

**Population growth, ethnic diversity, socio-economic status, and healthcare utilization in North East India: with special reference to the recognized tribes**

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**July, 2021**

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Suggested Citation: Lhungdim H., Sahoo H. and Ladusingh L. (2021). "Population growth, ethnic diversity, socio-economic status, and healthcare utilization in North East India: with special reference to the recognized tribes", Working Paper No. 21, International Institute for Population Sciences, Mumbai.

**IIPS Working Paper Series No. 21**

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(स्थापना/ Established in 1956)  
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**INTERNATIONAL INSTITUTE FOR POPULATION SCIENCES**

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# Population growth, ethnic diversity, socio-economic status, and healthcare utilization in North East India: with special reference to the recognized tribes

Hemkothang Lhungdim, Harihar Sahoo and L. Ladusingh<sup>1</sup>

**Abstract:** Studies on population and health issues of North East India, particularly ethnic demography and related-health problems, have not received as much attention as it deserved. Most research adopt a restrictive perspective yet simplifying the outcomes, often coupled with lack of geo-historical knowledge of the region, especially of its diverse ethno-lingual communities. Any study on North East India can only be meaningful and productive when grounded on the understanding of ethnic demography, including the composition, magnitude of diversity, growth pattern, territoriality and spatial patterning, health care issues, etc.

This study examines current and future population growth, measures ethno-lingual diversity, utilization and expenditure of healthcare services for major diseases by mothers and children, etc., based on data from Census, National Sample Survey (NSS), and National Family Health Survey (NFHS), by applying suitable statistical methods. Some interesting findings include negative growth or gradual decline (shift) observed of some communities/tribes and mother-tongues in recent years, high linguistic diversity, low proportion of adults with employment, better sex ratio among tribes than the national average, poor maternal and child health utilization (such as ANC, immunization, institutional delivery), increase in proportion poor or low wealth quintiles (53%), etc. The region's priority remains improvement of the socio-economic and health infrastructure and services, along with understanding the pattern of population growth and health care services, particularly in the context of diversity as illustrated by the myriad ethno-lingual communities.

**Key words:** Population growth, Diversity index, Disease burden, MCH services, Treatment expenditure, wealth quintiles, North East India.

## Introduction

The North Eastern region of India lies between 21°57' N – 29°30' N and 88° E – 97°30' E and is spread over an area of 2,62,379 km<sup>2</sup>. The region comprises of eight states, viz., Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura. The region shares a boundary with four countries, viz., Bangladesh (South-west), Bhutan (North-west), China (North) and Myanmar (East). Due to its location, from time immemorial the region has been a 'corridor' or "gateway" to and from East Asia, emerging as a 'perennial nuclear area' and a melting-pot of people from various racial stocks and ethno-linguistic families. On the eve of the first Anglo-Burmese War (1824-26) the region was governed by a political agent to the Governor General of North-East Frontier (Bhattacharya, 2018). Till today the region is geo-politically sensitive and of great strategic significance. The North Eastern region of India has been known or identified more

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<sup>1</sup> This paper is based on IIPS-sponsored research project with the same title during 2017-19 academic year, which was coordinated by the three authors as faculty of International Institute for Population Sciences, Mumbai-88.

for its ethnic diversity and cultural mosaic rather than its natural or physical settings and processes. As per Census 1951, the entire North East region, including three districts of West Bengal (Darjeeling, Jalpaiguri and Cooch Behar) has been classified as “Eastern Himalayan”, one of the natural sub-divisions of the Himalayan region, and further divided into six (6) divisions. The sub-divisions are: Assam Plains division; Assam Hills division; Manipur division; Tripura division; Himalayan West Bengal division; and Sikkim division.

According to the 2011 Census, the region is home to 3.8 percent of India’s population and nearly 8 percent of the total geographical area of the country. One striking feature of the region has been its high literacy rate and seemingly very good health status, as illustrated by high life expectancy, in most states. Despite the small share of population in the region, it is home to numerous ethnic communities speaking different mother-tongues belonging to language groups, but mostly belonging to the Mongoloid racial stock. One remarkable demographic feature of the region is the presence of diverse ethno-lingual communities, having more than 100 distinct mother-tongues, some with a population less than 5,000 while others having more than 10,00,000. The magnitude of territoriality and ethno-lingual diversity can be gauged and measured by determining the likelihood that two randomly picked persons in the region will speak the same language or mother-tongue, which is found to be very unlikely (Lhungdim, 1991). The presence of diverse ethno-lingual communities in North Eastern India illustrates that the region has been a melting-pot of races and cultures over the centuries, and today, is home to a large number of tribes and other populations of India. The distinctive socio-cultural milieu of the region has captured the imaginations of anthropologists, linguists, and other social scientists from all over the world. Due to its history, socio-cultural, location, and physio-geographical features, the North Eastern region has been strategically and geo-politically very important to the country. Various accounts of the people and region during pre-Independence India were written by the British administrators (Mackenzie, 1885).

In general, the tribal populations in the region are in the process of socio-economic transition from a traditional subsistence economy based on shifting cultivation to a market-oriented economy (Hemam and Reddy, 1998). Social change plays an effective role in shaping modernity in tribal societies in a slow and steady process, often viewed from a ‘traditional society’ perspective. Few studies on North Eastern India have focused on rapid population growth, socio-economic transition

and its diverse cultural and environmental conditions (Baruah, 1980; Chaudhury, 1993; Das and Das, 1992). The tough but beautiful hilly terrains of the region are an obvious hindrance to development because of the difficult transportation and communication compounded by problems peculiar to the area such as migrants issue, ethnic violence, pressure on land, economic backwardness, insurgency, absence of quality education and porous international border (Goswami, 2010). Over the years, issues of development and social change in the North Eastern region of India have increasingly been attracting attentions and research. Despite availability of several studies on the North Eastern people, issues related to tribal demography, ethnic diversity and health status of the region received insufficient attention from researchers and remain less understood. Therefore, this study is an attempt to fill the gap in literature, from the population and health perspectives.

