norms and guidelines hinder health worker retention and performance in tribal areas.
- Shortages in health care infrastructure and equipment as well as poor access and quality of health services is widespread in tribal areas.
- Research on tribal health is fragmented; disaggregated data on health services' performance, utilisation and coverage is not available. Comprehensive information on tribal health is deficient across all levels (district, state and national).
- Tribal health has no special or additional focus in the overall national and state health plans, thereby it finds no focus in the corresponding policies and programmes.

A health system is much more than the health services. The latter includes all the healthcare organisations that organise, manage and provide health services (curative, preventive, promotion and rehabilitation services), but the health system is much more. It includes the various societal and state structures that contribute to and strive for improvements in people’s health. In a broad sense, the health system includes the various traditional and home-based health practices, formal and informal healthcare pathways chosen by people, and operated by public or private agencies, as well as the various resources (human, financial and materials), goal-setting of these organisations as well as the values that underlie the planning and management of these structures. The WHO conceptualisation of a good health system is the one that delivers quality services to all people, when and where they need them. The exact configuration of services varies from one region to another, but in all cases requires a robust financing mechanism; a well-trained and adequately paid workforce; reliable information on which to base decisions and policies; well maintained facilities and logistics to deliver quality medicines and technologies (see figure 15). Tracing the journey of community health projects in most NGOs in tribal areas, a lesson learnt is that only an integrated approach that takes into consideration the various social determinants will be accepted, implementable and effective in strengthening the local health system, and not a vertical programme approach.

Figure 12. WHO health system building blocks (handbook on monitoring)



For the health system to be able to provide quality services to tribal communities, an assessment of the various components of the health system (in addition to the health services) is needed. We present below an assessment of the six building blocks of the health system in tribal areas of India based on the review of literature and our analysis (governance, financing, health workforce, service delivery, information and medical products & technologies. See figure 15).

GOVERNANCE

According to the WHO, governance in the health sector refers to a wide range of steering and rule-making related functions carried out by governments or decisions makers as they seek to achieve national or state health policy objectives that are conducive to provide quality health services for all. Governance is a political process that involves balancing competing influences and demands. While the scope for exercising governance functions is greatest at the national level, it also covers the steering role of regional and local authorities. However, the technical definitions of governance espoused by the global and national health authorities is often not broad enough to capture the different ways in which tribal communities relate to governance of public services. The United Nation's State of the World's Indigenous People report of 2010 summarises a more holistic understanding of health often held by tribal communities as the "harmonious coexistence of human beings with nature, with themselves, and with others, aimed at integral well-being, in spiritual, individual, and social wholeness and tranquility".(4) Some of the problems can be easily approached like a language barrier, but understanding and integrating tribal cultural norms and world views in regional governance mechanisms is a big challenge and there are hardly any examples of government departments at district and sub-district levels recognising these problems and making allowances for integrating tribal communities' world views, cultural norms and languages in their day-to-day management.(11) For instance, health awareness materials prepared for health services and other government schemes adopt the state's language, whereas local tribal languages (or dialects) often differ.

The traditional approach of affirmative action towards tribal communities has been insufficient in ensuring equitable distribution of health and development services in tribal areas. Health services and schemes suffer from poor implementation in many of the tribal areas, indicating the contribution of poor prioritisation and governance in these areas, in addition to various societal exclusionary drivers that operate in creating barriers to utilisation of these services and schemes by the most needy among tribal communities. Affirmative action has remained at the level of prioritising the implementation of particular schemes among tribal people or in ensuring central financing for particular opportunities for tribal people. However, the policies of affirmative action have not focused on improving the participation of tribal people within local agenda-setting and administrative agencies at the district level. For example, the National Health Mission mandated the creation of village level committees for health and sanitation as well as committees at the level of PHCs, CHCs/taluka hospitals and district hospitals. Little effort is made at ensuring representation of tribal communities within these bodies as the representation is taken up by the *panchayat* (local elected government) representatives who may not necessarily be from tribal areas. Even where such representation is mandated, it becomes symbolic without ensuring that tribal representation within the bodies is enabled with the ability to highlight and advocate against discriminations that they may face in the implementation of the programmes and schemes.

Solidarity across tribal communities has been historically poor resulting in a diminished socio-political collectivism across tribal communities, and a poor emergence of collective leadership across tribal communities that can bring their issues to the fore at district, state or national levels.(57) At present, efforts at collectivising tribal people for demanding their health and development rights is the exclusive domain of civil society groups, many of them often non-tribal in their roots. There are very few examples of civil society groups originating and being managed by tribal communities themselves. Even where such collectivisation exists, health is often a much lower priority when compared to more pressing needs related to employment, livelihoods, access to forests and grazing rights.

Another consequence of the common terminology "tribal" is the view of tribal communities as somewhat homogenous with similar approaches being applied to all tribal people, without paying close attention to the particular contextual and historical factors pertaining to tribal communities, often varying from one to another.(12) Thus, similar to other domains, the larger governance challenges also arise and influence the overall access to health services for these tribal communities.

Governance and health: Although health is a state subject according to the Indian Constitution (Fifth Schedule), the Centre has been given the authority of giving directions to the state governments, which could be used to direct the state governments to ensure provision of separate tribal sub-plans based on the percentage of tribal population in the states as recommended by the Ministry of Tribal Affairs of the Government of India. The National Health Policy of 2002 also provides for the state governments to tailor implementation strategies according to the need in tribal areas.(58) However, state-level interventions that are adapted to tribal settings are few and are insufficiently adapted to the particular requirements of tribal areas. The degree of interest and creativity in improving situation in tribal areas is further diminished at the lower levels (district and sub-district levels), especially in districts with very small proportion of tribal population.

The problem of poor implementation of health schemes and services in tribal areas is a sub-set of a larger governance and public services failure in these areas and is not specific to health alone (*see earlier discussion on government schemes*). One of the major problems in improving the prioritisation of problems with tribal health is the lack of good quality information. This has been highlighted by several committees recently that have examined the situation of tribal communities.(11) Very little systemic efforts exist at generating disaggregated tribal data outside of NGOs working in tribal areas or for tribal-specific schemes. This is not sufficient, as the key governance challenge is to ensure that all services (and not only schemes targeting tribal people) are being utilised and made accessible to tribal communities.

Some of the fundamental differences between the history and current principles underlying "development" in tribal areas is discussed in a recent report.(11) A few models for improving governance in tribal areas are implemented in different parts of the country, one mentioned often for its good governance is the ITDA model in Andhra Pradesh (see box 11). While a few have shown positive results in certain contexts, the lack of research on their functioning and overall impact limit their generalisability. However the lack of information should not deter other states from attempting to adapt or innovate local accountable models of governance.

Box 11: Few governance models in tribal areas

Integrated tribal development agency model of Andhra Pradesh: Extract from government order of Ministry of Tribal Affairs which called out the ITDA setup in Andhra Pradesh for its outstanding work, and shared its detailed model guidelines to all state governments for considering restructuring of their ITDAs based on it to ensure effective delivery of tribal development programmes.

The integrated tribal development agencies (ITDA) in the districts of Srikakilam, Vizianagaram, Vishakapatnam, East Godavari, West Godavari, Warangal and Adilabad were established with the primary objective of ensuring an integrated approach towards implementation of development programmes for the tribals in the sub-plan areas. In order to facilitate better coordination among all the functionaires operating in the sib-plan areas and to meet the needs of the tribals, who can look to a single agency for redressing their grievances in developmental as well as regulatory matters, and to gear up the rapid socio-economic development of tribal people and tribal areas in an integrated manner, the departments working in the sub-plan areas independent of the ITDAs and project officers, ITDAs were brought under the administrtaive control of the project officer, ITDA. Accordingly the government have introduced the single line administration system vide G.O.3rd read above and the system has been functioning since then.

Communitisation model of Nagaland(59)**:** Communitisation was launched in 2002, and consists of a partnership between the state and the community in order to improve delivery of government services including health. The key initiatives for health include transfer of government assets to a village/town committee with community representatives, and transfer of powers and management functions including salary disbursal powers. Studies of this model have shown that these committees have had a positive influence on functioning of health services with improvement of staff attendance, and inrease in utilisation of services with better availability of medicines.

In rural India, the construct of Village Health, Sanitation and Nutrition Committees by NRHM is recognised as a bridge to improve community participation and monitoring of local health services. Across the states the implementation and performance of these committees show mixed results but in tribal areas, these committees also bypass the traditional village councils. In these areas, we recommend for decentralised locally customised village health committees or responsibilities taken up by existing councils/community based organisations. We recognise that these committees will also have limitations resulting in mixed performances, and few top down structures like the ITDA model appear to be working in Andhra Pradesh. Nevertheless such models need to be studied and strengthened in keeping with existing local community structures and processes.

In the lack of sufficient availability of government health services, various voluntary organizations including the missionary or religious or other non-government organizations (NGOs), have made laudable attempts to provide healthcare to tribal people.(11) Lot of such efforts have received local, national and international recognition in terms of using innovative approaches and the community-based nature of their services, albeit focusing predominantly on curative services and some preventive care. These structures have varying degrees of accountability to the tribal population they serve, in view of the diversity in their origins, financing and value orientation. The level of participation and ownership of these structures by tribal communities is also variable, ranging from being passive recipients of charitable hospitals to being involved in the governance and management of some of these NGOs.

Even where specific schemes of the government are implemented for people below poverty line, poor customisation of the schemes to align with the social and cultural tribal settings results in poor coverage.(60) Better utilisation of schemes is intricately linked to local social networks and tribal communities often get left out due to their geographical and cultural separation from the local mainstream communities. From the first author's experience, despite corruption being an issue across the nation particularly in the health sector, given their socio-political vulnerabilities and their limited access to services, corruption appears to be higher in tribal districts. There is an urgent need hence to recognise and tackle this for policy makers.

FINANCING OF HEALTH

The main problems of financing of tribal health can be grouped into two, (1) under-financing, including poor allocation and utilisation at various levels and (2) poor planning and management of existing resources at various levels. Thus, social health protection, an important goal of a health system is compromised to a much greater extent for India's tribal population than for the others. While under-financing is an issue for the general health sector, there is a need for greater financing overall towards social health protection of the citizens along with additional innovative schemes for tribal communities and/or in tribal areas given its unique challenge s, and chronic exclusion.

Further, the lack of mechanisms to address the rising out-of-pocket expenditure for relatively minor outpatient procedures and hospitalisations results in various tribal communities facing catastrophic health expenditure for even a few days of hospitalisation. Often many of them just refuse treatment for lack of money, which is usually needed at the point of service delivery, even in government health services.(61) Given the difficulties in physical access in many of these areas, the non-medical and indirect costs incurred by a tribal family is often much higher than the actual medical cost, and acts as a deterrant to even considering approaching a health service.

Table 13. Financing access to health care (8)

Social Groups	Households Covered by a Health Scheme or Health Insurance	Problem in Accessing Medical Advice or Treatment		
		Distance to Health Facility	Concern That No Drugs Available	At Least One Problem in Accessing Health Care
ST	2.6	44.0	35.8	67.0
SC	3.3	27.3	24.2	50.4
OBC	3.8	26.0	22.8	47.4
Others	7.8	18.5	18.7	38.2
Total	4.9	25.2	22.9	46.6

**Source: NFHS-3 (2005-06)*

In the interest of equity and considering the geographical, social and cultural isolation and uniqueness of various tribal communities, financial allocations for health and development in tribal areas ought to be much more than being proportional to the tribal population. However, there is a common perception and complaints that "...funds for health care in tribal areas are underutilised, diverted to other areas, or utilized inefficiently, and worst, siphoned off by way of corruption". This is partially a problem of governance and oversight, as well as improved allocation and efficient expenditure on tribal health.(11) Even in the NRHM, there is no separate or additional allocation for reaching out to tribal communities be it for health promotion or to overcome the challenges of accessing health services.

