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EDITORIAL

At first I wish a happy and prosperous New Year 2021 to all.

This is the 60th volume number 02 of ADIVASI research journal published bi-annually in June and December. For this issue we have received a number of research articles on various aspects of tribal culture and development. In this edition eight articles based on empirical research studies contributed by sixteen research scholars have found place.

The 1st article contributed by Prof. A. B. Ota & Guha Poonam Tapas Kumar is titled **“Tribal Heritage Agriculture System: A self-sustained system challenged by sustainability concerns”**. In this article the authors has discussed the findings of an empirical study on traditional tribal agricultural systems and their significance in view of the fact that by and large, the tribal agriculture is ecological agriculture fostering a large number of endemic biodiversity in wild and cultivated crops determined by landscape and terrain. The tribal heritage agriculture system becomes relevant in the current context of climate crisis and environmental degradation challenging food security. In order to suffice to the arguments in favour of tribal agriculture towards qualifying to be called Tribal Heritage Agriculture Systems, the authors have examined the agricultural practices of two Particularly Vulnerable Tribal Groups (PVTGs) of Odisha i.e., Lanjia Saora and Bonda and advocated in

favour of their practices for recognition as Tribal Heritage Agricultural System (THAS) in the fitness of things as envisaged by GIAHS guidelines.

The next comes the paper titled **“Forest Knowledge and Adivasi Education-Field Perspectives”**. This paper authored by Ms. Malvika Gupta & Felix Padel have presented their research findings on Adivasi knowledge and value systems, concerning forest, land, community and much else those are now getting undermined by schooling systems imparting literacy but often, producing a high degree of alienation of tribal children and their families as well as culture. In this context the authors hold the opinion that one key reason for this situation seems to be that policy recommendations to integrate Adivasi knowledge and skills into the curriculum including indigenous pedagogies and mother tongues have not been properly appreciated and implemented. At the same time, there exist other examples across the country which from different standpoints attempt integration in the face of the dominant ideologies of assimilation.

Captioned **“A Study on Blood Pressure Distribution among the Juangs : A Particularly Vulnerable Tribal Group (PVTG) of Odisha”** is the 3rd paper presented by five scholars namely Prof. K. C. Satapathy, Prof. P. K. Patra, Prof. Mitali Chinara, D. K. Barik & Samir Ranjan Bal.

This paper presents the findings of a community based cross-sectional study undertaken among the Juang tribe of Keonjhar district in Odisha to find out the distribution of the blood pressure and the correlation within systolic blood pressure (SBP), diastolic blood pressure (DBP), heart rate, pulse rate, age group and mean arterial pressure (MAP) of the tribe.

The 4th paper titled **“Strengthening agro-ecological practices in millets production system in Koraput District, Odisha”** contributed by Bijaya Kumar Nayak is based on primary and secondary data collected from millets growers, concerned agriculture officers, market players, consumers of Semiliguda and Borigumma Blocks of Koraput District. This paper reflects that millets play an important role among tribal farmers in enhancing their income, food and nutritional security in the tribal areas.

The next paper titled **“Contextuality of MGNREGA in the aspirational districts of Odisha – An analysis”** is written by Dushasana Mahanta, Dr. Mihir Kumar Jena & Dr. Prafulla Ch. Mohapatra. This paper attempts to ascertain the outcomes of employment generation and asset creations through Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) - the largest ever anti-poverty employment generating programme for the rural India in the Aspirational Districts of Odisha in comparison with the same in other States of the country.

“Tea Tribe of Assam: In the Quest of their Identity and Entitlement”

authored by Prof. Braja S. Mishra comes as the 6th article. This article presents a critique on the identity and entitlements of tea garden workers community, popularly known as 'tea tribes' of Assam', is based on some historical contours and continuum when at present their quest for establishing a separate identity and getting a fair share in the resources for their development has resulted in a complex social mosaic in the state with increasing ethnic tensions and alienation among various communities.

The 7th paper titled **“Knowledge and Practices related to menstruation among the tribal women and adolescent girls of Odisha”** is authored by Gulsan Khatoon. This paper makes an evaluation of menstruation-related knowledge and practices among tribal women and girls. The results show several practices: cultural and social constraints connected with menstruation including myth and misunderstanding; the adaptability of teenage girls to it; their response, family reactions recognising the significance of menstruation; the changes taken place in their life since menarche and their resistance to such changes. The article further recommends methods for improving young girls' menstrual wellbeing and hygiene and concludes that menstruation-related cultural and social behaviours rely on the schooling, mood, family, climate, history and belief of girls.

“Emerging trends of tribal studies in India: An anthropological assessment” is the last (but not the least) article contributed by Dr. L. K. Sahoo that has laid focus on understanding the emerging

trends of tribal studies in India with particular reference to Odisha. The paper based on secondary sources has adopted a review-based approach. The analysis has underlined the potentiality of tribal studies in general from anthropological view point and in particular its emergence as an academic discipline for development discourse and its future scope.

The paper contributors deserve sincere thanks for their painstaking efforts in presenting their articles. I express my gratitude to Shri Sarat Ch. Mohanty, Associate Editor of Adivasi and

Consultant, SCSTRTI for a thorough reading and editing of all the articles and for his efforts not only for bringing out this issue but also for all the issues of ADIVASI published over last 14 years. I am also thankful to Dr. Mihir Kumar Jena, Lead Consultant, SCSTRTI for rendering a scholarly editorial support to this journal.

I sincerely hope that the articles published in this issue of ADIVASI will be useful to all the readers who are interested about tribal society, culture as well as their development.

Dated, the 8th December, 2021
Bhubaneswar

A. B. Ota

Contents

Sl. No.	Names of the Paper Contributors	Title of the Paper	Page
1.	A. B. Ota & Guha Poonam Tapas Kumar	Tribal Heritage Agriculture System: A self-sustained system challenged by sustainability concerns	1
2.	Malvika Gupta & Felix Padel	Forest Knowledge and Adivasi Education-Field Perspectives	20
3.	K. C. Satapathy, P. K. Patra, Mitali Chinara, D. K. Barik & Samir Ranjan Bal	A Study on Blood Pressure Distribution among the Juangs: A Particularly Vulnerable Tribal Group (PVTG) of Odisha	34
4.	Bijaya Kumar Nayak	Strengthening agro-ecological practices in millets production system in Koraput District, Odisha	48
5.	Dushasana Mahanta, Mihir Kumar Jena & Prafulla Ch. Mohapatra	Contextuality of MGNREGA in the aspirational districts of Odisha – An analysis	57
6.	Braja S. Mishra	Tea Tribe of Assam: In the Quest of their Identity and Entitlement	72
7.	Gulsan Khatoon	Knowledge and Practices related to menstruation among the tribal women and adolescent girls of Odisha	79
8.	Laxman Kumar Sahoo	Emerging trends of tribal studies in India: An anthropological assessment	85

Tribal Heritage Agriculture System: A self-sustained system challenged by sustainability concerns

A.B. Ota¹
Guha Poonam Tapas Kumar²

ABSTRACT

Traditional agricultural systems in tribal areas of India are diverse. The significance of the tribal agriculture is that it is by and large ecological agriculture fostering a large number of endemic biodiversity in wild and cultivated crops determined by landscape and terrain. The intermingling of climate resilient biodiversity and cultural diversity in the modes and means of their livelihoods earning has made the practice sustainable. Over the years, their accumulated knowledge and wisdom, experiments and experience, environmental perceptions and traditional management systems, notion of preservation and conservation have sustained their food production and conservation of agrobiodiversity and thereby has the potential to contribute to agricultural extension programs in a farming system perspective.

In order to safeguard and support world's agricultural heritage systems there have been initiatives at the International level such as the FAO initiative for conservation and adaptive management of Globally Important Agricultural Heritage Systems (GIAHS) under which the Tribal Heritage Agriculture Systems (THAS) is sort of evolving documentation process to recognize exclusive zones and traditional practices. The tribal heritage agriculture system becomes relevant in the current context of climate crisis and environmental degradation challenging food security.

In order to suffice to the arguments in favour of tribal agriculture and their unique aspects towards qualifying to be called Tribal Heritage Agriculture Systems, the authors have examined the agricultural practices of two Particularly Vulnerable Tribal Groups (PVTG) in Odisha and argued in favour of their practices for recognition as THAS in the fitness of things as envisaged by GIAHS guidelines.

Key words: Tribal agriculture, heritage agriculture, food security, sustainable development, indigenous knowledge, THAS, Lanjia Saora, Bonda

Agriculture in India is diverse. The geographical location, terrain and topography, socio-ecological complexes of rural and tribal communities have by and large determined the agricultural

patterns in different parts of India. Agriculture, with its allied sectors, is unquestionably the largest livelihood provider in India. Indian agriculture and allied activities have witnessed a green

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revolution, a white revolution, a yellow revolution and a blue revolution.

In order to suffice to the arguments in favour of tribal agriculture and their unique aspects towards qualifying to be called Tribal Heritage Agriculture Systems, the authors have examined the agricultural practices of two Particularly Vulnerable Tribal Groups (PVTG) in Odisha and argued in favour of their practices for recognition as THAS in the fitness of things as envisaged by GIAHS guidelines.

Agriculture policies in India and elsewhere, in agriculture dominated nations, are over emphasizing modern agriculture with farm mechanization, high yielding varieties, systems of intercropping, crop intensification and diversification, improved package of practices and newer technologies to which tribal farmers are not so well adept. Hence, in many places, especially in tribal areas, the modern agriculture has not been able to make benefits as desired. On the other hand, the traditional agriculture is based on farmers' knowledge and experience of dealing with crops in the same environment which are ecologically feasible and sustainable.

Many studies are there providing to understand that the poor farming households fail to cope up with modern agriculture as they fail to adopt the whole package. Hence, they dwell on their traditional practices in which they are quite efficient and they don't need to depend on any external resources. The studies on modern agriculture indicates that even if production has improved through modern technologies, its environmental and social impacts are

cause for concern. It is therefore, that the traditional agriculture continues with its package of practices which is more stable, less input intensive and least dependent on external resources. In the larger context of environmental stability, conservation and management of natural resources and sustainability of production and production systems, the traditional agriculture has reasons to be promoted as self-sustaining and sustainable farming systems.

Tribal Heritage Agriculture System in Context

Traditional agricultural systems in tribal areas of India are no less diverse. In most of the cases the agriculture system is determined by the landscape and the terrains. The significance of the tribal agriculture is that it is by and large ecological agriculture fostering a large number of endemic biodiversity in wild and cultivated crops. The intermingling of climate resilient biodiversity and cultural diversity in the modes and means of their livelihoods earning has made the practice sustainable. Over the years they have accumulated knowledge and wisdom based on their experiments and experience which are the key inputs for sustaining food production and maintaining the vast agro-biodiversity. Their environmental perceptions and traditional management systems add up to their rich agricultural heritage. Their notion of preservation and conservation of the natural resources including the diversity in crops has the potential to contribute to agricultural extension programs in a farming system perspective. Worldwide, specific agricultural systems and landscapes have been created, shaped

and maintained by generations of farmers and herders based on diverse natural resources, using locally adapted management practices. Building on local knowledge and experience, these ingenious agricultural systems reflect the diversity of its knowledge, and its profound relationship with nature. These systems have resulted not only in outstanding landscapes, maintenance and adaptation of globally significant agricultural biodiversity, indigenous knowledge systems and resilient ecosystems, but also in the sustained provision of multiple goods and services, food and livelihood security and quality of life.

In order to safeguard and support world's agricultural heritage systems, in 2002, FAO of the United Nations started an initiative for the conservation and adaptive management of Globally Important Agricultural Heritage Systems (GIAHS). The initiative aims to establish the basis for international recognition, dynamic conservation and adaptive management of GIAHS and their agricultural biodiversity, knowledge systems, food and livelihood security and cultures throughout the world. It is to be noted here that "Agriculture" in the context of GIAHS incorporates forestry and fisheries following the FAO definition. Globally Important Agricultural Heritage Systems are defined as "Remarkable land use systems and landscapes which are rich in globally significant biological diversity evolving from the co-adaptation of a community

with its environment and its needs and aspirations for sustainable development".