### **Data and methods**

The data for the present study was drawn from two principal sources: 1. The Census reports of various years - for demographic descriptions and estimation of ethnic diversity and projection of populations; and 2. Survey data – to highlight the recent situation on certain health issues not covered by the Census, or related measures. The two main survey data used are both large-scale and nationally representative: (a) Social consumption and Health data (Household schedule 25.0) of the 71<sup>st</sup> round (2014) of the National Sample Survey (NSS) for health-related indicators, and (b) Fourth round (2015-16) of the National Family Health Surveys (NFHS-4), which covers 601,509 households, for demographic, socio-economic, and diseases and healthcare services indicators. These data sources complemented analytical requirements and estimates for specific objectives. In some cases, the district was the unit of analysis, substituted by state level data depending on the nature and availability of the data. Population projections, measurement of ethnic diversity, growth rate, sex ratio and work participation have been computed using Census and survey data. The projection of various speakers of mother-tongues/languages was done based on the 2011 census (upto 2061) on the assumptions of both exponential (linear) and logistic changes or models, as used in a study with the US Census (Ortman & Shin, 2011).

**Linguistic Diversity Index:** A statistical analysis was attempted to measure the ethno-lingual diversity in the study areas, which take into consideration the number of speakers of a language in a state, and among the scheduled and non-scheduled tribes. Computation was done to obtain the

Linguistic Diversity Index (LDI) based on Greenberg’s method (1956). For instance, in a given country with population P and n languages, with L1, L2, ..., Ln speakers, respectively, index of linguistic diversity of the country can be known and derived using:

$$D = 1 - \sum_{k=1}^K (p_k)^2 \dots\dots\dots (1)$$

where  $p_k$  is the fraction of total population speaking language k, K is the total number of languages in a country. Clearly, when there is only one common language, the index is 0 (zero). When the number of languages increases and the shares become more equal the index tends towards 1 (one). In other words, as stated by Greenberg, the index can be interpreted as representing the probability that any two persons of the same country selected at random would have different mother tongues. The highest possible value, 1, indicates total diversity (that is, no two people have the same mother tongue) while the lowest possible value, 0, indicates no diversity at all (that is, everyone has the same mother tongue).

**Key Findings**

The findings of the study relate mainly to the recognized scheduled tribes and their languages/mother-tongues at the state and district levels, which includes population growth, composition, measuring linguistic diversity (indices), socio-economic status, utilization of maternal and child services, etc.

***1. Population growth and composition: the recognized scheduled tribes***

***Brief profile of tribes***

The Census 2011 mentioned 135 recognized tribes (as scheduled tribe) in the North Eastern India, an increase by 14 more tribes since 1991<sup>2</sup>. Manipur had the maximum number of recognized tribes with 34, followed by Assam with 29 (15 in autonomous districts and 14 in other non-autonomous districts), and Tripura with 19. Sikkim (with 4) and Nagaland (with 5) are the two states having the minimum number of recognized tribes in the region, despite having many disparate sub-tribes. It may be pointed out that in Assam, Meghalaya and Mizoram (once under one administration), there are 37 sub-tribes of Kuki tribe (any) listed separately, and in Tripura the list includes 17 such sub-tribes of Kuki.

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<sup>2</sup> An increase in the number of tribes observed over the years in most states due to the inclusion of new ethnic communities in the tribes list as per the modification orders (amendments) from time to time.

Some of the populous or well-known tribes (as per the recognized list) in the region are Khasi, Garo, Boro, Kachari, Naga (any), Mizo (any), Kuki (any), Karbi, Dimasa, Nyishi, Apatani, Adi, Tripuri, etc. In case of Nagaland, there are many large sub-tribes such as Ao, Konyak, Lotha, Angami, Phom, Sema, etc.

### ***Growth of tribes***

In India the tribes accounted for 8.6 percent of the total population (2011 census) up from 6.9 percent in 1961, and between the last two censuses (2001 & 2011) it has increased by 23.7 percent with 104.5 million persons. The population of the North East region of India was estimated to be about one million in 1830, and continued to grow rapidly reaching 4 million in 1901. After India's independence, their population grew four-folds since 1951, from 10 million to 45.4 million in 2011, with an annual growth rate of over 4 percent. Two important events were associated with rapid population growth in the region: (i) in the 1951 census due to large-scale population re-distribution associated with the partition of India in 1947, and (ii) in 1971 Census, as the region experienced large scale exodus of population from the erstwhile East Pakistan. As per the 2011 census in the NE region, Assam had the largest population with 31 million people (69% of the total population of the region), followed by Tripura with 3.6 million (8%) and Meghalaya with 2.96 million (7%), while the least populous states were Sikkim with 6.0 lakh persons (1%), and Mizoram with 1.1 million (2%).

Over the past 40 years since 1971, the scheduled tribes grew by 6.5 percent annually, with the highest rate of 6.8 percent in Nagaland, followed by 6.2 percent increase in Manipur, and least in Assam by 2.6%. However, states also experienced negative growth during 2001-11: the highest decrease was in Assam (-8.5%) and Sikkim (-6.2%). Overall, the region recorded a decline in tribal population by 6.3 percent. At the district level also, negative growth was observed, mostly in Assam and Sikkim. In 55% of the districts (47 of 86 districts) in NE India, tribes account for more than 50 percent of the total district population.



By the 2011 census, there were nearly 250 ethnic communities (mostly tribes/sub-tribes<sup>3</sup>) in the NE region, and many of these tribes showed exceptionally high decadal growth (over 50%) in the past two decades in most of the states. However, the major tribes with a population of more than 2 lakhs in a particular state were Adi, Nyishi (Arunachal Pradesh), Tripuri (Tripura), Thadou (Manipur), Naga, Ao, Konyak, Sema (Nagaland), Any Mizo (Mizoram), Khas/Jaintia, Garo (Meghalaya), Boro Kachari, Karbi, Kachari/Sonwal, Miri, Rabha, and Lalung (Assam).

### *Age structure of the tribes*

Understanding the age structure of a population is important as the pattern reflects socio-economic and health status with implications about development. Over the years, a gradual shift in age group from younger to older ages was observed in the NE region. For instance, in 1991, children aged 0-14 years constituted about 41 percent, adults aged 15-59 years constituted the most dominant group with about 53 percent and the older age group of 60+ constituted about 5 percent. However, by the 2011 census, the share of children (0-14 years) declined by 6 percent to 35 percent, and the share of adults increased by 6 percent to 59 percent, and that of older group (60+) nearly one percent (6%). A similar pattern was observed in most states, and among the states, Sikkim had the least proportion of children (28%), followed by Manipur (31%) and Assam (32%), which indicates declining fertility. In fact, over the years, fertility declined in all states, but slower in Meghalaya and Nagaland; both states experienced a decline in the population of children by less than 3 percent over four decades. As per the 2011 census, states with the largest proportion of older age groups were Sikkim (7.2%), Tripura (6.8%), and Mizoram (6.4%). Meghalaya has the least share of older persons (4.6%), since 1981(4.5%).