The poor planning and management of existing resources at various levels as a contributing cause for poor financing of tribal health is discussed earlier. One of the important means of financing that many state governments have chosen in the last decade has been the insurance mechanism along with strategic purchasing of healthcare, often from private hospitals. However, tribal communities are likely to have benefited least from these large and popular insurance schemes. For example, coverage under the Rashtriya Swasthya Bima Yojana (RSBY), a nationwide insurance scheme targeting people below poverty line, remains extremely low in the tribal areas; less than 3 per cent of tribal population has any type of health-related insurance (See table 13). (10,11)

There have been some experience with piloting community health insurance among tribal communities, largely led by NGOs; three of 12 community health insurance schemes in 2004 specifically focused on tribal populations. Although, having demonstrated a benefit in terms of reducing out-of-pocket expenditure at the time of service delivery and improving health services utilisation, they remain very local in their implementation and in some cases temporary.(62) Moreover, community health insurance as a vehicle of social protection without the involvement and ownership of the state has not proven to be a sustainable solution for social protection in health globally; although promising and inspiring in its vision, it has not been able to achieve the larger goal of social protection of tribal communities.(63)

HUMAN RESOURCES FOR TRIBAL HEALTH

There are large gaps in public health infrastructure such as PHCs, sub-centres and higher hospitals in tribal areas. As per recent rural health statistics (2015), on an average the shortfall of health centres is nearly a quarter of the requirement (22 percent of sub-centres, 27 percent PHCs and 27 percent CHCs) in tribal areas. In addition, vacancies and capacity gaps of existing staff are much higher in tribal areas than elsewhere.(8,11) For instance the 2015 data reveals that the shortage of female health workers (ANMs) at sub-centres is limited to only 9 states but in Arunachal Pradesh and Tripura, the vacancies are nearly half of the required numbers. The doctors' shortfall at the PHC level in tribal areas is huge in states like Chhattisgarh (62 percent), Odisha (48 percent), Karnataka (41 percent), Gujarat (29 percent), and Assam (29 percent) - all of them with significant tribal populations (see table 14). Specialist availability reflects a worse trend with most reporting 50 percent or more shortfall with 16 states reporting more than 90 percent; in schedule five, six and other northeastern states, there is a huge shortfall of specialist physicians in tribal areas. (see table 15)

Table 14. Doctors at PHCs in tribal areas across Indian states (as of 31st March 2015)*

States/UTs	**Required** (one per PHC)	**Shortfall/Surplus**
Schedule V		
Andhra Pradesh	130	**
Chhattisgarh	411	255
Gujarat (2013)	382	111
Himachal Pradesh	43	**

Jharkhand	160	0
Madhya Pradesh	332	33
Maharashtra	315	**
Odisha (2013-14)	426	205
Rajasthan	210	-35
Schedule VI and other northeastern states		
Arunachal Pradesh	117	15
Assam	283	83
Manipur (2013-14)	45	**
Meghalaya	110	**
Mizoram	57	8
Nagaland	128	**
Tripura	45	**
Island territories		
Andaman & Nicobar Islands	4	**
Dadra & Nagar Haveli	7	0
Daman & Diu	0	0
Lakshadweep	4	**
Other states		
Bihar (2010)	6	5
Goa	8	**
Haryana	0	0
Jammu & Kashmir	48	**
Karnataka	64	26
Kerala	137	**
Punjab	0	0
Sikkim	12	**
Tamil Nadu	66	**
Telangana	93	**
Uttar Pradesh	NA	NA
Uttarakhand	10	**
West Bengal (2013)	304	**

**Doctor – allopathic. Source: Rural Health Statistics, Health Intelligence Bureau, Ministry of Health and Family Welfare, Government of India, 2015*
*** Surplus.*

Table 15. Specialists at CHCs in tribal areas across Indian states (as of 31st March 2015)

States/UTs	**Required** (four per CHC)	Shortfall/Surplus
Schedule V		
Andhra Pradesh	44	40
Chhattisgarh	340	319
Gujarat (2013)	280	270
Himachal Pradesh	40	40
Jharkhand	416	383
Madhya Pradesh	416	368
Maharashtra	268	185
Odisha	540	461
Rajasthan	252	175
Schedule VI and other northeastern states		

Arunachal Pradesh	208	207
Assam	124	120
Manipur (2013-14)	28	28
Meghalaya	108	105
Mizoram	36	36
Nagaland	84	80
Tripura	28	28
Island territories		
Andaman & Nicobar Islands	4	4
Dadra & Nagar Haveli	4	2
Daman & Diu	0	0
Lakshadweep	12	12
Other states		
Bihar	0	0
Goa	4	2
Haryana	0	0
Jammu & Kashmir	44	22
Karnataka	28	19
Kerala	48	39
Punjab	0	0
Sikkim	0	0
Tamil Nadu (consultants on hiring basis)	80	80
Telangana	92	86
Uttar Pradesh	NA	NA
Uttarakhand	32	20
West Bengal (2013)	432	245

Source: Rural Health Statistics, Health Intelligence Bureau, Ministry of Health and Family Welfare, Government of India, 2015
*** Surplus.*

Some states such as Andhra Pradesh, Andaman and Nicobar Islands, Jammu and Kashmir, Karnataka, Maharashtra, Manipur, Rajasthan, Sikkim, Tamil Nadu, Tripura and Uttarakhand are reporting overall numerical adequacy of doctors. However, the distribution of these human resources within the states show severe inequities and disparities; most of them are *concentrated* in urban areas, district headquarters and in hospitals with far fewer in remote areas, more so in tribal districts within these states. Although there is some relaxation in population norms suggested at national levels, this is often not implemented in spirit. Many tribal hamlets and settlements need further relaxation of various population norms to enable access to various categories of health workers including ASHAs.

A systematic effort at building greater representation of tribal people within the health workforce is lacking in most states. Efforts at ensuring local tribal health workers within the health workforce could also improve the acceptability of care provided. Meanwhile with non-tribal health workers catering to tribal communities, the socio-cultural differences between the two are crucial to acknowledge and address by regular sensitisation of the health workers. Special orienatation must be provided to health workers in particular medical officers and health workers in the community to sensitise them aboutnot only the socio-cultural differences but also the challenges of working in such areas and with these communities, to prepare themselves before they are posted to these areas.

The other major difficulty in delivering public health care to tribal population is the lack of health workers that are willing, trained and equipped to work in these areas. There is a shortage due to vacancy, absenteeism or half-heartedness of doctors, nurses, technicians and managers in public health to work in these areas. The reasons range from more difficult reasons related to social isolation to lack of amenities, financial and non-financial incentives for health workers in these areas. The latter could be tackled in the short-term, while the former requires a sustained approach at improving the accessibility and amenities in these areas. The poor overall development of various other infrastructure (schools, banking, finance, etc) also impedes the availability of health workforce in such areas.(27) An emerging thinking in this line is to support building of local health workforce, relaxing norms in these areas to allow this and even develop innovative bridge cadres to fill the gaps in human resource (see box 13). These however are still at a local scale, and it is imperative that various health and allied health councils wake up to these challenges.

Box 12. Chhattisgarh experience with HR innovations (64)

The 3-year course (rural medicine assistants' course) was a response to a major crisis in human resources for health that the newly formed state of Chhattisgarh faced. The state responded to this crisis in multiple ways- and it is interesting to look back now on what was tried and what was not tried and why this was so and what were the outcomes of different efforts.

- One effort was to open up new medical colleges. Two colleges have been successfully opened and two more including a centrally sponsored one is planned.
- The other was nursing schools and ANMs schools. These two have opened up and though less in numbers and slower to start off than could be asked for they are progressing well.
- A third was the Mitanin programme, a community health volunteer programme of a woman health activist in every hamlet that is doing relatively well. It has survived and grown and it is exploring new directions of growth.
- A fourth, very little discussed and even less documented is a major effort to train village RMPs, or quacks in less polite usage, to provide rural care. These informal medical practitioners had only to be nominated by the panchayat and sent to the district hospital, where they would then get a six month training and a certificate and then be sent back. About 1100 persons were so trained and state considered providing two of them with government employment in each panchayat and then gave it up, preferring them to be market driven. This by all reports failed to make any impact and has disappeared from public consciousness, but is worth digging up, if not for anything, at least to not repeat it.
- The fifth bold experiment and the most curious of the lot is this three year course. It ran three years and then stopped by the government, but in a final spin seems to have come up as a winner with fresh possibilities.

ACCESS TO ESSENTIAL MEDICINES

Little information is available on access to essential medicines in tribal areas including emergency medicines. Similarly, tribal populations are most disadvantaged with respect to access to various other health technologies. Given the access to health services is fragmented and across different types of service providers with little regulation, irrational use of drugs and emerging drug-resistance in these communities is a concern. In the northeast, the emergence of drug-resistant malaria and tuberculosis has been reported.

While irrational drug use is a concern across the country, in tribal communities especially the PVTGs the term 'rational' will have to be re-looked at. Given tribal communities have only been recently exposed to modern medicine or allopathy, the sensitivity of these drugs for common illnesses, and possible adverse reactions have to be explored. This particularly takes priority when dealing with PVTGs where the vulnerability is both in terms of biology and numbers.

Box 13: PVTGs and drug policy

In the late 2000s, the first author was invited by an expert committee looking at PVTGs in Andaman & Nicobar islands, where he observed that the pharmacy that catered to the Great Andamanese tribe stocked Nimesulide syrup for children. Nimesulide is a drug banned in many countries and its use in a tribal community with less than hundred individuals should be strong discouraged. The expert committees for PVTGs (Jarawas and Shom Pen) also advocated for preference for traditional medicinal practices for such tribes with cautionary drug use. The committee also recommended against routine immunisation of the PVTGs at present adopting a wait and watch approach instead.

On the other hand, access to emergency medicines like anti-snake venom is crucial given the tribal communities' exposure to insects/animals, and must be studied and planned for. The relative difficulty in accessing health services further necessitates that the local health workers are frequently trained in basic trauma and life support, and are also supported with necessary equipment/infrastructure to ensure stable referral to the nearest higher centre.

Drug related out-of-pocket expenditure is another area of concern especially in higher hospitals where tribal patients receive prescription to outside pharmacies. It is recommended that additional budgets should be provided for *taluk* (or block) and district hospitals to ensure that drugs for tribal and similar vulnerable communities are available at the hospitals, thereby eliminating such expenditure.

HEALTH SERVICE DELIVERY

Various factors related to health services access and quality as well as community level factors that influence the utilisation of health services in tribal populations. From the health services side, some of the important gaps are as follows (see table 16):

Table 16. Problems faced in accessing health services compared between SC, ST and national average (per cent)

Problems listed	SC	ST	Total
Distance to health facility	27.3	44	25.2
Having to take transport	25.3	42	22.9
Not wanting to go alone	12.8	20.1	11.7
Concern that no drugs available	24.2	35.8	22.9
Concern that no provider available	23.9	35.2	22.7

**Source: NFHS-3 (2005-06)*

- Poor geographical accessibility to health facilities in view of poor road and transportation facilities especially in and around forest areas, but also in part due to restrictive conservation policies in some cases;
- Poor availability of health staff, partly due to socio-cultural factors that affect health worker preferring to work in tribal areas, but also related to lack of rigorous monitoring and prioritisation of tribal health at the district levels;
- Poor quality of services offered, both technical quality (related to effectiveness of care, safety, adherence to quality standards) and also subjective quality (related to acceptability of care, open-heartedness and culturally accessible); also due to gaps in infrastructure, equipment and human resources; waiting time at the health centre and timings of the facilities

- Lack of transport and communication facilities; limited use of traditional practices and health-seeking behaviour (local beliefs, customs, and practices);
- Poverty and financial constraints (the majority of healthcare services is theoretically free of cost, but indirect and informal payments, such as travel cost to and from the government facility, leaving work to seek care, and paying for prescribed medicines, exist);
- Supply-chain gaps affecting access to medicines, vaccines and various other health technologies.