Tribal Heritage Agricultural System (THAS) is a concept that falls under the initiative towards GIAHS intended to create public awareness and safeguard world agricultural heritage sites. It is sort of evolving documentation process to recognize exclusive zones and traditional practices that approve of the merit to be called heritage agriculture. The broader objectives of THAS has been: to understand and appreciate the nature friendly agricultural practices of local and tribal populations around the world; to document indigenous knowledge; to conserve and promote these knowledge systems at global scale to promote food security and sustainable development; and providing incentives for local population by measures like eco-labelling, eco-tourism. Tribal Heritage Agricultural System, in this context, by and large emphasize upon the provision of local food security; conservation of agricultural and associated biological diversity; store of indigenous knowledge; and ingenuity of management systems.

Tribal Heritage Agriculture System in India/Odisha

The 'Inventory and Documentation of THAS in India'³ by Schumacher Centre⁴ presents a comprehensive account on the Tribal Agricultural Heritage Systems. The report presents that a salient feature of traditional farming systems is their degree of plant diversity (Chang, 1977), minimizing risk by planting several species

³ www.fao.org/giah

⁴ www.schumachercentre.org

and varieties of crops (Harwood, 1979), traditional multiple cropping systems (Francis, 1985), raised beds to produce dry land crops amid strips of rice (Beets, 1982) and such. Depending on the level of biodiversity of closely adjacent ecosystems, farmers accrue a variety of ecological services from surrounding natural vegetation. Clearly, traditional agricultural production commonly reflects a total multiple-use system of both natural and artificial ecosystems, where crop production units and adjacent habitats are often integrated into a single agro ecosystem.

The inventory of documentation of THAS summarized 16 GIAHS in India out of which five sites have been recognized from Odisha, Andhra Pradesh and Chhatisgarh where the THAS have met the GIAHS ideals. They are Benwar Farming System by Baiga in Bilaspur of Chhatisgarh for shifting cultivation; Three-tier agriculture system of Kandha Shavar in Seetampeta of Andhra Pradesh for agriculture and horticulture; Hunting and gathering system of Horshley Hill, Madnapalle in Andhra Pradesh for agriculture; Paderu agriculture system in Paderu of Andhra Pradesh for shifting cultivation; and Terrace cultivation by Lanjia Saora of Odisha for agriculture.

The FAO has accorded the status of GIAHS to the traditional agricultural system being practiced in Koraput region of Odisha. The Koraput Traditional Agriculture System is the first agricultural system in India that has been recognised for its outstanding contribution to

promote food security, biodiversity, indigenous knowledge and cultural diversity for sustainable and equitable development⁵. The Koraput region has been accorded GIAHS status for rice-diversity, although the importance of growing several endemic varieties of paddy, millets, pulses, oilseeds, vegetables by ethnic communities including PVTGs like Bondo, Didayi, Kondhs in a slash and burn agriculture system has not been undermined. The Lanjia Saora who live in particular geographies in the erstwhile Koraput and Ganjam district also share the credit under GIAHS, although their system of terrace cultivation has been recognized under tribal heritage agriculture system.

In Odisha there are 62 Scheduled Tribe communities out of which there are 13 designated Particularly Vulnerable Tribal Groups (PVTG). Each tribal community is unique compared to the other in one or many ways as regards to their socio-cultural and socio-economic life. Their means of livelihoods earning especially from the agriculture and forest collection amply provide to understand their knowledge systems related to the landscape, the inter-linkage between farm and forest, ecosystem interactions and above all the natural resources management which are scientific in their own context. Over generations, the tribal communities have established and showcased unique systems in agriculture and farm productions as self-sustaining units adding to the panorama of tribal heritage agriculture. Tribal agricultural

⁵<https://www.downtoearth.org.in/news/un-heritage-status-for-odishas-koraput-farming-system--35627>

heritage denotes the values and traditional practices adopted by them, which are more relevant for present day system. For the tribal people, agriculture is not merely an occupation, it is their way of life. In this context, it may be stated that like the Koraput region has been accorded the GIAHS status, and the terrace cultivation of Lanjia Saora have got recognition as THAS, there are many potential systems and sites in tribal Odisha that may qualify to earn THAS status if they are documented and systematically presented. As such, the understanding reflects that under one GIAHS a number of THAS may be recognized.

Thin line differences between traditional agriculture and tribal agriculture

The traditional agriculture in India has been simple, based on traditional technology and experience-based farming systems, although, over the years, there has been sea change in the agriculture and agricultural technology. The High Yielding varieties (HYV) of crops has not only taken over the traditional endemic germplasm, but also has made the Indian agriculture input intensive in terms of increasing doses of chemical fertilizers and pesticides. Wherever the new crop varieties have spread, time-honoured crop rotations, inter-cropping patterns and other important features of traditional agriculture have been harshly uprooted. The official policies also support the idea of improved agriculture with HYV, directly or indirectly making a point that the traditional agriculture system is backward and incapable of meeting the desired objective of agricultural productions to make the Nation domestic

surplus with food grain. The paradigm shift from traditional agriculture to scientific or modern or improved agriculture has been highlighted more in economic terms i.e. to increase the standard of living of farmers as well as to ensure food security for a vast population of India.

Traditional agriculture is value based and efficient systems because

- It is dependent on natural processes and thus is ecologically sound
- It uses the off farm, external and non-renewable inputs to the least
- It is socially-just, provides equitable access to productive resources and opportunities
- It has greater productive use of the biological and genetic potential of plants and animals
- It banks on the traditional knowledge, technology and practices
- It is climate resilient, sustainable and builds self-reliance
- It is an efficient production system
- It showcases integrated farm management along with natural resources conservation
- It is tuned in with the local customs and cultural traditions
- The practice helps in continuation of knowledge sharing

Many major studies and reports have been quite appreciative of the traditional agriculture systems. For example, Voelcker Report of 1893, mentioned by Dyer (1938), observed that Indian agriculture was highly varied across the country, defying generalization, and that some of the farming practices were as

good as they could be. Stating on the general excellence of cultivation systems Voelcker remarked that '...the crops grown here are numerous and varied ...That the cultivation should often be magnificent is not to be wondered at when it is remembered that many of the crops have been known to the *raiyats* for several centuries, rice is a prominent instance in point' (The Ecologist, 1983). Similarly, J. Mollison (1901), has presented elaborate accounts on the practice of artificial warping, the suitability of the implements used traditionally in Indian conditions, the technology of terracing and collecting silt in Western Ghats, soil mixing practices for crop diversification, and many other traditional technologies in Indian agriculture that are scientific in local situations. Hume's (1879) account on Indian Agriculture is valued for being culturally important, and is part of the knowledge base of civilization. His observation on weed control and grain storage practices under different meteorological conditions by Indian farmers opens up new dimensions of thinking to appreciate and appropriate traditional agriculture in India.

More recent research reveals several interesting facts about the significance of traditional agriculture. Through these studies the arguments and justifications in favour of reverting to traditional methods of farming have only grown stronger and more imperative. The high level of skills of the farmers of remote tribal villages still untouched by the official development programmes is well established through the researches of R.H. Richharia (Dogra, 1991) on indigenous rice varieties as compared to

high yielding varieties. In another account Dogra has mentioned that the tribal farmers possess detailed knowledge on properties of large number of rice varieties that are remarkable for their high yields, supreme cooking qualities, typical aroma, and for other cherished qualities.

The tribal heritage agriculture system becomes relevant in the current context of climate crisis and environment degradation putting food production under stress, and on the other side to meet development ideals set to achieve Sustainable Development Goals. Loss of biodiversity, loss of livelihood, disturbances in land-water management have resulted in drastic fall in economic returns for marginalized and poor. To overcome all these, especially in combating climate crisis and to optimize land use and food production from traditional agriculture, the experience of agriculture, the adoption of traditional technology, appropriation of traditional knowledge and management systems hold to be important areas for study, analysis and deliberation. Thus, tribal agriculture heritage systems related indigenous knowledge of the tribes draws paramount significance. It could, presumably, provide platform for universalization of the local knowledge systems in favour of traditional practices and traditional technologies as well as provide replicable models to revamp traditional agricultural systems in relation to terrain, topography, landuse, ecosystem and community culture.

Tribal agriculture is scientific in farmers' own accord

Tribal agriculture is unique in its aspect and typical to the landscape features.

There are different forms of agriculture seen in tribal areas. They include slope agriculture, agriculture on valleys, low lands and wetlands. Lands are mainly divided into four categories like: irrigated lowlands, backyards, non-irrigated croplands, and hilly uplands. With the entire terrain in undulating relief, the first category of land is at a premium. It is painfully carved out of hill slopes and narrow stream beds through years and years of backbreaking work. Tribal agriculture, by and large, is rainfed agriculture.

What is particularly commendable about the traditional tribal farming systems in India is the farmers' knowledge and practice that maintains the land clean from weeds, the ingenuity in water management in agriculture, their knowledge of soils and their capabilities as well as of the exact time to sow and to reap, the non-pesticide pest management, scientific crop rotation, careful methods of cultivation with hard labour. The tilling and cultivation methods use relatively simple implements like ploughs, seed-drills, harrows, levellers, reapers, etc.

The irrigation systems in tribal areas, many of which are well-developed, innovative and traditional technology rooted are scientific and productive. Several sources and means like wells, streams, ponds, channels, tunnels, gravity flow and diversion-based irrigation have been tapped and sustainably utilized. The construction of the wells, the kinds of wells and their suitability to the surroundings and means of the people; also, by the various devices for raising water, used in traditional agriculture have a distinct reason for adoption elsewhere.

Careful crop rotation is another distinct phenomenon in tribal agriculture. Crop rotation is better understood and appreciated by them. Mixed cropping and intercropping are integral to their traditional farming systems. There is always a mix of deep rooted and surface feeders. The arrangement of plants is made in such a way that some plants benefit some other plants in some ecological manner. For example, maize and cow pea are raised closer by so that cow pea can climb on the maize plant. Further, the crop arrangements are made in such a way that the crops cover most of the ground and thereby prevent moisture loss from the soil. Soil moisture conservation is not always made through specific interventions, but facilitated through default crop planning in fields.

The existing local practice of cultivation has evolved through centuries of experience, time tested, versatile and based on deep understanding of the ecosystem features. What is more important is the overall harmony of the traditional mixed farming system like under slope agriculture. In a farming system approach, the tribal farmers have integrated different primary production systems such as agriculture, horticulture, animal husbandry, fishery, forestry and other ancillary systems. Each system is in one way or other dependent on the other, output of one system becomes inputs for many other systems. For example, the agricultural produces go for human consumption, the residues are used as fodder and the decomposed materials are used as manures. Similarly, the output from animal husbandry is used for human needs as well as for agriculture. Hence,

farming systems are interdependent. The forest system provides water and nutrient for downstream agriculture fields and provides fodder for domestic animals. The soil and water conservation methods developed over years are beneficial for the villagers and contribute to maintaining the fertility of agricultural fields. Harmonious as the system is, disturbing a single component could have a chain effect of far-reaching consequences about which the tribal farmers remain utmost careful. Ghosh, et.al. (2010) have made certain observations on tribal agriculture and are of the view that traditional agricultural wisdom has potential to ensure sustainability of crop production in tribal areas. They are of the view that tribal people are very specific about selection of crops for different types of lands. The crops with stable yield can withstand any hazardous climatic condition and not affected by diseases and pests. They have notion of mulching for certain crops grown on the uplands.

The case of Lanjia Saora and Bonda agriculture in Odisha

In order to suffice to the arguments in favour of tribal agriculture and their unique aspects in consideration to their merit to qualify for recognition as tribal Heritage Agriculture System, the agricultural practices of two PVTG communities in Odisha such as Lanjia Saora and Bonda have been taken here for example. While the Lanjia Saora system of Terrace cultivation has sought recognition as THAS, the case of Bonda also qualifies to be considered under THAS.

The Lanjia Saora and Bonda represent two distinct tribal communities in the

Koraput region. The region is home to many tribal communities, each one of them characterized by a distinct identity in terms of social organization, culture and economy. The Saora location and the geographical distribution extend from undivided Ganjam to Koraput districts, mainly in the mountain borders. The two districts are divided into Ganjam, Gajapati, Rayagada, Koraput, Nawarangpur and Malkangiri. The pockets of Lanjia Saora concentration are Gumma and Serango area, Khajuriapada of R. Udayagiri area, Nuagada and Mohana of Gajapati district and Puttasingi area of Rayagada district. The Bonda are found in Khairput Block of Malkangiri District. They are divided into two groups i.e. Lower Bonda and Upper Bonda. The Lower Bondas live in the foothills in the multi caste/tribal villages while the Upper Bondas live in the mountain and hilly ranges well known as Bonda Hills in 2 Gram Panchayats namely Mudulipada and Andrahah. Both the Lanjia Saora and Bonda communities are regarded as PVTGs and hence micro projects in the name of Lanjia Saora Development Agency (LSDA) and Bonda Development Agency (BDA) have been constituted to facilitate their all-round development.