### *Sex ratio*

The tribes in the North Eastern region had a fairly good sex ratio with 994 females per 1000 males in 2011, an increase by 18 points (976) since 1971. Three states had a favourable sex ratio with more females than males in their populations in 2011 - Arunachal Pradesh (1032), Meghalaya (1013), and Mizoram (1007). Among the states, in Arunachal Pradesh, 13 out of 16 districts had a sex ratio equal to or higher for females, with Tawang and Papum Pare having the highest sex ratio

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<sup>3</sup> These 250 tribes or sub-tribes have been identified by Census 2011 in NE region (mostly from Arunachal Pradesh) are those communities having specific/distinct mother-tongues (speech or dialect communities), but only 135 tribes have been recognized or given scheduled tribe status.

(1076 each), while the lowest of 975 was in Upper Siang. In Assam the sex ratio ranged from 952 in Karimganj and Hailakandi to 1021 females in Barpeta district and 1011 in Cachar district. In Manipur, the highest sex ratio of 1090 was in Imphal West and lowest of 946 in Thoubal district. In Meghalaya, 3 out of 7 districts had a sex ratio of over 1000 females - the highest of 1066 in East Khasi Hills, and lowest of 970 in South Garo Hills. Three districts of Mizoram had a favourable sex ratio, with the highest of 1047 females in Aizawl district and the lowest in Mamit district with 951 females. Nagaland also had 3 districts with favourable sex ratio, and the highest with 1032 females in Kohima district and lowest in Mon district with 916 females, followed by Longleng district with 924 females. None of the districts in Sikkim and Tripura had a favourable sex ratio. In Sikkim, East district recorded the highest (987 females) and South district the lowest, of 920 females. In Tripura, the best sex ratio was 991 females recorded in South, and lowest of 969 females in North Tripura.

Sex ratios also varied widely among speakers of different languages/mother-tongue, but most groups had a favourable sex ratio (>1000 females). For instance, in Arunachal Pradesh among the 120-odd mother-tongue communities, half of them recorded a favourable sex ratio, some with exceptionally high (>1500 females) as among Panchen Monpa, Namsang Tangsa, Lichi Tangsa, etc, or very low ratio (<800 females) as observed among Muktum, Siran, and Taram speakers. The most plausible reason was the survival of many dialects with very few speakers in few pockets of the state, as also seen in some other states. In Assam also, the best sex ratio was observed among speakers of mother-tongues with smaller population such as Pawi, Synteng, and Mizo, and the worst among Lakher speakers. Among the indigenous communities, Dimasa speaker had the best ratio of 1023 females. In case of Manipur state, 18 out of 33 ethnic tribes had over 1000 females, with the best among Purum (1206 females), and lowest among Sema speakers/tribe. Meghalaya had 17 different mother-tongue speaking groups, and speakers of Lakher, Mizo, Hmar, and Khasi/Synteng showed favourable sex ratio. In Mizoram, the best sex ratio was found among speakers of Mizo, Synteng, Pawi, and Lakher, and lower ratio among speakers of Dimasa (Kachari), Mikir, Hajong and Garo. Of the 23 mother-tongue speakers in Nagaland, sex ratio was favourable among speakers of Angami, Rengma, and Sema, but much lower than others among speakers of Phom, and Mikir (<900 females). In Sikkim, among the four main mother-tongue speakers, sex ratio was less than favourable, but higher among Lepcha (985) and Bhutia (976) speakers. In Tripura, of the 20 tribes/mother-tongues speakers, sex ratio was above 1000 females

among speakers of Lushai, Kuki, Garoo, Uchai, Jamatia, and Khasia, but unfavourable among Bhutia, Lepcha, Orang, Bhil, and other smaller groups.

## ***2. Population diversity: ethno-lingual diversity and projection (2021-2061)***

The 45 million population in the region belonged to various ethnic groups known to speak more than 100 languages/mother-tongues. The 1991 Census listed 1,576 mother-tongues with separate grammatical structures and 1,796 speech varieties classified as “other mother-tongues”. The 2001 Census listed 122 languages and 234 mother-tongues with over 10,000 speakers, from which 22 were included in the Eight Schedule of the Constitution. Most of these mother-tongues are spoken in the North Eastern region of India.

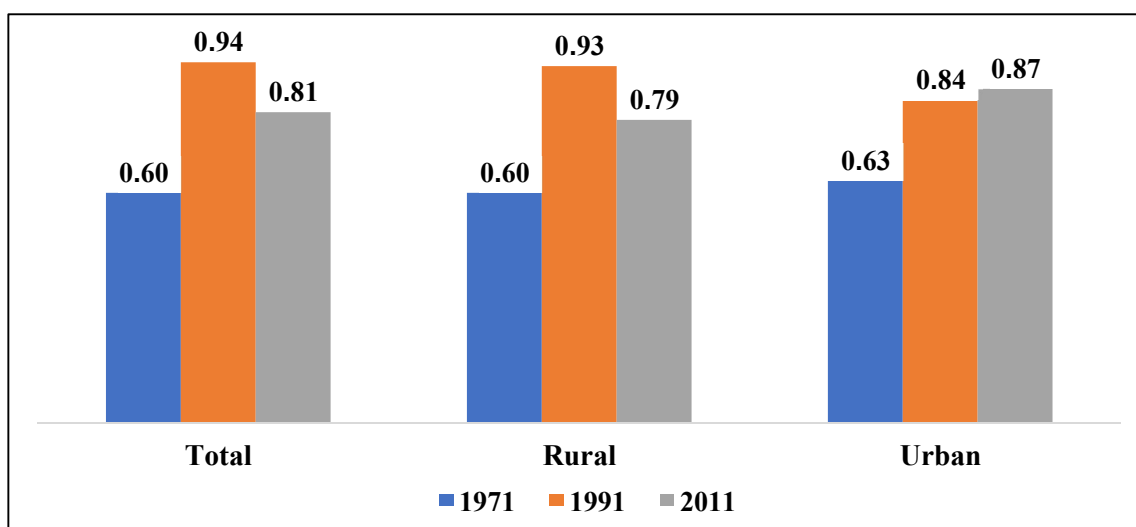
### ***Measuring diversity***

To understand the implications of the presence of such diverse languages or mother-tongues, a diversity index was constructed that measured the depth and extent of diversity in a geographical area or community. The index is a simple way of knowing the probability of whether any two individuals randomly selected speak the same language/mother-tongue or not, and the extent of homogeneity or diversity. The index ‘varies from 0, indicating the least diversity, to 1, indicating the greatest’ (Greenberg, 1956).