Even though access and utilisation of health services by tribal population is generally low, a larger proportion (as high as three-fourths of tribal population, whereas this is less than half in the case of non-tribal communities) of tribal communities utilise government health services than other communities. Most areas with tribal people has very little presence of the for-profit private sector.(65) However, in some states, there is a disturbing under-utilisation of government health services by tribal people, when compared to most other states. In Madhya Pradesh, for example, the levels of the utilisation of maternal health services were low in the districts with high percentage of tribal population.(66) In states such as Bihar (12 percent), Uttar Pradesh (27 percent), Jharkhand (35 percent) and Karnataka (47 percent) show comparatively lesser utilisation of government health services than other states. These could be a variety of reasons ranging from supply-related factors such as poor acceptability of care, poor availability of health workers to demand-based factors related to social and cultural factors and health-seeking behaviour among tribal communities in these states. Very little systematic efforts are being made in these states to understand and respond to this under-utilisation of health services by tribal population.(11) However, while outpatient services utilisation is relatively better-off, hospital utilisation by tribal communities is generally poor.(11) Improving government health services in tribal areas is the only way of strengthening access to health for tribal populations and very little opportunities exist for partnering with the for-profit private sector. However, NGOs, CBOs and missionary organisations run a variety of curative and preventive health services in remote tribal areas which can still be potential partners in the short-term to reach remote areas. Accessing healthcare from traditional healers is not uniformly high; in eastern parts of the country, a much larger proportion of tribal population sought care from traditional healers, than in other parts.

In most tribal areas, the health services are organised very similar to any other rural areas. Very little customisation to the local socio-cultural reality is attempted. At the district and sub-district level, there is very little systematic effort at adapting the programmes and services to better serve tribal populations. For example, delivery in sitting posture, a traditional practice among several tribal women is completely neglected in the rigid implementation of the safe motherhood activities of the reproductive and child health programmes. Similarly, the particular difficulties in building rapport with adolescent tribal children is hardly attempted within the community; instead tribal adolescents are expected to walk into adolescent health clinic days held at PHCs, which is unlikely to happen in the case of most tribal youth in view of various socio-cultural barriers. Various social, cultural, economic and political factors in society contribute to tribal people falling out of various schemes and prevent them from obtaining the benefit from, and participating in various services. In Karnataka, a study found that SC/ST had lower odds of institutional delivery even after adjusting for possession of a BPL card, suggesting that underlying exclusionary processes could prevent tribal people from realising their rights and entitlements even when apparently favourable targeting schemes such as BPL cards or RSBY schemes exist. (67)

As mentioned earlier, there is very little effort at involving tribal people within the health workforce either formally as ASHAs, ANMs, nurses or doctors, or through informal involvement as peer educators or counsellors. The lack of tribal people within the health workforce also hampers acceptability of healthcare offered. A much higher level of sensitivity, people-centredness and openness is required in health services in tribal areas than others. However, with the low motivation and absenteeism, building good rapport with tribal communities suffers even more and contributes to the poor acceptability of care as well as affects the quality of care. There is evidence to suggest that tribal people are likely to accept and utilise health interventions if more attention is paid to adapting them culturally and involving them more in program planning and implementation.

Very little monitoring of the technical or perceived quality of care provided to tribal people exists. Some reports mention unfriendly behaviour and very little consultation time in many PHCs in tribal areas. Apart from anecdotal reports, there is no systematic or a third-party/independent effort at monitoring of the quality of health services provided to tribal population.

One of the contributing reasons for the poor acceptability and utilisation of care could be the near absence of participation by tribal communities or their representatives in shaping polices, plans or implementation of services in tribal areas, right from the local (village or hamlet level) to national levels. Very few expert committees, task forces, policymaking bodies or advocacy groups are themselves tribal in representation at the national or state level. Similarly, tribal district level bodies also do not use the opportunity to invite and empower tribal people or their leaders in local implementation of programmes. Even though the *Panchayat* Extension to Scheduled Areas (PESA) gives *gram sabhas* the right and the role of influencing social sector schemes, which include health, there are no mechanisms in place to ensure such participation or oversight at the village level.(11) Similar situation is observed at the ITDP, district and the state levels. At the central level, the Ministry of Health and Family Welfare has no separate body to shape policies or monitor programs in tribal areas.(11)

INFORMATION (DATA AND RESEARCH)

There are large gaps in terms of data availability or research on issues related to tribal health in India. On one hand, the routine data generated through disease control programmes and general health services is poor in quality, while on the other hand, there is also a lack of disaggregated data for tribal areas/communities. Primary research work is scarce, save for some of the systematic surveys conducted by the RMRCT, Jabalpur that is ICMR's only tribal-specific expert centre (now elevated as the National Institute for Research in Tribal Health). Unfortunately not adequate efforts have been invested in sharing this data with researchers and practitioners outside the ICMR circuits in a context where data is insufficient. For any and every tribal specific health plan, the ministry of health and family welfare and its state counterparts should retrieve data and publications from ICMR to help inform programmes.

Within states, there is little effort at nurturing similar research centres for advancing locally relevant research on tribal health issues. The several medical and paramedical college community medicine departments for example could be a vital resource in this regard, but very few colleges prioritise this. Given ICMR's regional research centres are spread across the country, it is recommended that they also act as field sites for studying local tribal communities similar to RMRCT.

A comprehensive coverage of all tribal communities is also lacking. On one hand, even epidemiological studies (on disease burden and dynamics) is lacking, while on the other hand, deeper social science inquiry (earlier in this paper introduced as health policy and systems research) is also scarce. The few research studies on tribal health are disease specific, especially on malaria and tuberculosis, while the so-called neglected tropical diseases are poorly studied. A lot of published studies are also in the form of commentaries and essays, with very few data-driven studies. In the case of PVTGs, even these are absent. A lot of material hence needs to be drawn from technical reports, blogs, case studies in the grey literature and very local and poorly disseminated journals. Given these challenges, it is imperative that a systematic comprehensive effort should be made to collect and provide tribe level disaggregated data on basic dimensions outlined in this report including health. One such initiative was the people's assessment of health, education and livelihoods i.e. PAHELI household survey supported by the UN-Planning Commission Convergence Programme which attempted to explore the rural community's status on key human development indicators and engage communities to understand the status of human development (see box 14). A similar exercise among tribal communities across the different regions is recommended on the premise that it will be both empowering and enlightening.

Box 14: PAHELI 2011 Summary (68)

PAHELI stands for people's assessment of health, education and livelihoods. The PAHELI framework is built around four key human development domains: Life & Livelihoods, Water & Sanitation, Education & Loteracy, Mother and Infant Jealth & care. Based on the Millenium Development Goals and on national priorities, PAHELI is a household survey which looks at the provision of basic services at the village level through key central government social schemes and the links of these services to households.

PAHELI aimed to create measures, methods and mechanisms t engage citizens and communities in understanding the status of human development in their locality and guaging the effectiveness of government-run programmes. By building capacities in communities, this approach may lead to a better identification of actions that households can take to imrpove their situation as well as demands that communities can make for better delivery of services at the local level.

PAHELI also opens up the possibility of widespread participation of local people in collecting data that can be an integral part of planning and implementation. The lessons learned in the process of designing and executing PAHELI will be used to review and refine the framework, design, tools methods and analysis for future rounds.

Some of the poorly researched themes include the various social determinants of health, the role and way in which social determinants work against tribal health and development, implementation research of reasons for failure of policies and programmes in tribal areas, research related to substance abuse, mental health, adolescent, reproductive and sexual health, gender, displacement, migration and health-seeking behavior among PVTGs. Evaluation research and policy research are also scarce, particularly evaluations that ask *how* or *why* a given policy/programme worked as opposed to *did it work* (or not). Tribal health programmes and polices rarely invest in systematic and scientific evaluation approaches to learn and improve their implementation.

Ethical issues related to research on tribal health and within tribal communities is an important problem, along with the research methods employed when working with such vulnerable communities (see box 15). While on one hand there is the need to review research on tribal health carefully for the application of high ethical standards, there is limited training on this topic among researchers and a paucity of competent ethics review committees that can oversee such research. Cultural and socio-political factors also are significant barriers to research on tribal health. In this respect, a greater use of emancipatory research approaches that are finding a place within the health policy and systems research community, such as participatory action research could be an important way of using research as a tool for greater involvement, participation and engagement of tribal people.

Box 15: Indigenous peoples & participatory health research (69)

WHO recognizes that special attention needs to be given to the ethical aspects of research in a developing country context and that ethical issues need to be addressed within the relevant national and social context. The context will differ between developed and developing countries, as well as among developing countries. The populations of very poor developing countries are especially vulnerable to economic exploitation by developed countries or outside organizations and corporations, whose primary mission is not related to the health of the people.

This is a particular concern in relation to genetic research. A meaningful informed consent process is one way of protecting against such exploitation (WHO, 2002). However, low educational levels, or cultural or language barriers, may mean that special care has to be taken to ensure that consent is truly informed and that individuals and groups thoroughly understand what is being proposed and why. Field-testing of the informed consent process may in some situations be indicated, and funding allocated for the purpose.

This situation is further complicated by the lack, in many developing countries, of strong regulatory mechanisms, such as ethics review boards or committees. An important priority for all developing countries is to develop the necessary regulatory structures to address both the scientific and the ethical dimensions of research.

The recent controversy over the HPV vaccine trials in two states among tribal communities in 2010 revealed the need for stronger regulatory mechanisms especially when concerning research among vulnerable communities (see box 16).

Box 16: Rights violation found in HPV vaccine studies (70)

The Indian parliament's Standing Committee on Health, which, in April, 2010, began probing the use of HPV vaccines in two states after the reported deaths of seven girls, has concluded that "safety and rights of children were highly compromised and violated". In view of the report's finding of violation of human rights and clinical trial rules, the committee has recommended legal action against non-profit organisation Programme for Appropriate Technology in Health (PATH), which initiated the HPV project with the Indian Council of Medical Research (ICMR) in 2007, a year before marketing approval for HPV vaccines was given in India. PATH and the ICMR, the committee notes, did a full-scale clinical trial in vulnerable population groups, such as tribal girls, without mandatory permission from the Drug Controller General of India or the Indian National Technical Advisory Group on Immunization (NTAGI). The trial's purpose was to prepare ground for inclusion of the HPV vaccine in the Universal Immunization Programme (UIP). The report noted that "PATH resorted to an element of subterfuge by calling the clinical trial as 'observational studies' or 'demonstration project'". PATH, the committee reported, was not even a registered legal entity when it began working with the ICMR. "Not all studies of health topics (even when they involve humans and licensed pharmaceuticals) are clinical trials. Yet we took all approved steps to ensure that participants knew what the study was about and that participation was voluntary", said Vivien Davis Tsu, of PATH, Seattle. Chandra M Gulhati, Editor of the Monthly Index of Medical Specialties, New Delhi, said: "The fact that four out of five outcome measures pertained to determination of adverse reactions makes it a Phase IV clinical trial. In all such projects existing regulatory steps including payment of compensation in case of injury or death must be observed". Amar Jesani, Editor of the Indian Journal of Medical Ethics, Mumbai, said: "For a vaccine claiming to be a candidate for the UIP, the ICMR should have insisted on preliminary assessment by NTAGI to see if it was immediately needed, affordable, and sustainable for use in UIP". Slamming state agencies including the Drug Controller General of India for dereliction of duty, the committee recommended further investigation into the PATH trial and marketing approvals given for HPV vaccines.