Traditionally, the Lanjia Saora, Bonda and other tribes who are natives of Koraput region continued to do 'Podu chaso', otherwise called shifting cultivation or slash-and-burn cultivation under multi-cropping system. The slash and burn agriculture on the slopes is significant for the diversity of crops it has traditionally helped sustain, as also the diversity of cultivation practices it has generated. Crop

rotations, intercropping, and other sustainable agricultural practices are part of the inherited knowledge system of the Podu farmer. The Podu system has developed in tune with the climatic conditions of the southern Odisha districts. Here, monsoon is the main agricultural season. It is characterised by a thin continuous drizzle for four to five months in the year. This provides the moisture necessary for slope cultivation, without the soil being washed away to any significant extent. Shifting cultivation crops are completely attuned to this sort of rain. Their shallow root zones thrive on the thin soil layers, while their moisture tolerance enables them to survive and produce a bountiful harvest. The burning enriches the potassium content of the soil, whilst also controlling pests and weeds.

Verrier Elwin wrote on the importance of shifting cultivation and terrace cultivation in the tribal food economies. He notes that for several Adivasi communities in Odisha like Lanjia Saoras, the Bondas and the Gadabas, terrace cultivation is the main source while axe cultivation is a subsidiary means of livelihood (Elwin, 1946).

The typical shifting cultivation of tribal communities including Lanjia Saora and Bonda in Southern Odisha is practised on primarily two categories of land: Medium land and Upland. The medium land has a slope ranging from 3° to 10° gradient. Here, rice and millet, followed by a last niger crop, are cultivated annually under rainfed conditions. The land is cultivated in three-to four-year cycles, with equal fallow periods. This land is highly eroded, with rills and gullies steadily eating into the cropped area. Most of the medium lands

are under private ownership. The uplands are hilly regions with slopes ranging from 10° to 45° gradient. With sufficient fallow periods, this land has good regenerating capacity and productivity. But due to various reasons, the length of the fallow period decreased, leading to landslides during the monsoons which inundate lowlands and result in huge crop losses. It has been observed that at times, slash and burn cultivation is blamed for poor soil nutrient and depletion of resources. However, careful planning and a systematic approach may help overcome these deficiencies.

In lowland paddy areas, these tribal communities have developed indigenous systems of water management and crop optimisation, combining long-duration and short-duration varieties that enable crops to withstand the monsoon water currents in the valley, while optimising land use.

In terrace agriculture, more conspicuous about Lanjia Saora compared to Bonda, the irrigation management is particularly remarkable. They level the terrace land properly so that water can flow or trickle down effectively from one plot to the other. Water is not allowed to spill over the plots. The main water channel is checked at different intervals. They divert the flow of water towards the field and from one field to other. They use earthen pipes or bamboo poles, palm trunks so that water can flow to the neighbouring fields without making any breach in the ridges. They may place a flat wooden plank or a flat stone piece on the ground where the water will drop with a speed. It helps in conserving the soil as it will flow only after facing a direct impact with the stone piece

or wooden plank. This practice is followed where there is a perennial stream running down the hill slopes.

They use their excellence in developing the terraces or developing plots in the uplands for growing paddy. In many areas, the farmers have built the cross bund by themselves and run the channel to several running meters with such a precision that the flow is never interrupted. They do it very nicely using the bamboo poles as a levelling instrument.

In the streams, as one may find in several places of Lanjia Saora and Bonda habitations, they dig shallow wells which retain the flow water for the summer season. They use this water for irrigating the field on the bank of the streams. In some areas, it is seen that a tank stream during the rainy season. They too have water budgeting systems like, on the bank of the water harvesting structures, they fix the families who would use the water in the first year and who would use in the next year.

For crop protection from insects and pests they use many types of plant materials. The dry leaves of Neem (*Azadirachta indica*) and Begunia (*Vitex nigundo*) are mixed with grains and pulses before they are stored in containers to prevent damage by beetles. They sprinkle cow dung on standing crops to prevent browsing by livestock. There are also instances where farmers put bit of opium in the internodes of cucurbits to increase branching and so the number of fruits.

In their systems of agriculture, very often, farmers do not factor labour costs into their production systems, especially small and marginal farmers. But the whole

family works on the farm including children, women, even the elderly. Before converting the slopes into terraces, the Lanjia Saora and Bonda farmers used to grow about 25-30 crops under mixed farming system following sound agronomic practice. In addition, they know about diverse uncultivated food available in forests. In tribal system of agriculture, multiple cropping system is highly preferred except for paddy which is grown as a single crop on terraces and low lands. Traditional farming under shifting cultivation system provided them a balanced mix of nutrients in the form of several millets, legumes, cereals, fruits, vegetables and herbs.

Usually the tribal farmers holding marginal land hardly incurred any cash expenditure in traditional agriculture. These farmers save seeds from the previous year's crops. Farm animals fertilise the fields with manure while the crop residues of this organic mixed farming system, completely free from chemical poisons, provides nutritious food for livestock. Through mixed farming of grains and legumes soil fertility is maintained. If one crop fails due to some reason, other crops of the mixed farming system enable farmers to survive despite some loss.

It is the entire system of agriculture practised by the tribal communities that has helped preserve this rich diversity of crops, as also diversity of cultivation, as different systems are practised on different types of land and different types of soil. This knowledge system is of great value today from point of view of germplasm conservation.

Rice cultivation systems in Lanjia Saora and Bonda highlands

There are different traditional systems of rice cultivation seen in the Lanjia Saora and Bonda highlands that includes Myda system, dry system of cultivation, semi-dry system of cultivation, wet cultivation and Bedha cultivation that has been briefed as below.

• Myda system

Myda is an ancient system of cultivation in southern Odisha tribal belt. The Bonda and Gadabas grow two rice crops together in the same field during Kharif (Rainy season). At the lower level of the plateau, the lands are classified as *gedda*, *bedda*, and *jhola*. The *gedda* lands get running flow of water from May to November along with silt and clay. During February/March when the three types of lands get partially dried up, the Bonda and Gadabas start their field operation. The land is ploughed semi dry or wet. Chipti (short duration) and Kerandi (long duration) rice seeds, mixed in 5:2 proportion are cultivated. The seeds are broadcasted in fields with a little standing water. Chipti matures in June/July. During the same time top portion of the Kerandi crop is also cut to reduce excess vegetative growth and prevent lodging. The height of the water in the fields increases and the water remains flowing, the maximum being at the *jholas* (deep low lands). At places where stubbles rot due to excess water in the *jholas*, vegetative propagation by splitting the tillers from the surviving hills of Kerandi is practiced. The Kerandi grows tall as the water level rises. If necessary standing rice crop is again defoliated in September/

October. This saves the crop from lodging. The Kerandi rice is harvested in December-January (280-300 days).

• Dry system of cultivation

The dry system is followed in rainfed uplands, especially in some of the terrace fields of Lanjia Saora, which do not have standing water in the field. The land is ploughed several times to get the desired yield. With the onset of monsoon in May-June, farmers broadcast the seeds. Early and extra early varieties are cultivated in this type of land and high seed rate is followed. After broadcasting, the uplands are left unattended till the crop matures. Normally, weeding is not done because the dryness and hardness of soil makes uprooting difficult.

• Semi-dry system of cultivation

The semi-dry system is followed in rainfed/irrigated medium lands. The field is prepared and dry seeds or sprouted seeds are broadcasted depending on the rain/standing water. If rain is heavy, farmers sow sprouted seeds to save the seeds from rotting and if the field is dry, they sow dry seeds. Sowing is done in May-June. When the crop is one month old, ploughing of the field is done in 5-10 cm standing water. This operation is known as *Beushaning*. A week or ten days after *beushaning*, laddering is done, weeds are removed and thinning is done followed by gap filling using uprooted seedlings. *Beushaning* saves labour need for weeding.

• Wet system of cultivation

The wet system of cultivation is carried out in rainfed and irrigated low lands.

The field is ploughed repeatedly to bring a soft puddle with 5 to 7 cm standing water. The rice seedlings are transplanted or sprouted seeds are directly seeded depending on the economic condition of the farmers. Transplanting is done usually in July-August by random method using 4 to 6 weeks old seedlings. Hand weeding is done once or twice depending upon the weed population and the labour cost.

- **Bedha (Plain) cultivation**

Bedha cultivation in broad principles remains the same as podu cultivation. Bedha (ploughed land) is invariably softer and free of any forest growth, thus do not need to be cleared and burnt. The first ploughing begins before the rain. The streams are carefully utilized to irrigate the beds of terraced fields. Every part of the valley is considered precious. Converted into rice fields, the numerous terraces lead from one into the others with drops of 2-5 feet. In some parts of the Lanjia Saora and Bonda highlands excellent terracing can be seen. The wall of each terraced field is roughly reverted with stone. Elaborate irrigation arrangements are carefully made: streams are taken across and around the fields, and the water is guided over the drop by a gutter of hollowed bamboo. Just like weeding on Dangar, the transplantation of seedlings in Bedha is done predominantly by women.

Terrace cultivation by Lanjia Saora and Bonda

Terrace cultivation is commonly seen at

the foot hills. The terraces are seen to be ascending from the bank of a perennial stream to the foothill zone and if the slope is wider the terraces continue upward to a certain extent beyond the foothill in consideration to the suitability of slope. The platform of the terraces is flat throughout and the fall of each terrace is stone packed. The construction of the terraces is so ingeniously and skilfully done that no soil is carried down with water. The terraces are built right up to the beds of hill streams and extends many hundreds of feet from the depth of villages to the hill slopes and in some cases rising up to the hill tops. The flow of water from one terrace to the other is controlled by channels and water ways which are provided on the ridges of terraces. Two or three pits are dug at the lower side of the upper terrace and these pits are packed with boulders. The water flows into these pits and from there through the boulder trickles to the terraces down below. The water management is so skilful that it avoids flooding of the terraced fields.

Location of terraces depends on the hill streams. According to older people, in the early days, the community members preferred to settle in areas where ample area was available for terracing. They blocked the course of streams at certain points and diverted the stream course to avoid flooding inside the settlement. The diversion of the streams was made towards the terraces.

Usually on the wide slopes the Lanjia Saoras make stone embankments first and then level the earth by cutting the slopes from upper reaches of the slope

and dumping the soil on the lower reaches to make the field perfectly levelled. Embankments are made of loose boulders in the beginning and in course of time the soil deposit due to runoff makes the bund stronger. Each terrace is usually one to two feet higher compared to the next downward terrace if the slope is wider. In such cases the boulder embankment settles down easily. However, boulder embankments of terraces on steep slopes stand at a height of three to five feet from adjoining terraces. Such embankments need additional care and interventions to make them stable. In such cases the Lanjia Saora cement the boulders with mud so that they do not fall down easily. Afterwards, the soil deposit from the runoff makes the embankments stronger and stable. The Lanjia Saora possess ingenious skills in setting stones and boulders to build very strong and stable bunds, guard walls and even walls of houses. They set the stones in such a manner that face of one stone strongly holds face of another stone. They do not need masonry tools to measure width and straightness by height and length of embankments. Experience of embankment construction is utilized in estimating the load on the wall for stability. Accordingly, they decide width of the embankment.

Rainfed agriculture is practiced on terraces. There are very few terraces that get irrigation from perennial streams. Each terrace has one or more inlets and one or more outlets. The runoff from the hill slope enters into the first terrace on the upper reaches through more than one inlet. More than one inlet is

designed to reduce the force of runoff entering into the first terrace. The inlet points are decided in consideration to the slope. Similar number of outlets is also designed to discharge the runoff. The outlet of the upper terrace is the inlet of the lower terrace. The rain water in this way flows down and down to the last terrace on the slope and finally discharge the water to streams. This way the water logging in the terraces is avoided.