Results show that over the years the index of diversity increased from 0.60 in 1971 to 0.81 in 2011(Fig.1), and also indicated higher diversity in urban areas (0.87) than in rural areas (0.79). The increase in diversity index was more evident from the state level indices (Fig.2). As in 2011, states with higher diversity index were Nagaland (0.93) and Arunachal Pradesh (0.86), while least diversity was observed in Mizoram (0.45) and Tripura (0.50). It is noteworthy to mention that since 2011, urban areas show higher diversity than rural areas, particularly in Arunachal Pradesh, Nagaland, and Sikkim. In contrast, urban areas of Tripura (0.16), Mizoram (0.24) and Manipur (0.32) have a higher level of uniformity. The low index also suggests dominance of one language over others in that area. Another plausible factor that indicated higher diversity was the low proportion of scheduled/national Indian languages in a state. For instance, it was observed that the diversity index was much lower in states in which one of the scheduled languages was predominant and spoken by others also, as in Assam, Tripura and Sikkim. Hence, an overwhelming majority of the population in Nagaland (88%), Mizoram (87.6%), Meghalaya (85%), and Arunachal Pradesh

(70%) spoke many native mother-tongues and these states did not have any non-scheduled languages/mother-tongues. The increase in diversity index or level over the years in the region also reflected the polarisation of ethnic identity in the region for socio-economic and political reasons by many speakers of different mother-tongues/language cognates.

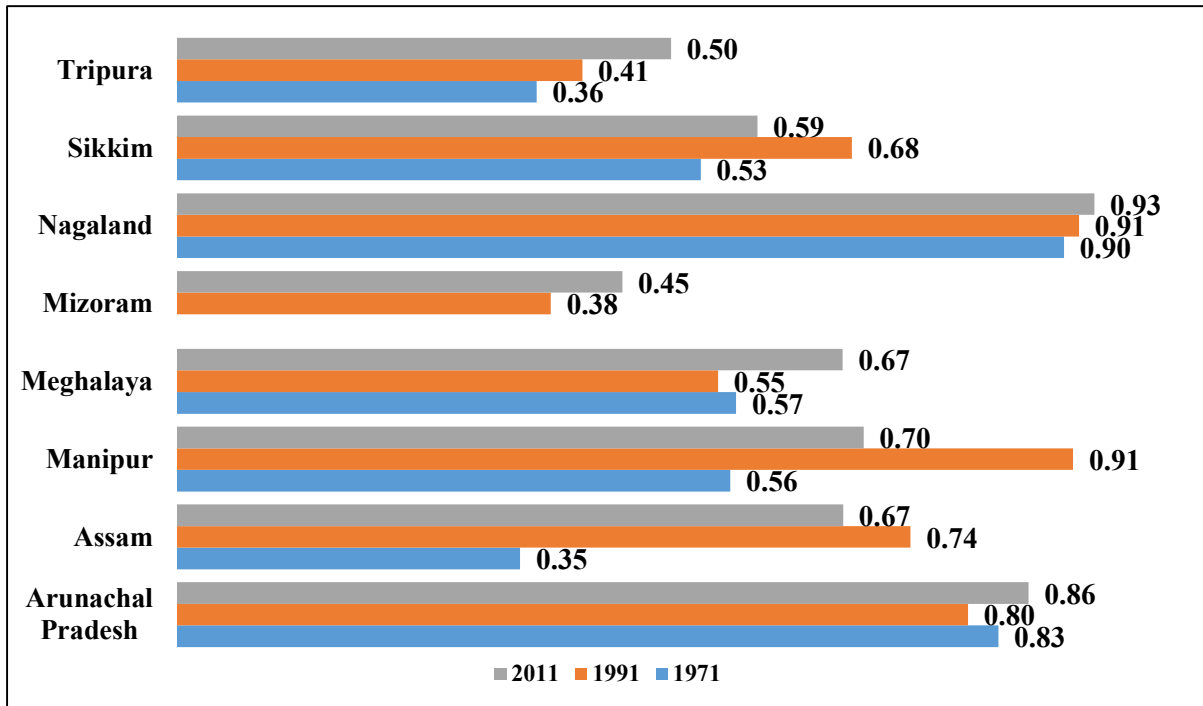
**Figure 1: Linguistic Diversity Index by residence in North Eastern region of India, 1971-2011**



Source: Calculated based on Census data by applying Greenberg's method.

The very high linguistic diversity index in the region (Figure 1 and 2) and states clearly implied that the probability of two randomly selected persons speaking the same mother-tongue or language was very less or unlikely. This poses a serious implication on policies related to education, communication, and socio-economic development.

**Figure 2: Linguistic Diversity Index for the states of N-E India among STs, 1971-2011**



**Source:** Calculated based on Census data by applying Greenberg's method.

**Note:** In 1971 Census, Mizoram was part of Assam.

### ***Projection of speakers of languages/mother-tongues***

An attempt was made on population projection to understand the likely growth of these medley ethno-lingual groups in the next 50 years (2021 to 2061). The projection was done for each language/mother-tongue using both exponential and logistics methods across the states.