CROSS CUTTING THEMES

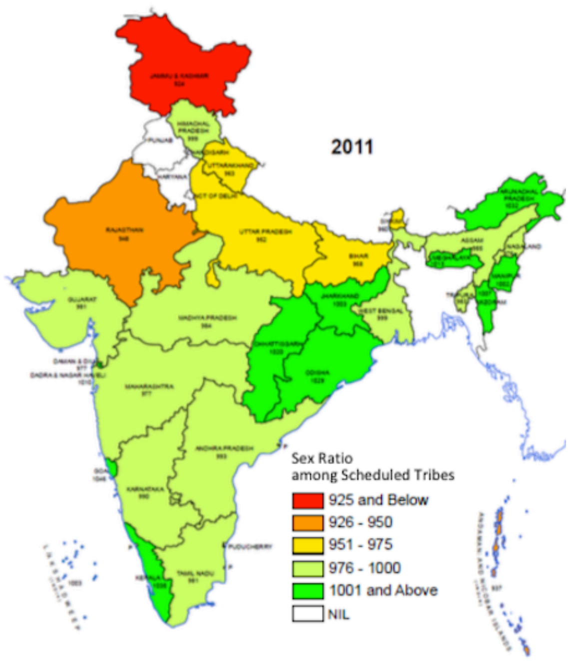
Key findings:

- While sex ratios in tribal areas are better off, the status of women in tribal households and communities is not uniformly favourable. Sexual and gender-based violence exists in some pockets.
- Rich traditional health knowledge exists in tribal communities. Health systems do not harness the potential of positive traditional health practices. At the same time, specific interventions are needed in some areas to curb adverse cultural practices.
- Several social determinants severely affect tribal health such as geographical isolation, migration, displacement and armed conflict requiring targeted approaches.
- Civil society and non-profit NGOs play a key role in delivering services in several tribal areas, and often advocating for tribal specific issues.

Gender focus

The sex ratio in tribal communities is predominantly favourable across the different states, averaging 990 females per 1000 males (940 in general population) (see figure 14).

Figure 13. Sex ratio among ST population as per Census 2011 (12)



The current focus on gender among tribal communities is very poor, outside of the discussion on positive sex ratio or reproductive and child health programmes. Gender-specific health initiatives focus mainly on pregnant women, on motherhood (post-natal visits, promotion of breastfeeding) and promotion of family planning services to eligible couples. The focus on gender outside of pregnancy and fertility is narrow. The impact of social issues like increasing alcoholism, migration for work, sexual harassment and even cultural practices like witchcraft are seldom studied in relation to women's health.

Tribal communities vary across the country in their general attitude towards women. The relative position of women with respect to men is better off in some tribal communities. The adult sex ratio (number of women per 1000 men) in ST population is 990 as compared to 938 in non-ST population indicating an egalitarian social norm towards women in tribal societies.(11) However, this is a national average of a very large and diverse community; if one were to study tribal communities one by one, a very wide range of gender-related practices ranging from extreme inequality to egalitarian practices may be seen. In any case, progressive exposure and mainstreaming of previously isolated tribal groups also brings with it the disadvantages such as male preference among children. A worrying trend is the decline in sex ratio even among tribal people, although it is still better than non-tribal communities.(11)

In some tribal groups, the social position of tribal women is no different from the neighbouring non-tribal rural communities. In Rajasthan, which has the largest population of ST in the country (over 12 per cent of the state's population), tribal people are concentrated in the southern and western desert regions. The poor maternal health outcomes among tribal women here is further adversely affected by the relatively poor social position of women in their communities, thus often affecting their health seeking behaviour, decreasing ideal number of health care consultations by these women and requiring a localised and culturally adapted implementation of health programmes in these areas. This situation of tribal girls and women is generalisable to several other tribal communities in other states, save for some of the island or forest-dwelling tribal communities in north-east India, where the social position of women may be better off.

Young tribal girls enter the reproductive age as victims of undernourishment and anaemia, and face greater health risks as a result of early marriage, frequent pregnancies, unsafe deliveries, and sexually transmitted diseases. Women's low social status makes them more likely to seek treatment only when the ailment is well advanced. Societal attitudes towards pregnancy, which is generally not considered a condition that requires medical treatment, nourishment or care, hinder efforts to deliver antenatal services.

Sexual and gender-based violence among tribal communities is a problem in several regions. This includes physical violence within households due to gender-related power imbalances within families, as well as other societal conflicts, migration and marginalisation of entire communities resulting in physical (including sexual), mental and emotional trauma inflicted on tribal people. The physical violence on married women within families is related to gender position of women in tribal communities and varies from one region to another.

For reasons including economic deprivation, poor livelihood security or lack of ownership of their lands, tribal women are vulnerable to trafficking to large cities for daily wages work. The women are particularly vulnerable to these situations in view of their lack of exposure, and poor negotiation skills. It is estimated that thousands of minor tribal girls could be subject to illegal trafficking from Jharkhand, West Bengal, Bihar, Chhattisgarh and Odisha according to various newspaper and media reports. They end up in large cities like Delhi, Mumbai or other metros, leading lives of deprivation and under the mercy of large contractors. A significant number eventually end up in commercial sex trade and are vulnerable to a variety of physical and mental health problems, often due to a complex web of reasons related to poor safeguards in their home states and lack of healthcare, education and judicial services to the unorganised sector and the poor in large metros. Urban health services, especially in large cities are very poorly equipped to deal with women subject to sexual violence. Very few large hospitals have procedures and protocols to cater to victims of sexual violence. There are several instances in lay press of victims of sexual violence being made to wait for hours on end without any concern for their privacy, safety and lack of competent counsellors who could help these women grapple and cope with their physical, sexual and psychological trauma.(71) At present, only a few states employ special staff in large hospitals to help the poor and vulnerable to navigate the often busy and impersonal style of operations in these hospitals. Urban primary care services have very little outreach staff who could identify and bring into the system, the victims of sexual violence, especially tribal women and others from far-away areas with nobody to trust and seek help from.

In some instances, the geographical and cultural isolation of some tribal people, especially the PVTGs poses a difficulty in organising a culturally appropriate health and counselling services for victims of sexual violence. In the case of the Jarawa people in Andaman Islands, sexual exploitation of their women is only coming to light in recent years.(72) While the legal and judicial mechanisms to protect them are still being put in place, a lot needs to be done in terms of establishing culture-sensitive counselling and health services that is accessible to the victims. A health service that is trusted by the local community and built on principles of participation by tribal people (especially women) from the community could enable early identification of exploitative instances and prevent years of neglect of such crimes as was the case among the Jarawa people.

The problem of sexual violence is not only an issue of access to judicial services, but includes the building of a system where our health services are able to respond quickly to the victims as well as help with their rehabilitation over time. In conflict-prone areas which include large tribal belts in Schedule V and VI areas, there is a trust deficit between "services" (any service including health and education) in view of the constant exchange of allegations between the community and the services. This makes it a particularly challenging environment to operationalise community-based interventions and involve tribal communities and offer grievance redressal. Several instances of sexual violence are reported from conflict zones in the media. Apart from judicial and legal mechanisms to look into the human rights violations in these areas, the health and social services need to put in place a more responsive system to cater to the victims, as well as provide psycho-social rehabilitation. At present, health services in tribal areas are not equipped with such skills; neither is there the necessary knowledge on socio-cultural situation of the tribal people, nor the financial or human resources to offer these services. For example, schools, hostels and other educational institutions established to provide education in tribal areas need to invest in building up a system to allow local health workers to help deal with various adolescent health problems as well as identify any early instances of sexual violence or exploitation, if any. Another pattern is the exploitation of women when they try to access a service; we came across newspaper reports of sexual exploitation of tribal women by officials in course of availing schemes. There could be several social and cultural barriers to reporting these to the police, but the health workers and services ought to be able to respond to the immediate physical and mental health needs of such women. Several instances of such violence and sex "rackets" in schools, hostels and offices (including government offices) is testimony to the need for tribal health services to invest in counsellors, tribal ASHAs and other health workers trained in being sensitive to this problem. (73,74)

Tribal women also face domestic violence in some regions.(75) Adverse gender relationships within tribal homes have several implications for decision-making, sexual health and reproductive rights of tribal women. Some tribal societies are not comfortable with the idea of managing fertility by women. In some tribal communities, women's reproductive health consequences are contingent upon gender inequality, lack of power and resources.(75) This applies to the use of several reproductive health services including treatment for reproductive tract infections or sexually transmitted illnesses that require male participation in the consultation, HIV/AIDS screening and consent procedures, choice of contraceptive method (e.g., insisting on condom use by male partner), seeking timely abortion services, etc. (75)

Traditional health practices

A recent report on the state of the world's indigenous peoples notes the contribution of tribal people to humanity's cultural diversity, enriching it with more than two thirds of its languages and an extraordinary amount of its traditional knowledge. A large part of tribal traditional knowledge deals with the promotion of health and local systems of medicine and healing. Tribal societies have nurtured a system of healing practices through the use of medicinal herbs and other locally available natural ingredients and rituals, addressing both mind and body. These traditional beliefs and methods are different from the modern scientific worldview and emerge from their living in forests with higher biodiversity than rural or urban areas. This belief and healing system has a strong influence on the health practices and health seeking behavior and choices of tribal people.(11) Studying traditional health practices and herbal remedies within tribal communities worldwide has indeed isolated several pharmacologically active chemicals.

Traditional health systems provide a way of understanding and explaining the nature of health, the cause of illness, and the remedies, various curing techniques. They also are a reflection of how tribal societies deal with sickness and maintenance of health. In many tribal societies, the traditional healers act as the medium between man and nature the entity and provide spiritual solace in times of health or other social crises in their households. It has been argued that lack of emotional content and spiritual security in modern health care system is an important reason for its lack of embrace by tribal and various other rural communities.

Various beneficial practices have been reported in literature and shared by various stakeholders at the multi-stakeholder consultations. Household remedies, practices and herbal formulations for fever, common headache, dental caries, and hepatitis are a few examples. Traditional health practices are also described for antenatal and postnatal care, infertility, menstrual problems and sexual health problems. Most of these practices could work for a majority of these conditions wherein there are no complications. However, their application in more severe conditions such as respiratory and gastrointestinal infections among children and elderly, abortion, prolapse, diabetes, hypertension and severe mental health problems pose problems. Others are clearly harmful for any condition; witchcraft and casting out demons/spirits are some examples.

The traditional healer in some settings is a major health worker for the treatment of all types of ailments. He is consulted first for any kind of health issue in the community. Their local credibility, social status, availability and personal interactions with people, acceptance of payments in kind and a deeper engagement into tribal families and histories contributes to their popularity and their care being perceived as being more people-centred than that of the modern health services.

The various multi-stakeholder consultations held on tribal health and the literature reviewed point to the following key themes on tribal traditional health practices and knowledge systems:

- There is a need for pluralistic health systems in these areas where the rich traditional knowledge is integrated with the existing health services.