The remarkable feature in the inlet and outlet designing is that they are never kept in one line. In most cases it is seen that the inlet and outlet position are diagonally opposite. The terrace is not perfectly levelled rather a gentle slope of 1% to 3% is maintained from one lateral end to another. In a terrace if the inlet is positioned at the upper end across the hill slope, the outlet is positioned at the diagonally lower end along the gentle slope within the terrace. Thus, water travels from the inlet end within the terrace to the outlet end very gently. The velocity of water is reduced by designing the slope appropriately and therefore hardly any soil erosion occurs from the terraces. In this way the water is made available to all sections in a terrace and thereby the soil is well drenched, the crops are well irrigated, and the excess water is drained out.

In setting the stones or boulders to construct embankments, women are better to men in certain aspects. Setting boulders for making embankment requires good deal of effort, requires lot of patience and takes a long time. Side by side with setting embankments women also level the terraces with

desired slope level. Hence, women are considered experts in terracing. The men on the other hand engage themselves in hard physical work which is otherwise difficult for women. Male folks usually gather heavy stones and boulders at the site of work. When required they lift and place heavy boulders for setting foundation of embankments. If huge rocks are available on the terrace site they are cracked and broken down into smaller pieces using traditional techniques and the smaller pieces are used to construct embankments.

The Lanjia Saora usually cultivate two types of paddy such as Adangsar (Big-paddy) or Ambadhana (Mango-paddy) in January-February, and Mudasar or Sanadhana (small-paddy) in June - July.

The Bonda cultivate a number of paddy varieties on terraces. They are well known for a particular kind of paddy that they grow on terraces, especially in wet terraces. The paddy is locally called Muna Ker or Badadhan. The variety takes more than 8 months to mature and be harvested. It grows to a height of more than 5 feet and grows well in terraces with stagnant water. Usually this variety is cultivated at the mouth of slope and stream. It can withstand the velocity of runoff and stagnation of water. The Bonda are of opinion that because of cold climate the variety grows tall and takes more than 8 months to mature. The variety is endemic to the Bonda hills. The same variety when cultivated in lower Bonda area, it matures at a relatively shorter duration between 4 to 5 months.

The terrace cultivation starts in the

month of April after the Chaita Parab. They prepare the terrace for transplantation. The terrace land is ploughed up deeply so that water and the carbon matters (out of burning of root stocks and weeds) can get into the deeper layer of soil. In the month of May they transplant the seedlings and the transplanting called Unker starts with a ritual. Before transplanting they resize or repair the embankments and bunds of the terraces using hand hoes. There are identified terraces that are called Anglai (sacred land) from where the transplanting starts. If the Anglai is located near a water hole then a type of worship is conducted there for a goddess called Jal Kamini with offerings of egg and chick to seek her benevolence for better output from the said field.

The Bonda people know the reason why they should not delay transplanting beyond the month of May. According to them, during May-June they get occasional showers which are beneficial for the tender saplings. These showers help the seedlings to propagate root system properly before the monsoon rains come. Their experience states that if adequate rooting happens before the monsoon then the paddy plants will be able to withstand the current of the runoff. This is an adaptive management that reduces the chances of damage to seedlings by runoff current. In case of late transplanting there is every possibility that the seedlings may be washed away by runoff for lack of sufficient anchorage.

There are about five paddy varieties cultivated on dry slopes which are

harvested by November-December. The paddy cultivated on the wet terraces is harvested during December-January. Traditionally the Bonda rotate their traditional crops in the same patch of hill slope to raise productivity of the soil. Bonda cultivators consider double cropping a cultural taboo for them. They assert that they worship the paddy seed in the annual *chaiti* festival before it is grown ceremonially in their fields. Since this festival cannot be observed twice in a year, they cannot go for double cropping on the same patch.

The Bonda traditional agriculture is intensive and requires many helping hands to take up the processes in a timely sequence. They require cooperative labour with a number of plough cattle. They are of opinion that they never needed to add any farm yard manure or cow dung manure to the terraces. According to them the runoff collects sediments rich with nutrients in the fields which facilitate healthy growth of the paddy crop. Where the sediment deposit is higher, there the crop health is remarkable. In other words, the health of agriculture in the terraces is determined by the health of the upper reaches that supplies nutrients. In the Bonda hills this equation is still well managed contributing to the gain of people from terrace agriculture.

Salient features of Lanjia Saora and Bonda agriculture systems

Tribal agriculture has always been treated as low technology backward agriculture which is not true. It is quite compatible with other so-called modern farming methods. It represents

environmentally viable options for all types of farmers, regardless of their farm location, and their skills, knowledge and personal motivation. It is subsistence-based agriculture. It is often believed that tribal agriculture is uneconomic with lower yields but these may still translate into better net returns as their costs are also lower.

- **Preference for diversity**

In tribal agriculture system, the farmers have long favoured the diversity on farm. The multiple cropping in shifting cultivation systems is a testimony to that. There are a huge number of varieties cultivated in a mixture that includes cereals, pulses, oil seeds, vegetables, spices, roots and tubers, and also tree crops. The tribal farmers do not standardize a particular type of practice for all variable conditions. They maintain diversity by variety of agricultural technology and interventions. The multiple cropping system provide them a range of outputs, and thus represent logical approaches to coping with variable environments. Mixed crops are less variable in time and space, and combined yields are often greater.

- **Different land use strategies**

The Lanjia Saora and Bonda exhibit experience-based knowledge on agricultural interventions suitable to terrain, landscape and ecosystems. They have been continuously experimenting with new varieties or readopting old or existing ones and also sharing their results within the community. For example, the upper Bonda have been cultivating the Muna

Ker, locally called Bada dhan on wetlands or on-stream terraces where water is either stagnant or flowing through continuously. The paddy variety attains a height up to 6 ft and takes a long time up to 240 days when it is mature to be reaped. The Bonda often cuts the plant maintaining a height of about 4ft in order to influence early maturity. Initially started as an experiment, it became an experience of all. Hence, to reduce the time between transplanting and reaping the Bonda cuts the paddy at growing stage which has become a common practice now. The lower Bonda have a different experience with the same paddy variety. That, when the same seeds are cultivated on the lower Bonda area the paddy is harvested in between 120-150 days since transplanting. The difference is in climate, temperature, water relation of the crop, nutrient flow and sunlight. It states that there is always an innovation and consequent upon the innovation is replication. The Lanjia Saoras also have similar experiences about cultivation of a paddy variety called Kemi Sar on uplands, terraces and low lands. A particular variety shows varied yield performances in varied situations and based on such observations the tribal communities take land use decisions and align strategies for better yield and sustainability.

- **Ecological agriculture**

Lanjia Saora and Bonda agriculture assumes importance as ecological agriculture as the agro-ecosystems harbour great deal of biodiversity. In their agriculture system, mosaic of natural ecosystems coexists with a wide

variety of agro-ecosystems. Such a highly diversified landscape unit is likely to have a wide range of ecological niches conducive to enhancing biodiversity and at the same time is likely to ensure sustainability of the managed landscape.

- **Sustainable systems and sustainable productions**

The numerous varieties of crops being grown in those areas, and the good quality seeds available to the villagers make these areas as sustainable agriculture models. Better field preparation with manuring, sowing operations, crop management and post-harvest practices leads to better quality of crops as well as yields. All these are done within the framework of the traditional system that is, maintaining the essential harmony of agriculture, animal husbandry and forestry.

Effort at the community level to rebuild or improve the traditional system of mixed farming are done in a manner in which there is no conflict between agriculture, forestry, animal husbandry and emphasize upon the real needs of the village. Furthermore, breeds of cattle have been promoted which thrive on crop residues. Thus, a farming system approach is maintained.

- **Scientific in local context**

Lanjia Saora and Bonda appropriate their traditional agriculture in scientific manner. Sustainable development has to be considered in the context of the ecological framework within which the system operates. Agriculture development is best formed by using traditional technology, for building up soil fertility, which otherwise is built up

through natural processes of forest succession where trees play a key role.

- **Diversity of ecosystems and species**

The diversity of ecosystems and species help building mutually benefiting inter-linkages in the Lanjia Saora and Bonda territory. Because of this diversity, endemism in crops and livestock has been maintained. The ecological inter-linkages have been maintained through culturally tuned interactions with the environment that within itself has mechanisms for ensuring conservation of species and varieties.

- **Food and livelihood security of communities**

The diverse natural and agro-ecosystems have provided life support to the Lanjia Saora and Bonda tribes for ensuring food security from agricultural products as well as forest produces. Adequate biodiversity always offers an option for alternatives to strive through lean periods.

- **Local knowledge systems**

Local knowledge systems and technology happen to be instrumental in sustaining production systems. Apart from their experience-based knowledge on processes and practices of crop husbandry and animal husbandry, the knowledge on ecological interactions for non-pesticide management, dealing with decline in soil fertility, understanding landscape functions, creating low cost irrigation infrastructure are highly commendable in a context. Through a variety of approaches, traditional knowledge, wisdom and technology, based on

empirical knowledge accumulated over generations, the Lanjia Saora, Bonda and other traditional societies have learnt to conserve and enhance biodiversity. They have done it in the agro-ecosystem types and in the natural ecosystems.

- **The sustainability issues**

Tribal agriculture has been confronted with many issues. The first issue concerns the conservation and control of plant genetic resources. The second issue concerns the conservation of those farming systems evolved through generations carrying vast body of indigenous knowledge applicable for particular agro-climatic locations and agro-ecological situations as against growing trend of imposing alien systems. Current development paradigms and practices have been grossly ignoring the importance and value base of traditional agriculture systems. On the other hand, there are arguments building up justifying that traditional agriculture is self-sustainable. Many strategies prescribed by Indian and International agencies over emphasize the requirement of modernization and external inputs for sustaining agriculture, by and large ignoring the fact that traditional agriculture is self-sustainable.

Recent development policies have laid larger emphasis on external inputs as a means to enhance agricultural production. These external inputs have substantially substituted traditional processes and resources and have also discouraged application of traditional knowledge. Pesticides have replaced biological, cultural and mechanical

methods for controlling pests, weeds and diseases; inorganic fertilizers have substituted for livestock manures, composts and nitrogen fixing crops. The specialization of agricultural production and associated decline of the mixed farm has also contributed to this situation. The basic challenge for tribal traditional agriculture is to make better use of the internal resources.

Conclusion

The Lanjia Saora and Bonda highlands have distinct landscapes where distinct agricultural systems have evolved through generations. The undulating hill terrains and the massive network of streams interspersed with valleys and scarce plain lands are unique and distinct landscape features. Their mode of interaction with the landscape is governed by traditional

socio-political norms in case of both the communities. They give due considerations to local biodiversity, the ecosystem services, the wildlife habitats in decisions pertaining to their agriculture and other primary production systems. In the similar manner, diverting the stream network, bunding on the streams, irrigation structures remain to the decision of the traditional socio-political system.

In this consideration, in the fitness of things in this context as envisaged by GIAHS guideline, the landscapes of Lanjia Saora and Bonda qualify for consideration under Tribal Heritage Agriculture System. Investing on more detailed documentation of other tribal agriculture systems may help in bringing recognitions to their systems internationally.

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Forest Knowledge and Adivasi Education -Field Perspectives

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ABSTRACT

Adivasi knowledge and value systems, concerning forest, land, community and much else, are getting undermined by schooling systems that impart literacy but often, for all the good intentions, produce a high degree of alienation between children and their families or culture. A key reason seems to be that policy recommendations to integrate Adivasi knowledge and skills into the curriculum have not been properly implemented, including indigenous pedagogies and mother tongues. At the same time, there exist other examples across the country which from different standpoints attempt integration in the face of the dominant ideologies of assimilation.

Setting the Scene

Adivasi Knowledge and value systems face considerable challenge in present times. How much of the traditional knowledge on forest-based food systems is being absorbed by younger generations, for example? (Ramnath and Razon 2019; Padel and Gupta 2020). One reason for a seeming undermining of such knowledge seems to be the pedagogy at tribal schools, that too often comes down to a divorce between literacy-based knowledge taught and valued in schools and experience- or tradition-based knowledge systems passed on in Adivasi communities through oral traditions over generations. These Adivasi knowledge systems formed the epistemological basis of livelihood systems that in effect managed huge tracts

of India's forest lands; while official tribal schooling has been moulded towards imparting literacy. The value placed on literacy has had the corollary of undervaluing oral traditions, too often dismissed as 'superstition' and quaint folklore.