In the next 50 years, among the current 100 odd mother-tongues spoken in the North East region, not many will reach the 3-5 lakh mark, except for those with an already large population in the base year (2011) and included in the Eight schedule such as Assamese, Manipuri, Nepali, Bengali, etc. In 2061, based on exponential growth, the mother-tongues (ethno-lingual groups) likely to reach or cross the 5-lakh mark were Adi (5.5 lakh), Ao (5.8 lakh), Konyak (5.5 lakh), Mao (5.4 lakh), Nissi/Dafla (9.01 lakh), Odia (5.8 lakh), Santhali (5.0 lakh), and Thadou (5.2 lakh). The mother-tongues/groups likely to cross the 10-lakh mark were Bodo (32.5 lakh), Garo (25.8 lakh), Karbi/Mikir (11.9 lakh), Khasi (32.3 lakh), Lushai/Mizo (18.7 lakh), Miri/Mishing (14.2 lakh), Tripuri (22.9 lakh), etc. Most of these groups are rural-based, which implies the need to expand

socio-economic, health, and other development-related infrastructures in the near future accordingly.

Projected figures based on logistics method show a different picture, wherein the growth is much lower and probably closer to reality. Among more than 100 indigenous mother-tongues, those likely to reach or cross the 5-lakh mark or more were Bodo (27.2 lakh), Garo (21.2 lakh), Karbi/Mikir (9.8 lakh), Khasi (26.6 lakh), Tripuri (18.8 lakh), Lushai/Mizo (15.4 lakh), Miri/Mishing (11.9 lakh), Nissi/Dafla (7.4 lakh), etc. When compared with exponential growth, the difference in most cases was quite large, and only 7 mother-tongues would have speakers more than 5 lakhs in 2061. Accordingly, the extent of mother-tongue/linguistic diversity would continue to remain a concern for years to come, and probably interfere with political and socio-economic development of the region.

### ***3. Socio-economic status of the tribes***

#### ***Literacy and education***

The North Eastern region is one of the regions in India associated with high literacy, but found varying across the states and among different ethno-lingual groups. According to the 2011 Census, the region has a literacy rate of about 64 percent, 4.8 percent being literate without education, 71 percent literate but below matric/secondary level, 19.6 percent completed matric/secondary level, and about 5 percent with graduation and higher degree.

A sharp contrast in education was observed among tribes across the states, particularly in case of Mizoram and Arunachal Pradesh. Mizoram had the highest literacy rate in India. In 2011, the tribes in Mizoram had a literacy rate of 77 percent, followed by Sikkim with 71 percent, Nagaland with 68 percent and Tripura with 67 percent. Literacy rate was the lowest for tribes in Arunachal Pradesh (54%) and Meghalaya (59.7%). The state with the greatest share of matric/secondary educated but less than graduates among its tribes was Manipur (28%), followed by Arunachal Pradesh (23%) and Assam (22%). Similarly, Manipur also had the highest proportion of tribes with graduate/post-graduate/technical degrees (8.6%), followed by Sikkim, Arunachal Pradesh and Nagaland (7% each).

### ***Main and marginal workers***

According to the Census, in 1991, 59 percent of the main workers among the tribes in the NE region were illiterate, which decreases to 30 percent in 2011. Similarly, the proportion of literate main workers was 41 percent in 1991, which increases to 70 percent in 2011, but a decline observed among 'literate without education' from 60.4 percent to 14 percent. The share of main workers who are 'literate but with below matric/secondary level' has increased from 34 percent to 60 percent. Also, an increase in main workers with 'matric/secondary education, but those with below graduate' from 3 percent to 18 percent, and those with 'graduate/post-graduate/technical degrees and others' from 2 percent in 1991 to 8 percent in 2011 respectively.

In case of marginal workers among tribes also a similar improvement was noticed in the region. For instance, more literates with higher education were engaged as marginal workers. The proportion of tribes as marginal workers who were literate increased from 35 percent in 1991 to 75 percent in 2011. Similarly, those literate but below matric/secondary increased from 40 percent to 61 percent. A large increase was also observed in those having matric/secondary but below graduation from 2 percent to 26 percent by 2011, and among graduate/post-graduate/etc. from <1 percent to 6 percent during the same period. Such increase was observed across the states but was much higher in Manipur and Arunachal Pradesh and the least in Tripura.

Based on the industrial classification of main workers, majority of the tribes had been cultivators over the years, from 88 percent in 1971 to 59.7 in 2011 (Table 1). There was an increase in other categories such as Agricultural labourers, from about 4 percent to 9 percent, and other workers from 8 percent to 30 percent by 2011. In case of marginal workers among tribes also, a change was observed, with a decline in cultivators (from 72 percent in 1981 to 42 percent in 2011) but increase in participation in other categories, the highest with Other workers, from 4 percent in 1981 to 24 percent in 2011.

**Table 1: Industrial classification by main workers of Scheduled Tribes, North-East India, 1971-2011**

Occupation	1971	1981	1991	2001	2011
<b>Main workers</b>					
Cultivators	87.7	77.4	73.4	65.1	59.7
Agricultural Labourer	3.5	7.4	9.1	7.9	8.8
Household Industries	0.4	0.5	0.5	1.8	1.6
Other Workers	8.4	14.7	17.1	25.3	29.9
<b>Marginal Workers</b>					
Cultivators	-	71.6	78.3	54.9	42.5
Agricultural Labourer	-	22.5	17.5	24.8	28.0
Household Industries	-	1.7	1.3	5.8	5.2
Other Workers	-	4.2	3.0	14.6	24.3

Source: Census of India reports.

### *Tribes' economic status: wealth index/quintile*

The different rounds of NFHS provide valuable information on household characteristics and assets/possessions from which wealth quintile or index was constructed. A wealth quintile helps in determining how relatively wealth is distributed in households within the population by dividing into equal quintiles (20%), from the poorest to the richest quintile. For instance, NFHS-4 indicated that 71 percent of the tribes in India lived under poor economic conditions (first and second wealth quintiles), and their condition was much worse in the East (87%) and Central India (84%).

According to NFHS-4, more than half (53%) the households of tribes in the North Eastern region of India fall under the economically poor category (first and second quintiles), and the largest proportion of households (35%) in the second wealth (poorer) quintile (Table 2). Among the states, the proportion of poor households among tribes ranged from 10 percent in Sikkim to 72 percent in Tripura. Besides Sikkim, Mizoram also had relatively smaller proportion of poor households (16%), followed by Arunachal Pradesh and Nagaland (44% each).