- Significance of traditional health practices in the lives of tribal people and the need for a holistic approach towards health as opposed to a health problem or illness-based approach. This is possibly related to close relationship of these communities with the forests and their environment. These practices also provide a way of rationalizing what is unexplainable or unknowable locally. The transmission of these practices from one generation to another is both familial as well as through people recognized as healers within the tribal society.
- The recognition that traditional practices could be both beneficial (nutrition during menstruation and pregnancy, care within homes for primary care health problems) and harmful (witchcraft, retaining people with malaria/serious illnesses within traditional care)
- The need to differentiate between traditional health practitioners and untrained modern medicine practitioners commonly referred to as *quacks.* These two types of informal practitioners are often confused with one another leading to the common misconceptions about the former.
- Significance and role of traditional care providers and systems within formal health service settings related to areas where primary health care access is insufficient and poor health literacy, role of these systems in conditions such as infertility, depression, marital or familial discord related issues. And finally the challenges faced by traditional healers in approaching or building linkages with the formal health service in terms of communication gaps, lack of platforms as well as issues related to legitimacy and power.
- Need for systematic documentation and study of traditional health practices, wherein there has been a scattered effort and a lack of consolidation of various knowledge across time. (see box 17)

Box 17: *Aadi aushadi*, a unique social enterprise(76)

In Gujarat, detailed studies of the Vasava ethno-medicinal wisdom led to the documentation of over 250 plant species of ethno-medicinal significance belonging to over 75 families. This resulted in several additions to the current knowledge of the flora of Gujarat. Unwilling to stop with a mere academic exercise… a subsequent project titled *People-forest-laboratory linkages for conservation of ethno-medicinal biodiversity leveraged on the above academic contribution seeking to open up local economic opportunities.* This led to **Aadi Aushadhi,** a social enterprise that evolved through a sustained process of empowerment, education and entrepreneurship.

The Aadi Aushadhi members have graduated to organise themselves as a group of producers and marketers and engaged in mass cultivation of medicinal plants, on individual farms. By enhancing agronomical techniques for sustainable agriculture of medicinal plants and by putting in place community level systems for soil and water conservation, switching from single to multi-cropping, they registered an increase in yield, which served to reduce migration and provide educational and health benefits for the family. The *adivasis* currently function through three self-help groups, whose members have begun medicinal plant cultivation in their individual lands. They run an office and a processing unit at Dediapada. With capacity building training for innovation in product making, in communication and in marketing, *Aadi Aushadhi* has been able to create a visibility of their brand. The direct beneficiaries: 52 members. 450 people. The indirect beneficiaries: 22 villages.

- Need to identify and negotiate systematically against clearly harmful traditional practices such as witchcraft and need to engage with a variety of community-based and civil society organizations.

Adverse cultural practices: Notwithstanding the rich traditional health practices in several communities, there are also some dangerous and deeply rooted cultural practices that adversely affect health and well-being of tribal people. Some of these like witchcraft are remnants of ancient rituals that specifically target women. The exact incidence and distribution of such practices is not well studied. Women are branded as witches and "hunted down" and physically or mentally abused/tortured or in some instances, even killed according to various newspaper and media reports; the practice survives largely outside of the legal framework. It could be prevalent among several tribal communities, but only a few states (Jharkhand and Bihar) have implemented legislation to ban witch-hunting, while Tripura is considering a ban. Often, the practice of hunting down "witches" is of interest within health because, several health problems such as chronic illnesses, catastrophic life events like sudden deaths or more often mental health problems related to stress, depression or psychotic episodes are often attributed to being caused by a "witch", who is then targeted or abused. However it must be noted that these adverse cultural practices are *not* limited to tribal communities and are most often a feature of non-tribal communities in the same region signalling a wider cultural concern to be tackled.

Other social determinants of health

As discussed in the introductory section and in various other topics above, social determinants of health contribute to the comparatively poorer health and development indicators in several tribal communities in India. Social determinants of tribal health cut across and explain the observed gaps in access, utilization and implementation of routine health policies and programmes, as well as the failure of various special and affirmative action oriented policies as well. Social determinants of tribal health include various social-political, economic and cultural factors that contribute to the continuing exclusion of tribal people from participating effectively within the wider health and development efforts (including but not limited to government policies and programmes). Many of these vary from region to another as well as within and between tribal communities. We discuss below the most important ones, while acknowledging that the following is not the most comprehensive list.

Geographical isolation and living far away from cities and towns is an important reason for the delay and sub-optimal implementation of services. However, tribal communities are also victims of (often) well-intentioned "development" or wildlife conservation efforts and projects.(58) Such projects, be they in relation to developing national infrastructure in the form of dams, highways, mining and industry, or setting aside biodiversity-rich habitats for the protection of flora and fauna, the relative poor political organization across tribal communities limits their ability to negotiate with the administration in their own interest. While there is the larger issue of rights and entitlements in the process of building national infrastructure or wildlife conservation, tribal health and development concerns often get sidestepped either by accident or because of poor claiming of the available negotiation spaces by tribal communities. This also significantly impacts their health status, health-seeking behavior and enhances their isolation.(20,77,78)

Among the various socio-political factors that affect tribal health are migration, displacement and armed conflict. Deforestation, large-scale development projects, sudden implementation of legal instruments regulating or restricting access to forests or forest produce have contributed to migration and displacement, disrupting traditional and social processes that held tribal communities together.(10,48) Closely related to the problem of displacement and migration is the issue of trafficking, which affects the most vulnerable among tribal people, young girls and children. Beyond the issue of the violation of their rights and entitlements, it also contributes to poor coverage in health programmes such as vaccination, disease control and disrupts the setting up of disease surveillance structures. The high level committee on socio-economic, health and educational status of tribal communities of India identified three important constraints that perpetuate poverty among migrants in the Indian situation, *viz.* poor education, discrimination, and a hostile policy environment. These are all central to the achievement of better health too. In addition, migration and displacement contribute to family and social disorganization, erosion of traditional knowledge systems, harsh and unhygienic living conditions at work sites and physical and sexual violence in the case of female domestic workers.

Even in 2011, tribal literacy rates of tribal people are the lowest among the various population groups at 59 percent - much below the national average (73 percent) or those of scheduled castes (66 percent). Work participation among tribal people was also poor; less than half of them are engaged as "workers" according to the 2011 census. Cultivation of land by tribal people also showed a decreasing trend over the past decade, decreasing from nearly half of tribal people reporting cultivation in 2001 to only about one-third reporting cultivation in 2011. However, this trend was seen much more in southern India than in the northeastern states. Uptake of household industries continues to be the lowest among tribal people at below 2 percent. Literacy rate, employment and livelihood security (secure land tenure and rights over land) have a significant effect on the ability to access and utilise health services, especially in the Indian health system setting where rural Indians face significant out-of-pocket expenditure even for outpatient services and drugs (see box 18).

Box 18: Extract from the Godda report on maternal health and nutrition in tribal areas of Jharkhand (79)
NAMHHR carried out this Fact-finding mission after a paper was published in Economic and Political Weekly (EPW) (Stairway to Death: Maternal Mortality beyond numbers, Banerjee et al, Aug 3, Vol XLVIII no. 31, 2013) that examined 23 maternal deaths occurring in one year among young, poor women mostly from tribal communities (including PVTG) in two blocks of Godda District (Jharkhand). The objective was to develop an understanding of the situation of maternal health and related determinants such as nutrition, explore issues of service provisioning and suggest alternate strategies to improve health and nutrition services in the area.

The secondary data already indicates that the "one-size fits all" template approach to maternal health will not work in this area: in Godda district, it is clear that childbirth at home is 75.2 percent which is three times the rate of institutional delivery (24.4 percent). Yet the government has ignored the safety of these women, and put their lives at jeopardy by not putting in place a plan for safe home births with effective referral linkages in case of complications.

Moreover, within the Sundarpahari Block with 79 percent tribal population, there is a high proportion of primitive tribes like the Pahariyas, and the situation is exacerbated by low literacy (27 percent) and poor communications. There is poor convergence between departments towards saving the lives of the women of these PVTGs, leading to avoidable maternal deaths. Their traditional food patterns linked to the forests and the robust practice of mixed organic farming has been disturbed by the introduction of PDS grains, and the reluctance of the forest and agriculture departments. Iron-rich foods growing in the area have been ignored and women have been asked to take tablets during pregnancy which is alien to tribal culture.

Their local knowledge of herbal medicines and traditional birthing practices have been ignored and eroded by the intrusion of an exclusively allopathic health system that wants them to come to hospitals where no one speaks their language. Most of them have not been through school, and wide communication gaps persist. While roads lead up to the new factory being set up by a large industrial group, there are no roads for the villages of the PVTGs who prefer to live amidst the forests and hills.

Different tribal areas and their health problems need to be seriously studied both within Jharkhand and other areas of Tribal communities. The PVTGs or particularly vulnerable tribal groups require anthropological studies to understand the underlying reasons: what are acceptable health practices for different tribal groups from the government system and what

good health practices exist within their own tribal health systems, which they would like to retain. In addition there should be investigation into their nutritional status, as well as study of local food and agriculture practices.
Given the geographical situation of Godda district, it is difficult for health services to reach communities located deep in the forests. As a result, we observed tribal villages where women have never received ante-natal care, have no information about JSY or JSSK, and all of them have had home birth with some near-miss and maternal deaths; in PVTG villages the ANM has never come, and none of the children were immunized.

Other important social determinants include access to drinking water, sanitation and fuel. Very few tribal households have access to improved source of drinking water and sanitation; only 11 percent of tribal households in the country have access to tap water and only three percent households have tap water from treated source.(8,11) Accessibility to tap water, including those treated, differs widely across the states. Availability of tap water in the tribal households ranges from two percent in Odisha to 49 percent in Sikkim and 54 percent in Goa. A large proportion of tribal people (75 percent) practice open defecation. The proportion is much higher among rural STs (82 percent) as compared to urban areas (26 percent). Some states are particularly worse-off in providing sanitation services; tribal people in Rajasthan, Odisha, Jharkhand and Madhya Pradesh are most disadvantaged in this respect.(11) The type of fuel used for cooking and household purposes also exposes health disadvantages. Use of domestic fuel (use of firewood, cow dung or crop residues opposed to clean fuel such as cooking gas,, electricity or biogas) among ST households is very high. In most northeastern states especially Nagaland, Assam, Meghalaya, Manipur and Tripura as well as in Kerala, three out of every four tribal households use domestic fuel. Although the domestic air pollution has been identified as one of the most important preventable risk factors for disease burden globally and in India, only 10 percent ST households are using clean fuel, which needs to be addressed.(11) In the case of fuel, there is a double burden on tribal women, who bear the brunt of several crosscutting social determinants.

Role of NGOs

Nearly every tribal specific report or study states the role of one or many NGOs in working towards health of local tribal communities. In many of the states, there are numerous examples of NGOs taking up a particular domain of work like health and targeting a particular tribal community to work with. These NGOs often select a service based model or community based model approach to target improvement in health and development in the local communities with varying results.

Given their local area or community of focus, the NGOs often display significant understanding of local socio-cultural beliefs and practices, thereby innovatively adapting existing services to ensure better utilisation of services. Given the customised adaptation of health services/schemes, these models are not easily upscaled with similar impact. Numerous good practices can be found from micro to macro levels of the work of such NGOs offering outsourcing of various services to them as a valid option. The home based neonatal care model of SEARCH (*mentioned earlier)* is a clear example of this. The key factors that this approach highlighted was the need to understand the local context and the community, to think out-of-the-box for locally available, acceptable and yet cost-effective solutions, and the need for long-term research to study how and why interventions work in a given community.

While modest government grants are available more often from the centre than state to support part of the work at these institutions, most of the funding is derived from private donors both local and international to support the development work. Some projects initiated by such organisations have received acclaim while few have gone on to be upscaled by the state in all tribal areas.There is a simultaneous need for strong monitoring and evaluation systems to ensure continuous and consistent delivery of appropriate services to the tribal community.

SECTION 3: STRENGTHENING TRIBAL HEALTH:

In this section, we present recommendations organised according to the building blocks of the health system and the cross-cutting themes that emerged from the analysis of the previous section.