Associated with these impacts of schooling, Adivasis are being displaced rapidly, not just by industrialisation projects such as dams, mines and factories, but also by sanctuaries and even for 'compensatory afforestation', whose purpose is to replace forest destroyed by industrial projects (Choudhury 2019). The sanctuaries issue has frequently divided conservationists from tribal rights activists; yet Adivasi communities are often at the forefront of conserving

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forests that Forest Conservators have treated as a resource geared towards revenue or profit (Verma 2020).

In this context, how do anthropologists understand Adivasi knowledge systems, and how do they understand their own knowledge of tribal societies? Empirical research and analysis is vital; but needs to include Adivasi perceptions. Knowledge systems are exceedingly complex, and are linked with value systems, whose ethic, among Adivasis, is distinctly egalitarian.

Simply trying to conserve information and material artefacts in academic writings and museums tends to *objectify* tribal culture. Is it time to steer this towards dialogue?

To clarify this in an Indian context, a good starting point is Abhay Xaxa's poem *I am not your data*. We were close friends of Abhay. His death early in 2020 is much-grieved by many, coming shortly after he gained his PhD in sociology in JNU.

I am not your data, nor am I your vote bank,
 I am not your project, or any exotic museum object,
 I am not the soul waiting to be harvested,
 Nor am I the lab where your theories are tested,
 I am not your cannon fodder, or the invisible worker,
 or your entertainment at India habitat center,
 I am not your field, your crowd, your history,
 your help, your guilt, medallions of your victory,
 I refuse, reject, resist your labels,
 your judgments, documents, definitions,
 your models, leaders and patrons,
 because they deny me my existence, my vision, my space,
 your words, maps, figures, indicators,
 they all create illusions and put you on pedestal,
 from where you look down upon me,
 So I draw my own picture, and invent my own grammar,
 I make my own tools to fight my own battle,
 For me, my people, my world, and my Adivasi self!
 (Xaxa 2016)

In this article we shall draw on our own field experience in a variety of tribal schools to highlight some anthropological insights into tribal education and the situation of Adivasi communities in

relation to the forests where they have always lived.

To set the scene: Increasing numbers of Adivasi and tribal children are being educated in residential schools (Gupta and

Padel 2018). Although anthropologists have commented relatively little on this, a number of education experts have pointed to aspects of mainstream schooling which tend to alienate children from their families and communities (Ambasht 1999; Balagopalan 2003; NCERT 2007; Veerabhadranaika et al 2012; Saxena 2012). Adivasis themselves have commented on this recently (Markam 2020; Dungdung 2020). Vincent Schilling gives a native American perspective comparing India's tribal residential schools such as KISS with the notorious residential schools in North America, geared towards a declared policy of assimilation, that were dissolved by the 1980s with official apologies (Schilling 2020), while India has witnessed a major expansion of tribal residential schools since this time.

The Xaxa Committee Report calls this an 'ashramization' of tribal education, and connects it implicitly with an undeclared policy of assimilation (Xaxa 2014 pp.30 and 181), that contradicts the aim for a declared policy of 'integration' that was supposed to steer a course between colonial extremes of assimilation and isolation.

Extraction education (Walker 2018) is another helpful concept to understand the present situation of schools provided for Adivasis or tribal people in India, since some of the present show-pieces of tribal education, such as KISS and NMDC's 'Education Cities' (on which more below) are funded to a considerable extent by the very mining companies that Adivasis see as taking away their land. Arguably, extractive companies are helping to set up schools that extract children from their

cultures and communities (Gupta and Padel 2020).

A key feature of most tribal schools is the *deficit discourse* that permeates them (Aikman et al 2016), in as much as most literature on tribal education emphasizes low literacy and high drop-out rates, repeatedly blaming Adivasi parents for not valuing education, taking their children out of school to exploit their labour etc. Such discourse ignores key early policy documents (especially Elwin 1960, Dhebar 1961) that strongly recommended adapting school times to Adivasi work seasons and festivals, since children learn much of their traditional skills and knowledge by working in a system where play morphs into work, and education is part and parcel of the Adivasi economy (Ramnath 2015).

This is readily apparent from one of the most outstanding ethnographies of an indigenous Adivasi education system, Elwin's *Muria & their Ghotul* (1947). This emphasizes the ghotul system's sensitivity and non-imposing quality: children's primary teachers from the age of about six are elder children. What is taught contains an extremely rich oral curriculum of songs, riddles, myths, etiquette, dances, countless skills of preparing food and making forest-produce-based artefacts from combs to houses. This curriculum can be seen as perhaps even 100 per cent different from the curriculum of most schools. As for pedagogy, the *ghotul* system presents an extreme contrast: modern schooling starts by inculcating a form of discipline quite foreign to Adivasi culture, where adults rarely tell children what to do.

Decolonizing Methodology

This article will survey the evolution of

policy and practice on tribal education drawing on our own experience of a wide variety of tribal education systems. During the previous six years we have researched tribal education and schooling, starting from Gupta's M.Phil thesis at the Department of Education, Delhi University, regarding tribal education policy since Independence (Gupta 2016), making numerous field trips separately and together, and publishing several articles, part-funded by a research grant from Azim Premji University on the topic of residential schools and culturally sensitive education.³ We have visited schools and education projects in Odisha, Chhattisgarh, Madhya Pradesh, Gujarat, Maharashtra, West Bengal and Assam, interacting with and interviewing many pupils as well as staff and others involved in the education process, while also examining the literature on tribal education, and comparing the situation of indigenous or tribal education in India with the situation in several other countries.

Linda Tuhiwai Smith's book *Decolonizing Methodologies: Research and Indigenous Peoples* (1999/2012) is of seminal significance here. Tuhiwai Smith is a Maori scholar, and the situation of anthropology in Aotearora/New Zealand has shifted to the extent that Non-Maori can no longer write about Maori issues in the top-down, *objectifying* manner that was customary in colonial times. A central argument is that indigenous peoples have been repeatedly and, in many ways, *objectified* in anthropology - a fundamental critique of anthropological methodology in terms of

how we have tended to categorise tribal peoples and to define their cultures from a top-down perspective that is not reciprocal. The validity of tribal ethnography needs questioning from the standpoint of Adivasis themselves. How far do museums that put tribal cultures on display refer to Adivasi communities' own ways of understanding their cultures?

As we shall see, tribal schooling is often permeated with cultural racism, that looks on Adivasi culture as 'backward' (Kumar 1989). In this sense, the anthropological role of looking on tribal customs as objects of study can add insult to injury. What exactly is 'objectivity' in anthropology? When we examine how we know something, we realise we cannot 'know' a human subject unless we know or understand our own relationship with them. In this sense, 'subjective' or reflexive knowledge has to be the basis for real objectivity. When an anthropologist studies a tribal culture or village through field visits, without analysing the nexus of relationships these people have with police and other government officials, merchants, naxalites, timber mafia, corporate entities and their CSR teams, and with us researchers, this produces knowledge of limited validity, and has the effect of 'objectifying' human subjects—the essence of Abhay Xaxa's poem.

Felix's defining moment of learning from Adivasis was when men in a Baiga village he contemplated doing fieldwork in confronted him with the question, 'Do you really believe you can learn our culture in a year? And what would we gain from your study?'

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In April 2016 we attended a conference about tribal residential schools in Education City, Dantewada district; with visits to portacabin and other schools. Education city (Das 2018) is a complex of schools funded by the National Mineral Development Corporation (NMDC); and since our visit Education Cities have been inaugurated in neighbouring districts. Among several schools we have visited in Odisha are several in Rayagada district: Dongria Kondh Development Agency (DKDA) and other schools in Chatikona and the Mitra school near Bissamcuttack (all in Rayagada district), and Kalinga Institute of Social Sciences KISS, in Bhubaneswar, the world's biggest residential school, with an estimated 27,000 students, who receive free education there 'from KG to PG'. Schools we have visited in Gujarat include some of the first models of ashram schools –in Vedchhi, Surat district, set up by Jugat Ram Dave (Desai 1969), and Thakkar Bapa's first school in Dahod (Jani 2001); as well as Vasant school at the Tribal Academy in Tejgadh, associated with Ganesh Devy. In Bhopal city, Muskaan is an innovative education system for Adivasi children we have visited several times. During all these visits we conducted numerous interviews with a large range of key people involved in processes around tribal education.

Tribal Languages in Schools

Despite repeated policy directives since Independence, tribal languages are excluded from most schools. This is seen by experts as a main reason for their rapid decline throughout India (Devy 2004); a situation that seems to conform to linguistic genocide as defined by

Skutnabb-Kangas (2000). Many Adivasi parents, seeing education as vital for their children's future, and taking on the 'backward' label often attached to tribal 'dialects', seem resigned to this exclusion of tribal languages from schooling, although this exclusion is increasingly called into question by Adivasi activists and thinkers (e.g., Koya 2020). Considerable research corroborates the role of sensitively managed multilingual education in enhancing literacy (e.g., Mohanty et al 2009).

A basic part of Gandhi's vision of *Nai Talim* (or Basic Education) was use of mother tongue in education that was supposed to be mandatory in India (Article 350A). Yet in practice, most Adivasi children have been barred from speaking them, and very few tribal schools make them part of the curriculum. This is in marked contrast to situations in some other countries. New Zealand for example gives considerable attention to Maori Kaupapa (Pihama and Southey 2015).

Policy documents (especially Dhebar 1961) recommended producing textbooks in the 'major' tribal languages, with speakers of over 10,000, later raised in the 1992 policy to 100,000 speakers (MHRD 1992) – why this discrimination against languages with fewer speakers? Periodically, textbooks in tribal languages have been printed, but their use has rarely been systematic simply because most teachers are non-tribals who are not motivated to learn these languages. In Jugat Ram Dave's original school the local tribal language was used at first, as we heard from Dr Sanghamitra at the Sampoorna Kranti Ashram associated with this school, who became fluent in it there.

As for Thakkar Bapa's schools, although he speaks of using tribal languages in Standards I-III, as a bridge towards state languages (Thakkar 1941), it seems that in practice this did not happen. Jaipal Singh Munda confronted him on this point in the Constituent Assembly Debates in 1949, suggesting his school work would be of greater value if his teachers learned tribal languages (CAD 1946-1950). Within later multilingual education (MLE) programmes, there has been considerable tension between this idea of using tribal languages as a 'bridge', and encouraging their use in their own right, as languages for thinking and communicating in (Mohanty et al 2009). In New Zealand for example, every student has the right to write their PhD thesis in Maori.

The three-language formula set up by the Kothari Commission had the effect of marginalising tribal languages, since the main three were Hindi, English and the state language (Kothari 1966; Khandaraja & Verrela n.d.). When the 1992 education policy (MHRD 1992) limited a recommendation for using tribal languages only to those with over 100,000 speakers, this excludes the vast majority of smaller tribal peoples with distinctive languages, such as Bonda, Lanjia Sora, Juang or Durua in Odisha.

Progressive MLE policies in Odisha have had limited success for the reasons outlined (Mishra n.d.). Several MLE projects we have witnessed seem largely token endeavours, for example in a Ho school in south Jharkhand, and also at KISS; at most, the aim seems largely symbolic or to use tribal languages as a bridge.

By contrast, several schools we have visited make a point of using local

languages: Kurukh at the KKK Loordapa school in Gumla district of Jharkhand (Kerketta 2019); Kui in the Mitra school in Rayagada district; Munda in a school we visited near Ranchi; while the Vasant school in Tejgarh uses half a dozen tribal languages (American India Foundation 2017). At Muskaan they have developed the critical pedagogy of Paolo Freire (1970/1993) to involve children in teaching their languages to their teachers, which gives them a pride in their languages and motivation to learn. At a major government-sponsored Adivasi conference session on tribal education in Bhopal in November 2019, Felix witnessed Muskaan teachers pointedly introducing themselves in their own tribal languages rather than the Hindi, in contrast to older Adivasi activists who rarely spoke their own languages in public.

What it means to exclude tribal languages came over particularly strongly at a school we visited in a Gond area of Dantewada district that had institutionalised Sanskrit classes at 5am, with no Gondi in the curriculum!