The distribution of households by wealth quintiles at the district level across the region revealed that of the 86 districts in the NE region (2011), 51 percent had poor households, above the region's average. States with over 50 percent of the households in districts in the poor wealth category were 7 out of 16 districts in Arunachal Pradesh, 20 out of 27 districts in Assam, 4 out of 9 districts in Manipur, 4 out of 7 districts in Meghalaya, 6 out of 11 districts in Nagaland, and all 4 districts in Tripura. Sikkim was the only state in which none its 4 districts had households in the higher level



of the poor category – the highest was 13 percent in West district. The district with a remarkably higher proportion of households of tribes in the poor category was Hailakandi in Assam (88%), followed by Dhalai in Tripura (85%), Karbi Anglong in Assam and South Tripura (82% each). In sharp contrast, there were also a few districts in the NE region with an exceptionally low proportion of poor households, viz., Thoubal (Manipur; 0%) Aizawl (Mizoram; 2.8%), South (Sikkim; 3.4%), and Serchhip (Mizoram; 8.2%).

**Table 2: Percent distribution of households of tribes by wealth quintiles according to states, North Eastern India, 2015-16**

State	Lowest	Second	POOR	Middle	Fourth	Highest
Arunachal Pradesh	18.34	26.02	44.4	25.87	20.01	9.76
Assam	27.48	40.64	68.1	18.55	8.66	4.67
Manipur	14.62	38.65	53.3	25.93	14.19	6.61
Meghalaya	11.13	36.03	47.2	33.12	13.65	6.06
Mizoram	5.94	9.6	15.5	19.94	28.76	35.77
Nagaland	11.65	32.68	44.3	25.65	18.36	11.67
Sikkim	0.96	8.71	9.7	46.21	33.49	10.63
Tripura	25.5	47.02	72.5	16.17	7.32	3.98
<b>North Eastern India</b>	<b>18.1</b>	<b>34.9</b>	<b>53.0</b>	<b>23.9</b>	<b>14.1</b>	<b>9.0</b>

Source: computed from NFHS-4, 2015-16.

#### **4. Health (disease burden), healthcare utilization and expenditure**

The study also examines the burden of diseases, healthcare utilization for ailments and MCH services, including expenditures incurred among tribes in the NE region, using two survey data sources (NFHS-4 and NSSO). The Annual Report 2014–2015 of the Ministry of Health and Family Welfare, Government of India, identified nine issues and problems in the health sector in the North Eastern region of India.

##### ***Disease burden***

According to the 71<sup>st</sup> round of NSSO (2014), for past one-year prevalence of communicable disease among tribes in the region was 2.4 per 1000 population, and 32 per 1000 population for NCDs. Manipur (4.6/1000) and Arunachal Pradesh (3.7/1000) were the two states with the highest prevalence of communicable diseases, while Tripura (51.3/1000), Manipur and Mizoram (35/1000 each) had the highest NCDs. Diarrhoeal diseases were the most common among communicable diseases, and all ‘other fevers’, the most prevalent in the region. The pattern was similar across the states.

The NFHS-4 provided limited information on certain diseases/illnesses among adult women and men (aged 15-49 years) that were self-reported, but collected a more detailed background characteristic of both men and women who reported suffering from such diseases. Accordingly, men were more likely to suffer from diabetes (1.7%) than women (0.84%), but for other diseases more women suffered. More women reported suffering from asthma (1.7% against 0.6% among men), thyroid disorder (1.3% against 0.6% among men), heart diseases (2.2% against 1.5% among men), and Cancer (0.16% against 0.05% among men), However, an important defining feature was that more men were likely to seek treatment for the diseases. For instance, treatment-seeking by women for these diseases ranged from 65 percent for asthma and heart diseases to 76 percent for cancer. But in case of men, treatment for diseases ranged from 9 percent for cancer, 86 percent for diabetes and 81 percent for thyroid disorder (Table 3 and Table 4).

Looking at the state-wise variation in the North-Eastern region for diseases, Meghalaya, Mizoram, and Tripura showed higher rates of morbidities. For instance, the prevalence of heart diseases was the highest in Tripura (2.8%), followed by Mizoram (2.4%) and Meghalaya (2.2%) among tribal men. On the other hand, Tripura and Mizoram had a higher proportion of morbidities among females. Prevalence of Asthma in Tripura was much higher (3.7%), followed by Meghalaya (3%), and Mizoram (1.7%). The proportion of tribal females who sought treatment for Cancer was quite impressive over the other diseases in North Eastern India. Arunachal Pradesh, Nagaland, and Manipur had the least prevalence of these morbidities.

**Table 3: Percentage of Scheduled Tribe men aged 15-49 years who suffered from Diabetes, Asthma, Thyroid disorder, any Heart Disease, Cancer and sought treatment, North-East India, 2015-16**

Diseases	North-East	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura
Diabetes	1.7	1.0	1.2	0.3	5.2	0.9	0.7	1.0	0.5
Diabetes who have sought treatment	86.8	56.7	88.8	16.8	91.9	54.3	61.9	100.0	100.0
Asthma	0.6	0.3	0.3	0.3	0.5	1.1	1.9	1.6	0.6
Asthma who have sought treatment	69.4	28.7	100.0	44.4	61.5	86.0	46.5	41.8	100.0
Thyroid disorder	0.6	0.2	0.3	0.4	2.0	0.6	0.0	0.0	0.0
Thyroid disorder who have sought treatment	81.3	60.6	58.8	52.0	91.7	78.0	0.0	0.0	0.0
Heart disease	1.5	0.7	1.1	1.1	2.2	2.4	0.5	0.1	2.8
Heart disease who have sought treatment	63.9	78.5	64.8	35.6	66.1	87.0	55.8	100.0	50.6
Cancer	0.1	0.2	0.0	0.2	0.1	0.1	0.0	0.0	0.0
Cancer who have sought treatment	8.9	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0

Source: calculated from NFHS-4, 2015-16

**Table 4: Percentage of Scheduled Tribe women aged 15-49 years who suffered from Diabetes, Asthma, Thyroid disorder, any Heart Disease, Cancer and sought treatment, North-East India, 2015-16**