GOVERNANCE

1. **National to local tribal health focus**: Health indicators of tribal communities are lagging behind. There needs to be an explicit commitment by state health departments as well as district governments to focus on tribal health, either like national programme where guided by centre and adapted by state or each state to carve out its plan and include in NHM and other national initiatives.

> NHM in its recent framework of implementation calls for explicit prioritisation of health needs of vulnerable communities including ST communities in preparation of the local health action plans. This is welcome but still needs to be translated into relevant health service and programme changes at the periphery. Relevant extract from the 2012-17 framework of implementation shared here: (80)
>
> - *The district health action plans will be prepared on the basis of a socio-epidemiological profile with a focus on the health needs of vulnerable groups (i.e. people living in difficult and remote hamlets, SC/ST and Primitive Tribal Groups). The action plan will clearly prioritize intra district areas which are more difficult to reach, or have lower baseline indicators and devise plans to improve access to services.*
> - *Health of Tribals and People in Left Wing Extremist affected areas: The key areas to be addressed in planning for tribal health include limited access to health care services, malnutrition, gender issues, sickle cell anaemia, malaria and special needs of Particularly Vulnerable Tribal Groups.*

2. **State-level tribal health cells/task forces to steer state-specific tribal health programmes**: States need to develop state specific strategies to improve implementation and evaluation of services and programmes from health promotion to service delivery for tribal communities in the state, and grievance redressal.
3. **Strengthen tribal people's representation and participation through community planning and monitoring**: This is crucial across departments and includes strategies like ensuring tribal people's representation in all community health committees at all levels from village to district health society, and participation in state and national tribal health cells/task forces mentioned earlier.
4. **District-level tribal health/development forum**: At the district level, a comprehensive multi-stakehoder forum with district health society members, local NGOs, representatives of all tribal communities, social welfare department, forest department, women and child department to come together quarterly to review and deliberate over tribal area specific issues.
5. **Convergence and inter-sectoral coordination for tribal health:** At state level, different directorates need to come together to actively work together including the forest department. Given the influence of social determinants on tribal health, it is crucial that different departments recognise the need to come together in order to help improve tribal health status.

1. **Adapt or customise health programmes in tribal areas:** As explained earlier in this paper, customisation of health programmes/schemes is needed taking into consideration the local socio-political context and the health status profile of the local tribal communities. In the recent NHM framework, all districts affected by left wing extremism are identified as special focus districts and are allocated higher per capita funding,

focused monitoring and supervision, technical support and are encouraged to customise their programmes according to the local context.(80)

6. **Scale-up positive lessons from governance models in tribal areas of other states**: Given different models of governance like ITDA model in Andhra Pradesh or communitisation in Nagaland, pilot these in other districts as well, and evaluate their influence on improving governance in the district health system.
7. **Improve routine data quality for disaggregated tribal health data for better district and state tribal health monitoring**: Disaggregated data can help inform planning and decision making at all levels from knowing the situation on ground to implementing informed customised programmes.
8. **Improve supervision and monitoring of scheme/programme implementation for tribal communities**: This is needed at all levels to assess the actual situation on ground and ensure that services actually reach tribal communities. Grievance redressal mechanisms need to be brought into place to tackle challenges like corruption and poor quality of services.

HEALTH FINANCING

2. **Improve allocation to tribal health**: A higher allocation for tribal health is needed to tackle ongoing health inequities despite smaller numbers. Current allocation and utilisation of schemes should be analysed in district and state level reviews. Within the national health mission, a separate allocation must be made for health centres catering to tribal people, and health promotion for these communities. Even within a state, higher allocation maybe needed for certain tribal communities especially PVTGs, so an equitable financial plan is called for at the different levels.
3. Call for **comprehensive studies on financial management** of health services in tribal areas, state-wise allocation and utilisation of tribal specific initiatives including tribal sub-plans in relation to health, and out-of-pocket expenditure
4. **Higher funding for research and service delivery** in tribal areas should be channelled by the government via its different ministries. This can be done by directly putting out calls for the same or by partnering with local NGOs and academic universities.

HUMAN RESOURCES FOR HEALTH

1. **Reform and strengthen guidelines and norms related to ASHAs, community health workers and other health staff in tribal areas and encourage community involvement:**

NHM has relaxed some norms recently but in many areas these norms are yet to translated into changes on the ground. Some strategies already proposed in its recent framework (2012-17) are: (80)

- Support to ANM to help her reach relatively isolated villages/ tribal hamlets recommended through the state's tribal development fund.
- Flexibility given to states for relaxing the existing norm of ASHA to one ASHA per settlement in tribal, hilly and difficult to access areas.
- "Time-to-care": One of the most important recommendations in the framework is that health services should be within 30 minutes of walking distance from any habitation. This implies establishing additional sub-centres in areas with scattered habitations. *(from para 5.5.1.3, D.O No. 17014/9/13-Eco dated 11th July 2014, Ministry of Tribal Affairs, Minutes of Mission Steering Group of NHM, 20th December 2013- nrhm.gov.in, para 5.4.6 NHM framework 2012-17)*

Some strategies proposed from the multi-stakeholder consultations and the health system analysis are shared below.

- Relax ASHA and other health worker norms to resolve geographical access issues in tribal areas. For remote or difficult to access villages, consider appointing an ASHA in each village.
- Recruit a male counterpart of ASHA to help accompany patients to health centres/hospitals – a challenge for a female volunteer given the challenges in access in hilly and forested areas
- Build linkages between health workers and traditional *dais* to bring in their cooperation; consider training traditional *dais* as ASHAs
- Appoint tribal counsellors at PHC and public hospitals (block/district) to facilitate utilisation by tribal patients at these health centres, and help navigate intra- and inter-hospital referrals (latter is already in place in Tamil Nadu)
- Strengthen community-based pharmacies with trained local people (ASHA or male counterpart) to stock and dispense essential medicines
- In remote or difficult to access areas, upgrade sub-centres to accommodate a team rather than a single health worker, and thereby allow it to cater to more services than a regular sub-centre (two ANMs recruited in such sub-centres, or convert sub-centre to daughter PHCs with a lab technician, pharmacist and AYUSH doctor as possible)
- Appoint local drivers from the tribal community for ambulances

2. **Build capacity and sensitise health workers to** challenges faced by local tribal communities, socio-cultural characteristics of local tribal communities, local environmental health and genetic disease management if any, and traditional health practices like alternate birthing positions. Sensitisation of health workers is crucial to ensure better understanding of relevant health issues, better preparedness and sensitive behaviour.

3. **Prioritise HR placement and retention in tribal areas** in a given district or state through counselling and incentivisation**.**

The NHM has in its recent framwork (2012-17) called for various monetary and non-monetary incentives for health personnel serving in remote and underserved areas, and areas with tribal community. It highlights *the need for differential planning for remote or difficult to access areas* (including areas with tribal communities and left-wing extremist affected areas)*, expeditious filling of gaps in HR and infrastructure, strengthening home and outreach services, stronger community health worker programme, and a well trained cadre of nurses, medical and mid care providers recruited locally and trained appropriately.*(80) Some of the recent plans supported by NHM are :(80)

- Support for higher remuneration to medical officers and specialist serving in remote and rural areas.
- 50 percent reservation in post-graduate diploma courses for government medical officers who have served for at least three years in remote and difficult to access areas.
- Incentive at the rate of 10 percent of marks obtained for each year in service in remote or difficult to access areas up to the maximum of 30 percent of marks obtained in entrance test for admissions in post-graduate medical courses.

4. Explore **flexible recruitment and contracting strategies** for tribal areas (see box 12) - consider better incentives, shorter duration of posting, and flexible timings.

5. Build **representation of tribal people** within the health workforce: While this is done to some extent with respect to the volunteers, efforts should be put at the district levels to recruit female and male health

workers from within the tribal community itself. This will help overcome socio-cultural barriers and issues of low motivation and absenteism, and help bridge relationship between the tribal community and the local health centres. The NHM has in its recent framwork emphasises on establishing training centres for ANMs in tribal blocks to help form a district level cadre of ANMs and GNMs, with a district level recruitment to ensure that the ANM/GNM largely belong to the local tribal communities.

6. **Explore flexible and bridge para-medical courses for tribal areas to help fill large gaps in HR:** The recent NHM framework encourages development of bridge courses to encourage ASHAs to become ANMs, ANMs to become trained nurses and nurses to become nurse practitioners. Some strategies proposed from the multi-stakeholder consultations and the health system analysis are shared below.

- Flexible courses like Bachelors in rural medicine, nurse practitioners, and pharmacist educators (see box 12).
- Involve professional associations and link these health workers to existing professional education to allow for career growth through bridge courses.
- Develop local traditional knowledge domain into structured course like traditional health studies, and encourage local youth to take on this role
- Encourage sponsorhip or scholarship for studying medicine or allied health sciences with a compulsory work period post studies for 3-5 years. This will allow rotation of staff in regular cycles and ensure that gaps do not exist

ACCESS TO ESSENTIAL MEDICINES

NHM calls for provision of free drugs, diagnostics, diet for in-patients, cashless transport systems for patients to health services, free transport for emergencies and removal of user fees. It explains that these are the basic requirements to reducing the financial barrier from accessing health services.

1. Minimise out-of-pocket expenditure for tribal patients by **establishing generic medicine stores** with essential medicines outside government hospitals
2. Encourage pluralistic health systems in tribal areas; ensure **medicines availability in all systems of medicine**
3. Provide **additional standard treatment guidelines** for managing environmental health and genetic diseases, and accordingly ensure that local health centres are equipped for managing these conditions.
4. Develop focused drug policy for PVTGs on islands and specific tribes
5. **Monitor antimicrobial and other drug resistance** and/or toxicity in tribal areas especially for malaria, tuberculosis and HIV/AIDS in areas with high prevalence

HEALTH SERVICE DELIVERY

1. **Strengthen and locally adapt health promotion strategies:** Health promotion should be a priority for the local health workers and the village health committees using health. Health education material should be developed in local dialects and be relevant to the local culture by involving social scientists and local NGOs.

2. **Encourage a pluralistic health system by integrating traditional health practices as possible:** Traditional health practices should be documented and integrated into health promotion strategies, and health services (expanded later). NHM even calls for strengthening existing Indian systems of medicine and of including tribal medicinal practices in its programmes.

3. **Flexible health service organisation:** Different strategies proposed from the multi-stakeholder consultations and the health system analysis are shared below.

- Upgrade sub-centres in difficult to access or remote areas to daughter PHCs
- Partner with local NGOs to fill gaps in health services as needed from sub-centre level, capacity building responsibility, and service delivery
- Flexible norms for health centres not just based on population size but also on distance and difficulty to access
- Telemedicine to provide consultation in areas with HR shortages
- To overcome problems with access and transport, select locally suitable vehicle type for ambulance in hilly and forested areas. Innovative strategies like bike ambulances and hiring local vehicles to be considered.
- Fully equipped 108 ambulances should be stationed at key points identified based on access routes of a suitable vehicle type to allow full reach of services.

4. **Identify high risk areas or groups** in a district based on key health indicators, and focus additional efforts in these areas.

NHM includes the following strategies to identify high priority districts or groups.(80)

- A composite health index: NHM proposes an index to help address gaps in health outcomes within a state. The lowest quartile then are identified as high priority districts including districts with high proportion of tribal population and left wing extremism affected districts.
- Strategies for PVTGs: These include focus on this group in planning at block and district levels, more accurate needs assessment and mobile medical units for accessing health services, promoting intersectoral convergence to facilitate improvements in other social determinants and abolishing the discriminatory practices related to family planning.

5. Consider **district level/state level helpline** where information about public services and schemes is available and can be accessed, and minor queries addressed
6. **Health problems' specific recommendations** are shared below.
    a. **Prioritise safe deliveries rather than institutional deliveries in tribal areas**: It is imperative to reinforce the message that safe deliveries should be prioritised and not necessarily institutional deliveries.