History and Practice of Tribal Education

Most of the first schools set up in tribal areas were by Christian missionaries during colonial times. These created an 'educated' tribal elite (Bara 2002). The reaction from the 1920s took the form of ashram schools, as well as Gandhi's *Nai Talim*. As the Ramamurti education committee report makes clear, most tribal ashram schools did not meet the standards of *Nai Talim* (Ramamurti 1990 pp.68-72). By the 1940s-50s the style of many ashram schools was often distinctly Hindu nationalist (Prasad 2001; Sundar 2005); and

from the 1950s a huge expansion of RSS schools began with a 'civilising mission' that was in many ways mimetic of Christian initiatives (Froerer 2007 pp.13-16).

Early policy documents (especially Elwin 1960 and Dhebar 1961) strongly recommended schooling that would integrate modern and traditional knowledge rather than aiming for assimilation (Gupta and Padel 2018), by using *kachha* houses, bringing in tribal skills, knowledge of Adivasi history and heroes etc.

Yet this rarely happened. Thakkar Bapa's schools, though supposedly 'Gandhian', conformed little to *Nai Talim* standards, drawing little on local knowledge and skills of the hand. Thakkar's 1941 speech at Pune dismisses many elements of tribal culture as 'backward', especially the tradition of shifting cultivation (Thakkar 1941).

Residential schools for indigenous children in North America during these same years (mid-nineteenth century to 1950s) were overtly aimed at detribalization and forced assimilation, a policy oriented, as many now understand this, towards cultural genocide (Adams 1995; Milloy 1999; Churchill 2014). Striking similarities exist with what happens in a majority of tribal residential schools and hostels in India. Among these are: hair cut short on enrolment, when each child with an Adivasi name is assigned a Hindu name to replace it (as happened with Christian names assigned in Christian schools in America, as well as India); standardised, non-indigenous food; standardised Hindu rituals and prayers instead of non-indigenous ones; indigenous languages forbidden; and

great emphasis on discipline and hierarchy, in contrast to far gentler indigenous patterns of learning. Another similarity seems to be the ubiquity of sexual abuse in tribal boarding schools and hostels, reported recently with increasing frequency in Odisha and other states, exactly as in Canada and USA (Milloy 1999; UN 2009; Zee news 2010; Churchill 2014; *India Today* 2014; Survival International 2016).

The rapid growth of residential schools in India just as these were coming to be considered obsolete in North America is partly due to the recommendation for more residential schools and hostels by the Kothari Commission in the mid-1960s (Kothari 1966: 6.66); along with emphasis on training that would suit tribal youth for jobs in the industrialisation that was rapidly invading tribal areas during Nehru's premiership, in line with a 'fundamental reorganization in their economy and their way of life' (ibid. 6.59, p.225). The 1990s witnessed several new models of residential school, such as the Kasturba Gandhia Balika Vidhyalay (KGBV) and Eklavya schools; KISS also started at this time.

The deficit discourse about low literacy and high drop-out rates emphasizes an idea of tribal people as essentially *lacking*, enmeshed in poverty and backwardness. It tends to form part of a *social evolutionary* paradigm; and to be complemented by a high degree of cultural racism in schools—prejudice directed not so much against a person's skin colour as against their culture. For example, at a KGBV school in Godda district (Jharkhand), and a DKDA school in Chatikona (Odisha) in particular, teachers we interviewed spoke

with great frustration about the difficulty of 'civilising' children they perceived as extremely 'backward' or '*jungly*'.

The widespread idea of school pupils whose parents are non-literate as 'first-generation learners' seems to compound this prejudice. Obviously, as anthropologists familiar with the *ghotul* and similar 'youth dormitory' indigenous education traditions, we know that 'education' is not something new to Adivasi or tribal communities, yet we rarely, for example, challenge this idea of 'first generation learners'.

Extraction education (Walker 2018) represents yet another layer of alienation. Following Tata Steel's lead, several mining companies started their own schools for tribal children affected by their projects, such as NMDC (*India CSR Network* 2012) and Adani (*India Today* 2018); while these and also Vedanta (*Hindu Business Line* 2012) and Nalco signed MOUs with KISS. Taking as examples, Education city, KISS and an Adani-funded computer-based model of tribal education being promoted in Godda district (Jharkhand) in association with Adani's coal-fired power station project there, children's extraction from their communities involves promoting hi-tech modes of sharing information that could not be further from traditional, personal modes of learning. Extraction from communities is often promoted to counteract the threat of Maoist influence. This is often given as a prime reason for closing of day schools in insurgency-affected areas – also a feature in Northeast India (Jindal 2015).

The KISS model has been praised at many levels for giving 'hope' and aspirations to tribal youth (Finnan 2016). Problems to

do with many over-crowding, standardised food, and unhappy children running away or trying to (Mohanty 2017) are compounded by scale and distance from children's homes: a separation of boys and girls antithetical to Adivasi culture; Sanskritic prayers and rituals with little attempt to include genuine Adivasi or Christian languages, rituals or festivals; use of 'smart classrooms' to impart disembodied 'knowledge' bearing no relation to Adivasi knowledge systems; exoticization of tribal dance to greet dignitaries etc; and standardisation/uniformity of dress that excludes ornaments and traditional dress: display in Odisha's tribal museum of these items that are forbidden for daily use at KISS carries the implication that modern, civilised life involves discarding them. Compounding this, many children speak in interviews of being treated in extremely humiliating ways by staff. This cultural racism seems to be reinforced by the way the school's head speaks of the children's 'primitive' backgrounds, with relatives in the villages who 'don't understand anything' (Gupta & Padel 2020).

What seems particularly disturbing to an anthropologist is the idea of KISS as 'the world's largest anthropological laboratory' (KISS 2018). What does this mean? One aspect seems to be the implication that an experiment in 'uplift' is taking place here; but it is not a form of 'development' under Adivasi control.

This highlights an area where India seems out of sync with other countries, in terms of the insistence of indigenous communities in countries as diverse as Ecuador, Chile, Mexico, Canada, USA, New Zealand and Finland/ Norway/

Sweden for indigenous self-determination in the field of education (Mohanty 2009; Aikio-Puoskari 2009).

KISS was fixed in 2018 for the next Congress of World Anthropology, supposed to take place in January 2023 (KISS 2018). This arrangement was cancelled in mid-2020 after a petition called for this (George 2020; Guha 2020). This situation calls into question anthropology's relationship with education: should anthropologists play an advisory role, and if so, what should they be recommending? Should there be a two-way process of learning, with anthropologists stepping aside from a colonial-era role of educating the public or government about tribal cultures to creating a platform for Adivasi men and women of knowledge? For example, every New Zealander has to learn some Maori culture and language at schools now, from Aotearoa, the Maori name for their country, to the meaning of *tapu* - Maori for 'sacred', and origin of the English word 'taboo'. One could argue that Dongria opposition to cutting trees on their mountain summits, or violating it by mining it, comes from a cultural taboo – a sense of sacredness and restraint of great environmental wisdom.

As mentioned, several outstanding small-scale education projects exist in different parts of India that make a point of including tribal languages and culture, and children's own democratic decision-making in what they learn and how (e.g., Badhwar 2015; Joshi 2017). At Adharshila and Muskaan in Madhya Pradesh, and other such projects that make full use of tribal languages, one witnesses Adivasi children embracing education with

passion and enjoyment as a creative process they feel completely committed to.

Forest Knowledge and Anthropological Enquiry

One of most painful aspects of the Adivasi situation, recently highlighted alongside so many other issues, is the dispute over Adivasi communities located in sanctuaries and forest areas, from where many have been displaced or are currently threatened with dispossession (Odisha, Andhra Pradesh, Madhya Pradesh, Karnataka, Assam – Survival International 2014 and 2019), including the move to uproot several million Adivasis whose FRA applications have not been approved (Ramnath 2019). This dispute is complex and both sides often take extreme positions: on one side, tribal rights advocates rarely admit Adivasi collusion with hunting and timber mafias for example; on the other, conservationists often fail to recognise that Adivasi communities have conserved forest ecosystems far better than designated authorities, and have deeper knowledge of them.

Several PVTGs have faced decades of pressure from Forest Department officials to come down from the hills or out from the forest habitats where their culture is embedded. This applies to Paudi Bhuiya in Odisha; Konda Reddi and Chenchu in Andhra Pradesh; and Baiga in Madhya Pradesh. In all these cases, knowledge systems are clearly being undermined, alongside livelihoods.

Adivasis' forest knowledge has been little recognised by the Forest Department (Padel 1998); though Madhu Ramnath's work encouraging many senior Forest

Department officials to work with Adivasi experts has been a major, little recognised endeavour: Bastar Adivasis have helped regenerate native forest species in Telengana and other states, drawing on their immense knowledge (Ramnath 2016).

Knowledge of forest plants for food, healing and many other applications have been recorded in many articles in Adivasi. There seems little doubt of a tendency among many *Adivasi*⁴ youth to lose this knowledge, partly from lack of interest, especially since it seems so little valued in their schools. There seems a great need for more conservationists to work alongside Adivasis, learning from them. As Ramnath and Razon put this:

'There is no doubt that the forests have largely remained intact for hundreds of years because of the presence of the native people inside forests, with their regular use and consumption of the resources in them. That the forests then

were left largely unperturbed in the hands of indigenous peoples is a testament to their ability for harmonious co-existence and the spot-on blending of their practices with the forest ecology.'

The need seems to be for tribal education to become a much more egalitarian, two-way process, where children's knowledge and skills are valued, and non-tribals begin to learn from Adivasis as well as to assist in forms of education that reverse the learning (Gupta and Padel 2017).

Could anthropologists play a keener role in helping rejuvenate Adivasi knowledge and skills rather than just recording them 'before they disappear'? One aspect of anthropology is to highlight different modes of knowledge (Devy et al 2014). As many key thinkers understand this, the world's indigenous peoples are the only hope for human survival (Chomsky 2016), by preserving such knowledge alongside resisting the rape of the earth by extractive industries.

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A Study on Blood Pressure Distribution among the Juangs: A Particularly Vulnerable Tribal Group (PVTG) of Odisha

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ABSTRACT

Hypertension has been identified as a major cause of morbidity and mortality in both developed and developing nations. An elevated blood pressure alone contributes to majority of cardiovascular disease (CVD) worldwide. Raised blood pressure, commonly defined as systolic blood pressure (SBP) i.e., 140mm Hg or diastolic blood pressure (DBP) i.e., 90 mm Hg, is used to identify individuals at high risk of cardiovascular diseases.

A community based cross sectional study was carried out among the Juangs of Keonjhar district of Odisha, and a total of 164 adult individuals participated in the study out of which 84 were male and 78 were female. The objective of the present study was to find out the distribution of blood pressure and the correlation among SBP, DBP, heart rate, pulse rate, age group and MAP among the studied population. The result from the study reveals that the incidence of hypertension is more in male than the female and in which a total of 9.26 percent of respondents were exhibiting stage-1 hypertension, among them 6.17 percent were male and 3.09 percent were female respondents. Unlike other tribes in India, in the present study the Juang do not show hypertension cases at large but the prevalence of hypertension has occurred up to some extent, which can be stated that the Juang tribe is in the transitional stage towards hypertension. From the study it was observed that the cases of hypertension observed in the Juang tribe can be attributed to factors such as migration, modernization, undernourishment, high salt intake, traditional alcoholic drinks and exposure to modern way of lifestyle etc. The study suggests that in order to arrive at a meaningful conclusion, further investigation with robust sample design and in-depth ethnographic study is required.

Key Words: Blood pressure, hypertension, systolic blood pressure (SBP), diastolic blood pressure (DBP), Juang

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Introduction

Blood pressure refers to the force of the blood pushing against the walls of the arteries. It is expressed in two figures, the systolic (maximum) pressure and the diastolic (minimum) pressure. Each time when the heart beats, it pumps blood into the arteries and the blood pressure is highest when heart beats faster pumping the blood which is called systolic pressure. When the heart is at rest, between beats, the blood pressure falls and that is called diastolic pressure. Raised blood pressure, commonly defined as systolic blood pressure (SBP) i.e., 140mmHg or diastolic blood pressure (DBP) i.e., 90 mmHg, is used to identify individuals at high risk of cardiovascular diseases (Weber et al., 2014). One of the global non-communicable disease (NCD) targets adopted by the World Health Organization (WHO) in 2013 is to reduce the prevalence of raised blood pressure by 25% compared with its 2010 level, by 2025 (WHO-2013).