Diseases	North- East	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura
Diabetes	0.8	1.2	0.5	0.5	1.1	1.2	0.7	1.3	1.3
Diabetes who have sought treatment	71.2	63.8	67.2	72.1	64.8	91.5	65.9	89.7	75.2
Asthma	1.7	1.2	0.5	1.5	3.0	1.7	1.2	1.2	3.7
Asthma who have sought treatment	65.0	55.5	57.5	44.3	63.0	68.9	49.2	66.7	82.1
Thyroid disorder	1.3	1.0	0.8	3.3	2.4	1.6	0.9	0.7	0.6
Thyroid disorder who have sought treatment	75.5	82.4	60.6	59.5	83.6	86.2	68.5	99.1	95.2
Heart disease	2.2	1.5	0.5	2.3	4.1	3.5	2.4	0.5	3.6
Heart disease who have sought treatment	64.7	71.4	40.0	64.9	79.3	55.3	48.7	94.7	59.5
Cancer	0.2	0.2	0.0	0.1	0.4	0.3	0.1	0.0	0.1
Cancer who have sought treatment	76.2	77.9	26.0	100.0	74.1	75.2	84.7	100.0	100.0

Source: Author's calculation from NFHS, 2015-16

### ***Treatment expenditure for diseases***

NSSO data reveal that in the past one year preceding the survey, the mean medical hospitalization expenditure in the North East region was Rs.7082, but the amount spent for treatment varied widely. The poor households spent a smaller amount, Rs.6149, the middle-income households spent Rs.5560, while the richer households spent Rs.11021. However, across the states, the mean expenditure varied widely, ranging from Rs.3,445 in Tripura and Rs.5,585 in Meghalaya to over Rs.10,000 in Mizoram (Rs.10,868) and Sikkim (Rs.10,269). In Tripura, even the rich households spent Rs.5579, which was the least amount among the same category in the region. In case of expenditure by type of diseases, the average hospitalization cost was much lower for communicable diseases/ailments (Rs.4,547), compared to Rs.10,746 spent for NCDs. The amount spent also varied by the type of healthcare facility, wherein private healthcare facilities were about 3-4 times more expensive than public healthcare facilities. For treatment of communicable diseases, the tribes spent Rs.3,669 at public healthcare facilities but in a private healthcare facility the amount was as high as Rs.14,939. Similarly, treatment of NCDs at the public healthcare facility would cost Rs.7,168 but was Rs.22,862 in a private healthcare facility. Among the diseases, the average treatment cost was the highest for Cancer, followed by Lump or fluid in abdomen or scrotum (over Rs.32,000 each) (Table 5). Treatment for cancer (Rs.32,842) emerged as the most

expensive in the North-East region both at public and private healthcare sectors among the tribes, followed by treatment for lump or fluid in abdomen or scrotum (Rs.32,002). In general, the average hospitalization expenditure for non-communicable diseases was much higher than that for communicable diseases.

Treatment cost was much higher for most diseases in a private healthcare sector, double or more than the amount spent in a public healthcare facility. In a private facility, people spent exceptionally high amounts on treatment of ailments such as stroke/hemiplegia/sudden onset of weakness (Rs. 85,075), lump or fluid in abdomen or scrotum (Rs. 77,378), Cancers (known or suspected by a physician) (Rs. 58,445), Jaundice (Rs. 54,725), Heart disease - Chest pain, breathlessness (Rs. 35, 110), Gastrointestinal bleeding (Rs. 33, 916), and TB (Rs. 33,110). For minor diseases like burns and corrosions, back or body aches, people preferred to go to public hospitals, as they were cheaper. The expenditure for childbirth was five times higher in private hospitals (Rs. 15,624) than in a public facility. Furthermore, expenditure for malaria and other types of fever, more prevalent in the region, was quite high in the private healthcare sector.

**Table 5: Average hospitalization cost for ailments in last 365 days among Scheduled Tribes in North-East India, 2014 (in Rupee)**

Nature of Ailments	North-East India		
	Total	Public	Private
<b>Communicable Diseases</b>	<b>4547</b>	<b>3669</b>	<b>14934</b>
Fever due to Diphtheria, Whooping Cough	4484	3114	14786
Tuberculosis	7238	5825	33110
Diarrhoea/ Dysentery/ increased frequency	3766	3036	11840
HIV/AIDS	2700	2700	0
<b>Non-Communicable Diseases</b>	<b>10746</b>	<b>7168</b>	<b>22862</b>
Fever with loss of consciousness or alternative	3435	2694	15300
Fever with rash/ eruptive lesions	4917	4815	6780
All other fevers (including Malaria, Typhoid)	3804	3386	8837
Jaundice	15092	3824	54725
Cancers (known or suspected by a physician)	32842	23584	58445
Anaemia (any cause)	11873	12974	7551
Diabetes	12917	8395	22112
Mental disorders	18628	18628	0
Headache	7564	3944	11592
Seizures or known epilepsy	5410	5410	0
Weakness in limb muscles and difficulty	8590	8645	4200
Stroke/ hemiplegia/ sudden onset weakness	19481	8172	85075
Discomfort/pain in the eye with redness	7225	4955	20926

Cataract	10937	11329	9436
Earache with discharge/bleeding from ear	4963	3565	12877
Decreased hearing or loss of hearing	10225	8560	13750
Hypertension	11739	9747	20829
Heart disease: Chest pain, breathlessness	17364	6090	35110
Acute upper respiratory infections	5655	4753	10031
Cough with sputum with or without fever	3928	2473	26608
Bronchial asthma	12420	7927	23586
Pain in abdomen: Gastric and peptic ulcer	9250	5474	27220
Lump or fluid in abdomen or scrotum	32002	10272	77378
Gastrointestinal bleeding	6268	2643	33916
Skin infection (boil, abscess, itching)	5630	5537	6268
Joint or bone disease/ pain or swelling	9317	8262	23634
Back or body aches	7899	4655	24629
Any difficulty or abnormality in urinate	15145	5203	27820
Pain the pelvic region/reproductive track	10053	2768	31891
Change/irregularity in menstrual cycle	10782	8005	30148
Pregnancy with complications before or after	11042	8015	25015
Complications in mother after birth of a child	5760	5736	5897
Illness in the new born/ sick new born	4184	4478	3894
Accidental injury, road traffic accident	10669	6687	28112
Burns and corrosions	8498	8498	-
Symptom not fitting into any of above	17010	11150	36679
Childbirth – Caesarean/ normal/ any other	5103	3956	15624
<b>Total</b>	<b>7082</b>	<b>4952</b>	<b>22087</b>