- The district health office should develop phased plans to gradually shift to institutional safe deliveries in the coming decade.
- This will involve training of skilled birth attendants and provisions of required delivery kits to ensure safe home deliveries on one hand while preparing to equip local health centres and staff towards becoming safe delivery points.
- Include an additional module of training for SBA in NHM for delivering in alternate birthing positions and other relevant traditional practices
- Delivery hut model to be considered in remote or difficult to access areas
- For people living in remote areas, arrangements for living near the PHC (and higher hospitals) around the time of delivery (transit accommodation) need to be established. This is best done by partnering with local NGOs that work with these tribal communities.
- Identify high risk areas based on poor maternal health service coverage and focus additional efforts to reach services there

- Conduct maternal and infant death audits compulsorily for all maternal and child deaths in tribal communities

b. Implement **a comprehensive need-based family welfare programme** in tribal areas – moving away from camp based approaches to family centred need-based approach.

c. **Implement a multi-pronged strategy to combat malnutrition and nutrition related disorders, and coordinate with different departments to implement it**

- Relook at the existing *anganwadi* model to cater to nutrition requirements of tribal children. Consider expanding services to children 6 months onwards itself, and also include children or adults identified with malnutrition or any nutrition related disorder
- Upgrade some *anganwadis* to nutrition rehabilitation centres in areas with high prevalence of malnutrition/anaemia, or in difficult to access areas
- Build capacity of *anganwadi* worker to also provide nutrition counselling for adults and parents of malnourished children.
- Introduce nutrition in school curriculum from primary school onwards. Given many of these schools are residential schools, consider introducing kitchen gardening, poultry, and dairy keeping in school teaching.
- Strengthen care and support for severe acute malnourished children with a network of functional nutritional rehabilitation centres
- Call for research on local diet practises – high calorie/high protein meals by National institute of Nutrition or nearby dietary or medical colleges to helpe prepare recipes with locally available produce
- Support kitchen gardens and favourable nutrition practices in the community through village councils and self help groups
- Apart from existing subsidised cereals in ration shops, include locally available millets, green leafy vegetables, milk and eggs to ensure adequate proteins and vitamin supplements
- Call for research on profiling anaemias and other nutrition related disorders in tribal communities, and based on finding, organise for management of the same by local health centres

d. **Strengthen communicable disease control in tribal areas, especially malaria but also several other neglected diseases**

- Form multi-stakeholder teams to prepare for and combat communicable disease outbreaks including roads, forest, *panchayat,* etc.
- Equip and prepare local secondary and tertiary health centres to manage complications and emergencies if any
- Link government health centres in tribal areas to medical colleges to supplement monitoring of communicable diseases and outbreak investigation
- Strengthen disease surveillance for communicable diseases in tribal areas, and identify high risk areas for each communicable disease with close monitoring
- Call for documentation and study of local innovations in different tribal areas by different stakeholders, and develop a pool of innovations from which state players can select and adapt strategies
- Promote management of communicable diseases using physical, biological and environmental methods, and avoid dependence on chemical methods to avoid resistance

e. **Improve understanding of chronic diseases' profile, and epidemiology in tribal communities:** Call for studies on hypertension, cancer and substance abuse in tribal areas

f. **Monitor substance abuse and implement control programmes in tribal communities with history of high burden:** Promote community based deaddiction strategies that examine regulatory policies, health promotion, and improve network and access to de-addiction services depending on local patterns of substance abuse

g. **Build local health system capacity to identify and manage animal and accident related injuries:** build local health centre capacity and infrastructure to manage first-aid and triage of such cases, and appropriate referral for the same. Health department will need to prepare guidelines for first-aid and triage for such injuries.

h. Improve **one-health integrated surveillance of human-wildlife-domesticated animal transmission of zoonoses** by setting up pilot one-health surveillance sites in forest areas

i. **Plan and implement hemoglobinopathy control programme** in districts with tribal communities affected by a certain hemoglobinopathy like sickle cell anaemia and thalessemia: Borrowing from the Gujarat sickle cell control programme, plan and implement a comprehensive strategy to control the condition including screening, counselling and management of the condition among the community, but also to build capacity of local health centres to prevent and manage these conditions. The Ministry of Tribal Affairs has initiated a systematic screening programme for sickle cell anaemia but details are yet to be available to understand its full plan and scope.

INFORMATION (DATA AND RESEARCH)

1. **Need to capture disaggregated data for ST population - tribal focus in all policies a must:** In all health related information systems and other programmes related to tribal communities' development, tribal and PVTG status must be included as a key social characteristic. This is one of the most important recommendations as it allows not only to get an accurate picture of health status but also informs planning and monitoring of services for the tribal communities.
2. **Map tribal settlements and local health centres in each district (in a state) based on key health indicators** to help identify high risk areas based on different criteria from poor utilisation of specific services to difficulties in physical access. This will help streamline efforts to plan additional efforts to help facilitate reach of health services.
3. **Notify or establish central agency to collate and map out all existing work on tribal health and development:** Maintain a central repository of tribal health data with systematic compilation and review of tribal focused schemes/programmes across states and at central level. This repository could be housed in ministry of tribal affairs or health and family welfare, and be maintained state-wise but also according to tribal community.
4. **Link tribal communities in a given district/state or region with local medical and allied health science universities** to ensure systematic documentation and study of socio-economic profile, health problems profile and traditional health practices of the tribal community. These universities could act as notal institution for research and action on tribal health in the fields of medicine, dentistry, pharmacy, public health, social work and related fields.

5. **Improve data collection from routine vital events registration, cancer registeries, and implement registeries for haemoglobinopathies.**
6. **Develop a comprehensive list of important and relevant themes for research, and systematically organise calls for research through different institutions/departments:** Few areas identified in this paper are listed below:

- For malnutrition, study locally available nutritious foods and high protein or high calorie meal preparations
- For anaemia and specific nutritional deficiencies, study profile of anaemia and other micronutrient deficiencies , and study local preparations to help overcome these nutrient deficiencies
- Documentation and study of local traditional health practices
- Gender focused studies related to their access to health services, intimate partner violence, sexual violence and participation in health workforce
- Documentation and study of local innovations in different tribal areas by government/ NGOs/ community across the different staes, and thereby develop a pool of innovations from which state players can select and adapt strategies
- Mapping and analysis of tribal focused schemes and their evaluation on a whole
- Health education of tribal communities – propose innovative methods, appropriate method identification, and develop locally relevant material
- Monitoring of disease trends over time to better predict and control outbreaks of communicable diseases

7. **Encourage research that is comprehensive, locally relevant, participatory in nature and guided by ethical frameworks:** Few key points to consider are listed below:

- Long term cohorts need to be setup to monitor trends among tribal community in relation to changing lifestyle, diet and nutrition, environment related like relocation and mining, etc.
- Literature reveals that only few geographical areas, tribal communities and disease conditions are usually focused on in detail. There are gaps in terms of themes, tribal communities and areas. There is hence a need for systematic mapping of research available to identify the gaps, and then government needs to put out calls for focused research to help fill the gaps.
- While the need for epidemiological studies exists for the neglected areas, there is now a need to move beyond disease centred research into health policy and systems research.
- Strengthen the ethics oversight of research in tribal areas. Standards and guidelines for ethics committees in tribal areas with mandatory ethical approval by registered ethics committees for research in tribal areas should be put forth.
- Encourage a participatory research approach that allows for community participation and locally relevant research. Involve local community/community based organisation as well in the ethics approval process as well as possible.
- Encourage inter-disciplinary research: Call for work across domains like anthropology, epidemiology, health economics and conservation

8. **Partner with NGOs working with tribal communities as field stations** for facilitating research, training and independent monitoring of service utilisation and specific disease conditions, and in areas with poor reach of services, even service delivery. The presence of NGOs working with different tribal communities is an advantage for local governments to utilise to help overcome various challenges in reaching out to these tribal communities.

CROSS CUTTING THEMES

1. **Call for gender focus in all existing programmes and future work as well:** apart from gender focus in studies and programmes, capacity building and sensitisation of local health workers and NGOs of gender-specific issues especially in conflict zones, migrants in urban areas and areas with high migration rates is vital. To some extent this thought is echoed by NHM though operationally this is lacking.
2. Create **a special cell at state and national levels under the National Commission of Women** to ensure safeguards for tribal women, and help institutionalise grievance redressal and rehabilitative mechanisms for those in need. This cell should include women tribal leaders as members at all levels.
3. **Recognition and revitalisation of local health traditions in tribal communities:** proactive systematic documentation, identification and study of local health traditions, and when applicable, build local capacity to provide services
4. In areas with differences in traditional practice with standard health service practice like position for delivery, there is a **need for customisation of existing services with local socio-cultural practices**
5. **Partner with traditional health service providers in tribal areas** from health promotion to service delivery to referrals, and participation in various village health committees perhaps even as the ASHA.
6. **Identification of adverse practice, and systematic negotiation against such practice by engaging with various community actors:** Demystification of common medical ailments and treatments as a part of health education is key for such awareness.
7. **Partner with local NGOs to inform planning, delivery and/or monitor reach of services particularly on certain issues.**
8. **Develop an independent committee or department within MOTA that exclusively focuses on PPP, supervision and regulation**

BIBLIOGRAPHY

1. Measuring well-being and progress. 2013.

2. Declaration of Alma-Ata. International conference on primary health care. Alma-Ata; 1978.

3. Horton R. Indigenous peoples: time to act now for equity and health. Lancet. 2006;367:1705–7.

4. Health. State of the World's Indigenous Peoples. New York: United Nations publication; 2009. p. 155–87.

5. Monitoring the building blocks of health systems. 2010.

6. Mohindra KS, Labonté R. A systematic review of population health interventions and Scheduled Tribes in India. BMC Public Health [Internet]. 2010;10(Figure 1):1–10. Available from: www.biomedcentral.com/1471-2458/10/438

7. Chandramouli C. Scheduled Tribes in India. 2013.

8. Statistical Profile of Scheduled Tribes in India. 2013.

9. Government of Karnataka. Karnataka: Human Development Report 2005. 2006.

10. Sridharan V, Anil C. Study to understand the health status and healthcare systems In selected tribal areas of India [Internet]. 2010. Available from: http://www.graam.org.in/publication/study-understand-health-status-and-healthcare-systems-selected-tribal-areas-india

11. Report of the High Level Committee on Socio- Economic, Health and Educational Status of Tribal Communities of India. 2014.

12. Ram F, Shekhar C, Hemkhothang L. Health Status of ST Population : A Compilation of Available Latest Data.

13. Basu SK. Health Status of Tribal Women in India. Soc Change. 1993;23(4):19–39.

14. Basu S. Dimensions of tribal health in India. Heal Popul Perspect Issues. 2000;23(2):61–70.

15. Kshatriya GK. Changing Perspectives of Tribal Health in the Context of Increasing Lifestyle Diseases in India. J Environ Soc Sci. 2014;1(1):1–7.

16. Laxmaiah A. Nutrition of tribal population in India.

17. Haddad S, Mohindra KS, Siekmans K, Màk G, Narayana D. “Health divide” between indigenous and non-indigenous populations in Kerala, India: population based study. BMC Public Health [Internet]. BioMed Central Ltd; 2012 Jan [cited 2014 Aug 31];12(1):390. Available from: http://www.biomedcentral.com/1471-2458/12/1471-2458-12-390

18. Lawrence A, Lewis L, Hofmeyr G, Styles C. Maternal positions and mobility during first stage labour. Cochrane Database Syst Rev. 2009;(2):2–4.