Hypertension has been identified as a major cause of morbidity and mortality in both developed and developing nations. 'An elevated blood pressure alone contributes to majority of cardiovascular disease (CVD) worldwide. Hypertension is a risk factor for various degenerative diseases, imposing a great burden at global level' (Kearney et al., 2005). It is one of the most prevalent disease states that occur in approximately one in three adults. Hypertension is caused by malfunctions in both hormonal regulation such as angiotensin and aldosterone as well as disturbances in electrolytes such as sodium and water. Ways to prevent the development of high blood pressure

include eating a well-balanced diet, exercising, and maintaining a healthy weight (Meshram, 2016)

Hypertension is a major public health problem in India and is widely prevalent with large regional variations (Gupta et al., 2019; Farag et al., 2014). Recent studies on Tribes in India and Odisha shows an increasing trend of high blood pressure and life style related diseases which was traditionally very uncommon among them and is due to changing life style, modernization, industrialization, migration, extra salt intake and alcohol consumption (Sathiyarayanan et al. 2019, Satapathy et al. 2019, Kshatriya et al., 2016, Mohapatra et al. 2015). In the present study an attempt has been made to find out the blood pressure distribution and its prevalence among the Juang community, a Particularly Vulnerable Tribal Group (PVTG) of Keonjhar district of Odisha, and to find out the correlation among SBP, DBP, heart rate, pulse rate, age and MAP.

Area and people

Odisha is uniquely proud for the ethnic mosaic brought over by the 62 culturally vibrant tribes including 13 particularly vulnerable tribal groups (PVTGs), who are found distributed all over the state that constitute an impressive 22.85 percent of the total population of the state (Census, 2011). These tribes mainly inhabit the Eastern Ghats hill range that runs in the north-south direction. Keonjhar district constitutes 44.51% of tribal population to total population of the district (Ota, et al. 2015).

Keonjhar is a major district of Odisha, as far as the geographical area is concerned. The entire district is situated within 21°

00'53" N & 22° 09'43" N latitude and 85° 11' 0" E and 86°-21'30" E longitude. It can be distinctly divided into two parts which are highly dissimilar in nature i.e., lower Keonjhar and upper Keonjhar. It is mainly inhabited by tribes namely Bhuyans and Juangs.

The Juangs are one of the 13 particularly vulnerable tribal groups (PVTGs) of Odisha. The concentration of the Juang tribe is high in Keonjhar and some are scattered in Dhenkanal district. Juang people are basically a jungle tribe and are divided into two broad sections, namely, Thaniya and the Bhagudiya. Thaniya comprises of those of the Juang tribes who have settled down in the original homelands, while the Bhagudiya are those Juang people who have migrated to some other places. The word "Juang" means "Sons of man". They also refer themselves as Patra Savaras (Patra means leaf). The Juangs believe that they are first human beings to be born on earth. Their ancestors were born from a Rusi couple (a saint and his spouse) who were living in Rusi Tangar, a hillock near Gonasika in Keonjhar district. They also believe that in ancient times their tribe emerged from earth on the hills of Gonasika where the river Baitarani has its source (Ota et. al. 2015).

Materials and Method

Samples

A community based cross sectional study was carried out during January – February of 2019 among the adults of Juang tribes in 4 villages such as Gonasika, Guptaganga, Kadalibadi and Uppar Baitarani of Banspal block of Keonjhar district of Odisha. Data was collected

from 164 adult individuals comprising 84 males and 78 females who volunteered to contribute to the study through their active participation. The research has been carried out in conformity with the ICMR's 'Ethical Guidelines of Biomedical research on Human participants (2006)'. The subjects who had voluntarily participated were considered.

Measurement

The primary information of the participants such as name, tribe name, age, sex, and other family information was recorded in a structured format. Systolic and diastolic blood pressures (SBP and DBP, respectively) were recorded thrice using a standard mercury sphygmomanometer (diamond mercury sphygmomanometer) on the right arm of the participants. The average of three measurements was recorded. The heart rate was measured using stethoscope, and the pulse rate was measured by counting the pulse from the vein in one minute. In each test, measurement was taken thrice and average was recorded.

Classification of participants by stages of hypertension

For assessment of the individuals with hypertension or borderline hypertension, heart rate mercury sphygmomanometer and stethoscope were used and the recommendation of the JNC-VII (2003) was adopted for classification as shown in Table -1.

Statistical Analysis

After incorporating and systematizing the data into Microsoft Excel 2007, further analyses were conducted using SPSS version 20.0. Descriptive statistics, such as

Table 1: JNC-VII for hypertension classification

Category	Systolic Blood Pressure (mmHg)	Diastolic Blood Pressure (mmHg)
Normal	<120	And <80
Pre hypertensive	120-139	Or 80 -89
Stage 1 HTN	140-159	Or 90 -99
Stage 2 HTN	≥160	Or ≥100

Table 2: Age group and sex wise distribution of mean SBP among the adults of Juang

Age Groups	Sex	N	Mean	SD
<20	Male	12	117.17	4.55
	Female	17	117.12	3.46
	Total	29	117.14	3.87
21-30	Male	41	118.15	9.07
	Female	32	118.25	8.70
	Total	73	118.19	8.85
31-40	Male	23	118.70	7.58
	Female	20	117.40	8.86
	Total	43	118.09	8.13
41-50	Male	5	126.00	18.96
	Female	6	126.17	14.70
	Total	11	126.09	15.87
51-60	Male	3	131.33	4.16
	Female	3	120.67	15.14
	Total	6	126.00	11.52
Total	Male	84	119.10	9.20
	Female	78	118.49	8.83
	Grand Total	162	118.80	9.00

mean and standard deviation (SD), were used. The prevalence of percentage of hypertension in men, women and overall population were calculated.

Results

From the figures plotted in Table-2 it is

found that the mean of systolic blood pressure among Juang is 118.80 mmHg whereas the mean systolic blood pressure of male and female respondents is 119.10 mmHg and 118.49 mmHg respectively.

Figure 1 reveals that the male respondents of the Juang are exhibiting higher systolic blood pressure than the female respondents of Juang tribe. The systolic blood pressure increases with increasing in age group.

Figure 1: Distribution of mean SBP in Male and Female member of Adult Juang

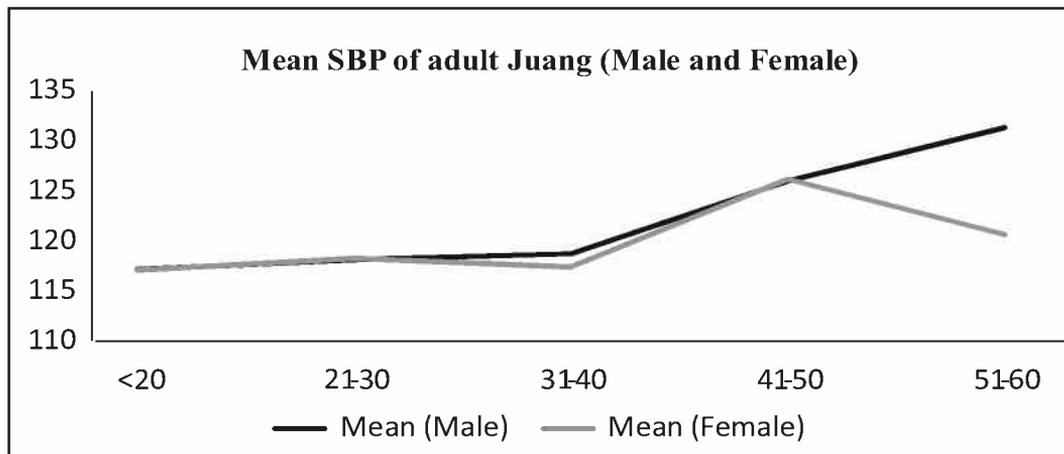


Table 3: Age group and sex wise distribution of mean DBP among the adult of Juang

Age Groups	Sex	N	Mean	SD
<20	Male	12	79.67	2.42
	Female	17	78.41	2.72
	Total	29	78.93	2.63
21-30	Male	41	78.88	5.36
	Female	32	78.81	5.79
	Total	73	78.85	5.51
31-40	Male	23	79.52	4.83
	Female	20	78.15	5.90
	Total	43	78.88	5.33
41-50	Male	5	86.40	6.80
	Female	6	78.83	9.13
	Total	11	82.27	8.71
51-60	Male	3	90.67	1.15
	Female	3	85.33	10.26
	Total	6	88.00	7.16
To tal	Male	84	80.04	5.51
	Female	78	78.81	5.79
	Grand Total	162	79.44	5.66

Findings from the table 3 reveal that the mean of Diastolic blood pressure of Juang respondents is 79.44 mmHg whereas the mean Diastolic blood pressure among male and female respondents is 80.04 mmHg and 78.81

mmHg respectively. Whereas Figure 2 shows that the male respondents of the Juang are exhibiting higher diastolic blood

pressure than the female respondents of Juang tribe. The diastolic blood pressure is increasing with increase in age.

Figure 2: Distribution of DBP in Male and Female members of Adult Juang

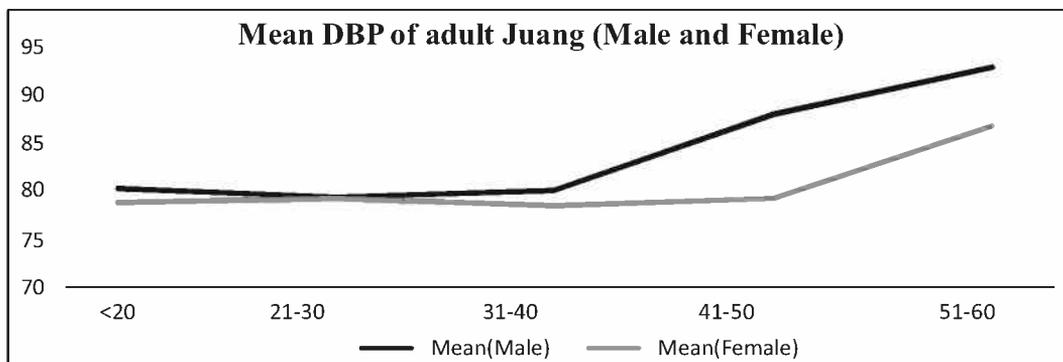


Table 4: Prevalence of Blood pressure distribution of Juang Adult (Male & Female)

Hypertensive Prevalence	MaleN (%)	FemaleN (%)	TotalN (%)
Normal	16(9.88)	21(12.96)	37(22.84)
Pre -hypertensive	58(35.80)	52(32.10)	110(67.90)
Hypertensive Stage -1	10(6.17)	5(3.09)	15(9.26)
Total	84(51.85)	78(48.15)	162(100.00)

The incidence of hypertension shown in Table 4 reveals that 22.84 percent of the total sampled respondents were exhibiting normal blood pressure whereas 67.90 percent of the respondents exhibiting pre-hypertensive stage of blood pressure, which constitutes 35.80 percent and 32.10

percent of male and female respondents respectively. A total of 9.26 percent of respondents have gone through stage-1 hypertension, among them 6.17 percent were male and 3.09 percent were female respondents.

Figure 3: Distribution of DBP in Male and Female member of Adult Juang

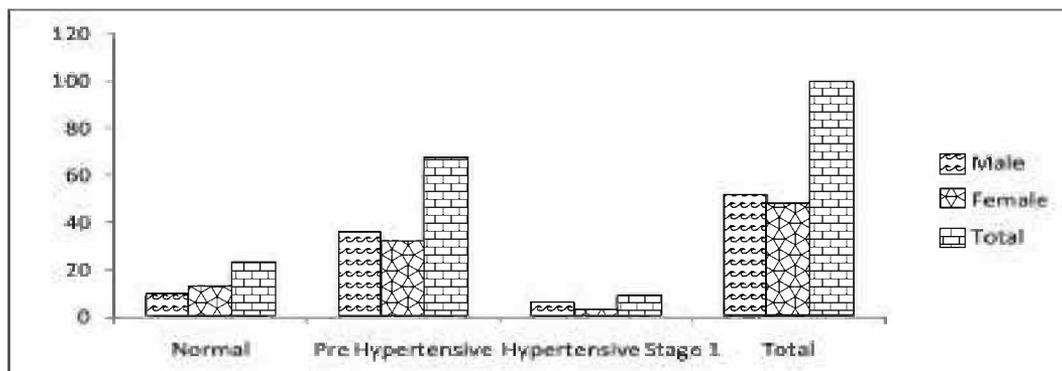


Table 5: Age group & sex wise distribution of mean Heart rate among the adult of Juang

Age Group	Sex	N	Mean	SD
<20	Male	12	73.83	7.84
	Female	17	71.18	5.96
	Total	29	72.28	6.80
21-30	Male	41	76.10	10.52
	Female	32	74.94	5.10
	Total	73	75.59	8.55
31-40	Male	23	73.30	11.79
	Female	20	73.20	6.53
	Total	43	73.26	9.60
41-50	Male	5	85.20	2.68
	Female	6	79.00	7.01
	Total	11	81.82	6.16
51-60	Male	3	72.00	12.00
	Female	3	74.00	3.46
	Total	6	73.00	7.97
Total	Male	84	75.40	10.50
	Female	78	73.95	6.01
	Grand Total	162	74.70	8.64

Results from Table 5 reveals that the mean heart rate among the Juang is 74.70. When segregated gender wise it reported the mean heart rate among male and female respondents as 75.40 and 73.95 respectively.