**Source:** calculation from NSS 71<sup>st</sup> round, 2014.

**Note:** cases of private healthcare expenditure were relatively less than in public facility.

### *Healthcare for MCH services*

Some of the MCH services examined were ANC, safe delivery, and child immunization from NFHS-3 and 4 rounds. Not all women in the NE region availed of antenatal care services during their pregnancy. According to NFHS-3 (2005-06), 78 percent of the women did not avail of ANC services, and this further declined to 76 percent in NFHS-4 (2015-16). Only about 5 percent of the women could get full ANC check-ups (NFHS-4), an increase by nearly 3 percentage points since NFHS-3. Even among women in the richest wealth quintile, full ANC was only 7 percent. No ANC among tribal women was the most in Sikkim (85%), followed by Mizoram (84%), and Arunachal Pradesh (83%). Full ANC was the most in Nagaland (10%), and Meghalaya (9%). Comparative figures for both NFHS-3 and NFHS-4 are shown in Table 6. It is noteworthy that in all the states of the NE region, ANC visits are not made, even in states predominated by tribes. State governments must take note of such low levels of ANC visits, as this poses risks for every

pregnancy in the region. Mother and child health (MCH) care becomes a big challenge and requires an all-out awareness campaign through health camps and involvement of local community level organizations and agencies.

The poor level of ANC clearly has an impact on safe delivery. In NFHS-4, only 65 percent of the women had institutional delivery, an increase from 30 percent in NFHS-3, but the level was as high as 96 percent in Sikkim and 82% in Mizoram. Delivery at home was the highest in Nagaland (66%) and Manipur (52%) and also the highest among women in the poorest households (56%), and lowest in the richest households (6%).

**Table 6: Percentage distribution of Scheduled Tribe women aged 15-49 years in North-East India by states and type of ANC services, 2005-06 and 2015-16**

States/ Regions	NFHS-3			NFHS-4		
	No ANC	Partial ANC	Full ANC	No ANC	Partial ANC	Full ANC
<b>North-East</b>	78.5	19.6	2.0	76.3	19.1	4.6
Arunachal Pradesh	81.9	16.7	1.4	83.4	15.8	0.8
Assam	78.6	18.3	3.1	74.3	20.5	5.2
Manipur	76.2	23.1	0.8	72.6	20.8	6.6
Meghalaya	77.1	21.3	1.6	76.2	14.5	9.3
Mizoram	74.2	23.0	2.8	83.8	15.6	0.6
Nagaland	79.8	20.1	0.1	51.5	38.5	10.0
Sikkim	78.8	18.0	3.2	85.5	7.5	7.0
Tripura	84.6	14.6	0.8	78.9	20.1	1.1

**Source:** calculated from NFHS 3 (2005-06), and NFHS-4 (2015-16).

In the case of child immunization also, the tribes in the NE region fare very poorly. Any immunization was only 17 percent in NFHS-4, but was an improvement of about 5 percentage points over NFHS-3. The proportion of children receiving any immunization was the highest in Sikkim (30%), followed by Tripura (27%), and Assam (22%), while it was the lowest in Manipur (4%), Nagaland and Arunachal Pradesh (6% each).

### **Conclusion and policy implications**

The NE region of India has a substantial tribal population, spread overall the eight states, and identified for some time for HIV/AIDS, insurgency and ethnic conflicts. The region is indeed a land of many myths, needing interventions in the areas of demographic, socio-economic and healthcare. While population grows at a very rapid pace, most states had fertility (TFR) close to replacement level, except in Meghalaya. Irrespective of the decline observed in population growth, the sex ratio of the region remained higher than the national average. The higher sex ratio was due

to the prevalence of tribal and indigenous culture that generally did not discriminate among women, and women were relatively more empowered than in most parts of the country. However, this empowerment did not translate into actions for the health benefits of mothers and children, as illustrated by the poor level of ANC visits and services availed.

To understand the future population prospects of these indigenous groups both logistic and exponential model projections indicated that there were many small ethnic groups or communities speaking distinctive mother-tongues which could become extinct gradually, while a few others would thrive and grow. In the region, ethnic diversity further shrank the probability of finding two randomly selected persons speaking, communicating or even understanding the same mother-tongue/language, and in some states use of a lingua-franca (common speech) or the language of the predominant community was becoming more common. There was a gradual decline in the numbers of speakers of smaller dialects/ mother-tongues, and an inevitable language shift or assimilation had occurred that portends the extinction of tribal languages. The quest for ethnic survival entails assertion in almost every group of socio-cultural and political aspirations, amongst the larger and stronger dominant groups.

The overall economic scenario of the North Eastern India in term of households under lower wealth quintiles was unexpectedly alarming, and occupational structure indicated that over the decades (1971-2011) there was a shift to non-traditional services. A very high proportion of tribes, even in states and districts predominated by them, still lived in condition of abject poverty, thereby calling for urgent government intervention. Despite the higher proportion still engaged in the agricultural sector, states experienced a gradual decline of workers in agriculture. This decline might be due to considerable progress in literacy over the years and opportunities in other services. During this decade the agriculture sector, household industry, livestock, forestry, fishing etc., showed a decline, while non-household industries, trade and commerce, construction, transport, storage and communication exhibited an increase in the proportion of tribal workers. The workforce exhibited signs of social and economic progress across the region. A careful intervention should be undertaken in order to restructure the economic scenario of the NE region. The industrial backwardness, including promotion of small-scale or household industries, etc., needs specific policies for growth in the region. The region performed well in education and services but lagged behind in awareness and promotion of good health. There was potential human resource but participation in the workforce was still minimal. In the area of health, the region exhibited better

life expectancy than most Indian states, but at the same time the burden of diseases and cost of healthcare services were among the highest in the country. The region lagged behind in healthcare infrastructure and services, thereby gradually being dominated by the private healthcare sector. The MCH services were also very poor, in some case unexpectedly low. There were also clear evidences of the spread of NCDs along with communicable diseases and high malnutrition in the region, due to which payment for treatment costs in terms of out-of-pocket expenses (OOPE) severely dented the financial capacity of most households. This study clearly opened up many avenues for further research and urgent interventions to improve the socio-economic and health status of the tribes in the region.

**Acknowledgement:** The authors thank the support of the Institute to undertake this study, and to all the project staff and other persons who had given their support and time, directly or indirectly, to the successful completion of this work. Also, special thanks to the anonymous reviewers for their valuable comments. However, any factual error or misinterpretation, if any, is the responsibility of the authors.

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