19. Bowser D, Hill K. Exploring Evidence for Disrespect and Abuse in Facility-Based Childbirth. 2010.

20. Sri BS, Khanna R. Dead Women Talking. 2014.

21. Prusty RK. Use of contraceptives and unmet need for family planning among tribal women in India and selected hilly states. J Health Popul Nutr [Internet]. 2014 Jul;32(2):342–55. Available from: http://www.ncbi.nlm.nih.gov/pubmed/25076671

22. Camp of wrongs: the mourning afterwards: a fact finding report on sterilisation deaths in Bilaspur. 2014.

23. Bang AT, Bang R a., Baitule SB, Reddy MH, Deshmukh MD. Effect of home-based neonatal care and management of sepsis on neonatal mortality: Field trial in rural India. Lancet. 1999;354(9194):1955–61.

24. Das MB, Hall G, Kapoor S, Nikitin D. India’s Adivasis. Indigenous Peoples. 2011. Report No.: 4.

25. Garikipati U, Babu GR, Pant H, Murthy GVS. GLOBAL JOURNAL OF MEDICINE AND PUBLIC HEALTH A study of infant deaths in tribal area of Andhra Pradesh , India. 2013;2(4).

26. Health Profile of Scheduled Tribes. 2006.

27. Balgir RS. Tribal Health Problems , Disease Burden and Ameliorative Challenges in Tribal Communities with Special Emphasis on Tribes of Orissa. National Symposium on Tribal Health [Internet]. 2006. Available from: http://www.rmrct.org/files_rmrc_web/centre’s_publications/NSTH_06/NSTH06_22.RS.Balgir.pdf

28. Diet and nutritional status of tribal population and prevalence of hypertension among adults. Hyderabad; 2009.

29. Das MB, Hall G, Kapoor S, Nikitin D. India - The Scheduled Tribes. Indigenous Peoples , Poverty and Development.

30. Rustagi P, Mishra SK, Mehta BS. Scheduled Tribe children in India: Multiple deprivations and locational disadvantage. Children of India: Rights and Opportunities. 2011. Report No.: 8.

31. Chakma T. The Health problems in Tribal populations in India: The burden (Morbidity, causes of death), what interventions work, Health care needs. Jabalpur; 2014.

32. Starvation deaths in Chenchu Adivasi of Nallamala forest, Andhra Pradesh. The Hindu [Internet]. Kurnool; 2009 Apr 30; Available from: http://www.thehindu.com/todays-paper/chenchus-on-brink-of-starvation/article319610.ece

33. Sinha A. Tribal-dominated districts account for 47% of malaria deaths in India. The Times of India. Lucknow; 2014 Oct 16;

34. Velho N, Srinivasan U, Prashanth NS, Laurance WF. Human disease hinders anti-poaching efforts in Indian nature reserves. Biol Conserv. 2011;

35. Sachs J, Malaney P. The economic and social burden of malaria. Nature [Internet]. 2002 Feb 7;415(6872):680–5. Available from: http://dx.doi.org/10.1038/415680a

36. Srivastava S, Singh TP, Singh H, Kushwaha SPS, Roy PS. Assessment of large-scale deforestation in Sonitpur district of Assam. Curr Sci. 2002;82(12):1479–84.

37. Saxena R, Nagpal BN, Singh VP, Srivastava A, Dev V, Sharma MC, et al. Impact of deforestation on known malaria vectors in Sonitpur district of Assam , India. J Vector Borne Dis. 2014;51(September):211–5.

38. Dhariwal AC. Vector Borne Diseases and Control Programmes in the tribal areas in India : The problem , Programmes , Successes , Failures and Major VBDs in Tribal Areas in India.

39. Kumar A, Valecha N, Jain T, Dash AP. Burden of malaria in India: retrospective and prospective view. Am J Trop Med Hyg [Internet]. 2007 Dec;77(6 Suppl):69–78. Available from: http://www.ncbi.nlm.nih.gov/pubmed/18165477

40. Sundararajan R, Kalkonde Y, Gokhale C, Greenough PG, Bang A. Barriers to malaria control among marginalized tribal communities: a qualitative study. PLoS One [Internet]. 2013 Jan [cited 2014 Aug 31];8(12):e81966. Available from: http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=3869659&tool=pmcentrez&rendertype=abstract

41. Sharma VP, Dev V. Prospects of Malaria Control in Northeastern India with Particular Reference to Assam. 2007;

42. Rao VG, Gopi PG, Bhat J, Yadav R, Selvakumar N, Wares DF. Selected risk factors associated with pulmonary tuberculosis among Saharia tribe of Madhya Pradesh, central India. Eur J Public Health. 2012;22(2):271–3.

43. Rebecca Sinate. HIV/AIDS issues in the north east India. Guwahati; 2014.

44. The complex problems of simple people: The burden and the pattern of illnesses among the Adivasi communities in central India as it relates to the problems of hunger and deprivation. Ganiyari; 2000.

45. Hazarika NC, Biswas D, Narain K, Kalita HC, Mahanta J. Hypertension and its risk factors in tea garden workers of Assam. Natl Med J India. 2002;15(2):63–8.

46. Mohindra KS, Labonté R. A systematic review of population health interventions and Scheduled Tribes in India. BMC Public Health [Internet]. 2010 Jan;10(Figure 1):438. Available from: http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2919477&tool=pmcentrez&rendertype=abstract

47. Kleinman A. Anthropology and psychiatry. The role of culture in cross-cultural research on illness. Br J Psychiatry [Internet]. 1987 Oct 1 [cited 2015 Sep 13];151(4):447–54. Available from: http://bjp.rcpsych.org/content/151/4/447.abstract

48. Equitable sharing of benefits arising from coal mining and power generation among resource rich states. 2013.

49. The Adelaide Statement on Health in All Policies: moving towards a shared governance for health and well-being. Health Promot Int. 2010;25(2):258–60.

50. Colah RB, Mukherjee MB, Martin S, Ghosh K. Sickle cell disease in tribal populations in India. Indian J Med Res. 2015;552–8.

51. Bhattacharyya DM, Basak J, Mukhopadhyay S, Mukhopadhyay A. Status of HbE variant among Rabha tribe of West Bengal, India. Indian J Med Res. 2015;111(May):521–4.

52. Balgir RS. Spectrum of hemoglobinopathies in the state of Orissa, India : A ten years cohort study. JAPI. 2005;53:1021–6.

53. Kaur M, Dangi C, Singh M, Singh H, Kapoor S. Burde of Sickle Cell Diseases Among Tribes of India - A Burning Problem. Int Res J Pharm Appl Sci. 2013;3(1):60–80.

54. Mukherjee MB, Colah RB, Martin S, Ghosh K. Glucose-6-phosphate dehydrogenase (G6PD) deficiency among tribal populations of India - Country scenario. Indian J Med Res. 2015;(May):516–20.

55. Balgir RS, Dash BP, Murmu B. Blood groups, hemoglobinopathy and G-6-PD deficiency investigations among fifteen major scheduled tribes of Orissa , India. Anthropologist. 2004;6(1):69–75.

56. Ghosh K, Colah RB, Mukherjee MB. Haemoglobinopathies in tribal populations of India. Indian J Med Res. 2015;(May):505–8.

57. Dubochet L. Making post-2015 matter for socially excluded groups in India. 2015. Report No.: XIX.

58. National Tribal Policy (Draft). 2006.

59. Bahl A (Central B of HI. Communitisation of Grassroot Health Services, Nagaland. 2005.

60. Ganesh G, Seshadri T, MH A, Kadammanavar M, Elias M, Mladovsky P, et al. What generative mechanisms excluded indigenous people from social health protection? A study of RSBY in Karnataka. Towards equitable coverage and more inclusive social protection in health. 2014. p. 190–206.

61. Improving Health Services for Tribal Populations. World Bank News. 2012 Feb;

62. Michielsen J, Criel B, Devadasan N, Soors W, Wouters E, Meulemans H. Can health insurance improve access to quality care for the Indian poor? Int J Qual Health Care [Internet]. 2011 Aug [cited 2011 Jul 26];23(4):471–86. Available from: http://intqhc.oxfordjournals.org/cgi/content/abstract/mzr025v1

63. Soors W, Devadasan N. Community Health Insurance and Universal Coverage : Multiple paths , many rivers to cross. 2010;

64. Sundararaman T, Raha S, Gupta G, Jain K, Antony K, Rao K. Chhattisgarh Experience with 3-Year Course for Rural Health Care Practitioners - A Case Study. 2008;1–23.

65. Thind A, Mohani A, Banerjee K, Hagigi F. Where to deliver? Analysis of choice of delivery location from a national survey in India. BMC Public Health [Internet]. 2008 Jan [cited 2014 Aug 31];8(29). Available from: http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2248571&tool=pmcentrez&rendertype=abstract

66. Jat TR, Ng N, San Sebastian M. Factors affecting the use of maternal health services in Madhya Pradesh state of India: a multilevel analysis. Int J Equity Health [Internet]. BioMed Central Ltd; 2011 Jan [cited 2014 Aug 16];10(1):59. Available from: http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=3283453&tool=pmcentrez&rendertype=abstract

67. Adamson PC, Krupp K, Niranjankumar B, Freeman AH, Khan M, Madhivanan P. Are marginalized women being left behind? A population-based study of institutional deliveries in Karnataka, India. BMC Public Health [Internet]. BioMed Central Ltd; 2012 Jan [cited 2014 Aug 14];12(1):30. Available from: http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=3269389&tool=pmcentrez&rendertype=abstract

68. PAHELI report: Peoples' assessment of health education and livelihoods. 2011.

69. Indigenous peoples & participatory health research. world health organization. 2014.

70. Sharma DC. Rights violation found in HPV vaccine studies in India. Lancet Oncol [Internet]. Elsevier Ltd; 2013;14(11):1. Available from: http://dx.doi.org/10.1016/S1470-2045(13)70420-0\npapers3://publication/doi/10.1016/S1470-2045(13)70420-0

71. Himabindu BL, Arora R, Prashanth NS. Whose problem is it anyway? Crimes against women in India. Glob Health Action [Internet]. 2014;7. Available from: http://www.ncbi.nlm.nih.gov/pubmed/25053256

72. Chamberlain G. Jarawa tribe now face sexual abuse by outsiders on Andaman Islands. The Guardian. 2014 Feb 1;

73. 11 minor tribal girls in AP hostel allege sexual abuse by tutor. Firstpost. Hyderabad; 2014 Jan 4;

74. Chhattisgarh: Tribal girls reveal tales of violence, sexual abuse. Bridge the gap, bring the change. 2013.

75. Bhasin V. Status of tribal women in India. Stud Home Community Sci [Internet]. 2007;1(1):1–16. Available from: http://www.krepublishers.com/02-Journals/S-HCS/HCS-01-0-000-000-2007-Web/HCS-01-1-001-07-Abst-Text/HCS-01-1-001-07-001-Bhasin-V/HCS-01-1-001-07-01-Bhasin-V-Tt.pdf

76. Kujur JM. Health Culture in Tribal Population. 2nd Expert Committee Meeting on Tribal Health. 2013.

77. Sachdev B. Perspectives on Health , Health Needs and Health Care Services among Select Nomad Tribal Populations of. Antrocom Online J Anthropol. 2012;8:73–81.

78. Subramanian S V., Smith GD, Subramanyam M. Indigenous health and socioeconomic status in India. PLoS Med. 2006;3(10):1794–804.

79. Maternal health and nutrition in tribal areas: Report of the fact-finding mission to Godda, Jharkhand. 2014.

80. Framework for implementation National Health Mission, 2012-2017 [Internet]. 2012. Available from: http://vikaspedia.in/health/nrhm/national-health-mission/nrh-framework-for-implementation