Figure 4: Distribution of mean Heart rate of the Male and Female member of Juang

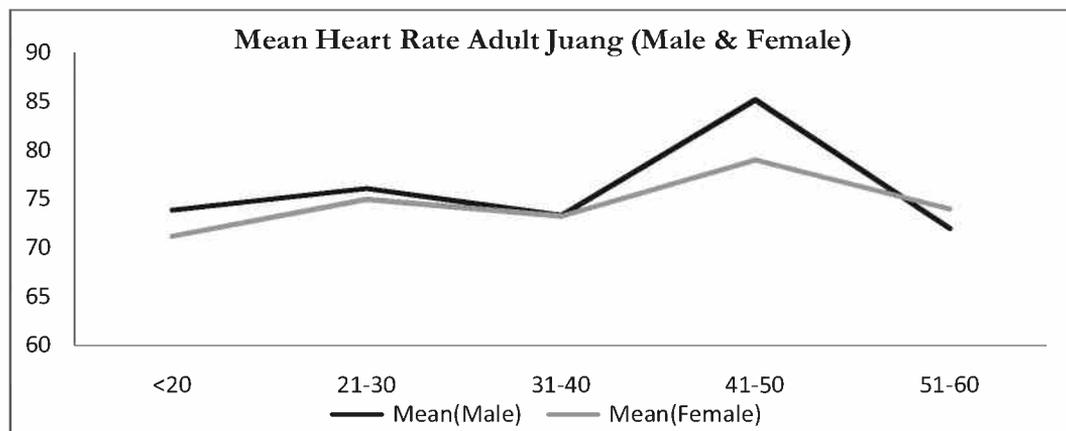
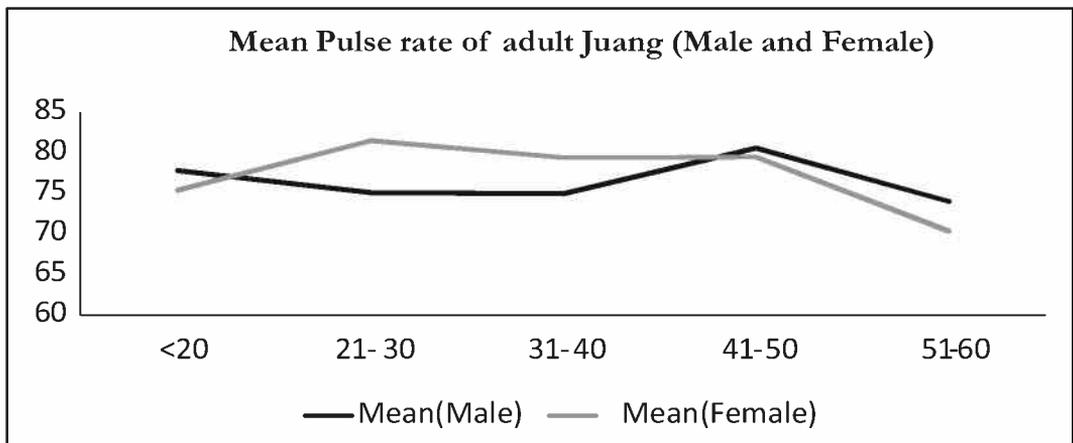


Figure 4 transpires that the mean heart rate among the male respondents is higher than the female respondents of Juangs and the increasing trend in heart rate is highly seen in the age group of 41-50.

Table 6: Age group & sex wise distribution of mean Pulse rate among the adult of Juang

Age Group	Sex	N	Mean	SD
<20	Male	12	77.83	9.48
	Female	17	75.41	7.65
	Total	29	76.41	8.38
21-30	Male	41	75.10	11.64
	Female	32	81.50	8.87
	Total	73	77.90	10.93
31-40	Male	23	74.96	10.78
	Female	20	79.40	7.80
	Total	43	77.02	9.66
41-50	Male	5	80.60	7.27
	Female	6	79.50	8.85
	Total	11	80.00	7.78
51-60	Male	3	74.00	6.93
	Female	3	70.33	2.89
	Total	6	72.17	5.15
Total	Male	84	75.74	10.69
	Female	78	79.05	8.52
	Grand Total	162	77.33	9.82

Figure 5: Distribution of mean Pulse rate of the Male and Female members of Juang



Results from table 6 show that the mean pulse rate among the Juang is 77.33 and the mean pulse rate among the Juang male and female respondents is 75.74 and 79.05 respectively.

Figure-5 transpires that the rate of mean

pulse rate among the female respondents is higher than the male respondents of Juangs. Increasing trend in pulse rate is highly seen in the age group of <20, and with increase in the age group the pulse rate has been seen decreasing in case of both male and female.

Table 7: Age group & sex wise distribution of Mean arterial pressure among adult Juang

Age Group	Sex	N	Mean	Std. Deviation
<20	Male	12	92.17	2.01
	Female	17	91.31	2.58
	Total	29	91.67	2.36
21 -30	Male	41	91.97	5.60
	Female	32	91.96	5.64
	Total	73	91.96	5.58
31 -40	Male	23	92.58	4.77
	Female	20	91.23	4.99
	Total	43	91.95	4.86
41 -50	Male	5	99.60	10.62
	Female	6	94.61	10.00
	Total	11	96.88	10.09
51 -60	Male	3	104.22	1.02
	Female	3	97.11	11.34
	To tal	6	100.67	8.19
Total	Male	84	93.06	5.92
	Female	78	92.03	5.66
	Grand Total	162	92.56	5.80

Findings from table 7 show the mean arterial pressure among the Juang is 92.56 and among them the mean arterial blood pressure of male and female respondents are 93.06 and 92.03 respectively. It is clear

from the figure10 that the mean arterial pressure (MAP) continues to be increasing with increase in age group, and the MAP is high among the male compared to the female Juang respondents.

Figure : 6 Distribution of Mean arterial pressure in Adult Male and Female of Juang

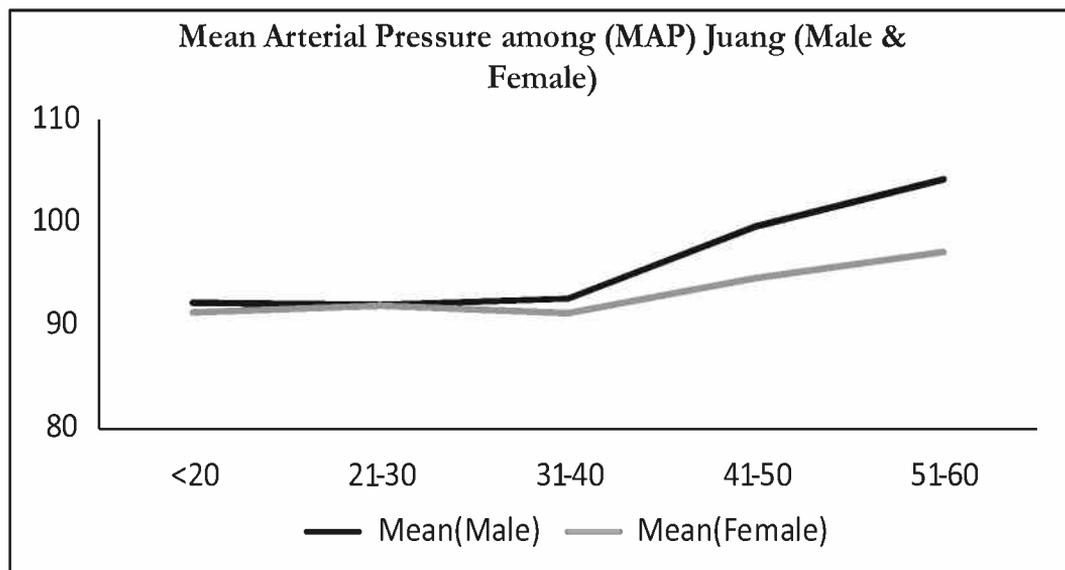


Table : 8 Correlation matrix among SBP, DBP, Heart Rate, Pluse Rate and Age

Blood pressure variables	DBP	Heart rate	Pulse rate	MAP	Age
SBP	.456 **	.208 **	-0.008	.815 **	.205 **
DBP		0.121	0.072	.888 **	.237 **
Heart rate			.542 **	.187 *	0.091
Pulse rate				0.043	-0.03
MAP					.261 **
**. Correlation is significant at the 0.01 level (2 -tailed).					
*. Correlation is significant at the 0.05 level (2 -tailed).					

Result from table 8 reveals that the SBP has strong positive correlation with DBP, heart rate, MAP and age; similarly, the DBP has strong correlation with SBP, MAP and age. Heart rate has strong positive correlation with SBP, pulse rate

and MAP, whereas the pulse rate is strongly correlating with heart rate only. MAP has strong positive correlation with SBP, DBP, heart rate, and age. Age has strong positive correlation with SBP, DBP and MAP.

Discussion

The tribal populations of India are experiencing phenomenal change on social, cultural, and economic fronts, for the past few decades and because of various developmental activities significant change in life style and dietary habits has been seen among the tribal communities (Kshatriya et al., 2016).

In recent times, the study on blood pressure has received the attention by a group of biological anthropologists for favor of political economic analysis of human biological variations and health in addition to already existing human ecological approach to the study of health (Mohapatra et.al.2015). Study on blood pressure has been taken as a subject of extensive research, because it is a common risk factor for cardio vascular and renal disease. The present study presents a crucial insight regarding blood pressure distribution among the Juang tribe of Keonjhar district, Odisha. Many studies in similar lines have been conducted covering different tribal communities in urban and rural areas of different states as presented in Table 9. However, while the other studies have referred to the WHO criteria (i.e., 160 mmHg and/or 95 mmHg) for assessment, the present study has used JNC –VII criteria for classifying hypertension and hence this study may not be compared with other studies.

The mean SBP among the Juang is 118.80 mmHg. The male respondents of the Juang are exhibiting higher systolic blood pressure than the female respondents of

Juang tribe and it is observed from the present study that the systolic blood pressure is increasing with increase in age group. The mean DBP among the Juang is 79.44 mmHg and the male respondents are exhibiting higher diastolic blood pressure compared to the female respondents of Juang tribe. The diastolic blood pressure is increasing with increase in age group. The mean Heart rate among the Juang respondents is 81.82 and the mean heart rate among male is 75.40 and female is 73.95. The mean of Pulse rate of Juang is 77.33, which is 75.74 for males and 79.05 for females. The mean heart rate among the male respondents is higher than the female respondents of Juangs and the increase in heart rate is highly seen in the age group of 41-50; and increase in pulse rate is highly seen in the age group of <20, and with increase in the age group the pulse rate of both male and female decreases.

The mean arterial pressure among the Juang is 92.56 and which is 93.06 and 92.03 for males and females respectively. The study indicates that the mean arterial pressure (MAP) continues to increase with increase in age, and the MAP is high among the male than the female respondents of the Juang. The study signifies that the incidence of hypertension is high among the male respondents as compared to the female respondents of Juang community; with a total of 9.26 percent prevalence of hypertension in which 6.17 and 3.09 percent respondents are male and female respectively.

Table 9 Distribution of prevalence of hypertension among different ethnic groups in Odisha

Population	Place of study	Prevalence (%)		Reference
		Men	Women	
Juang	Keonjhar, Odisha	6.17	3.09	Present study 2019
Bhumij	Mayurbhanj, Odisha	10.92	10.08	Satapathy et.al. (2019)
Bathudi	Mayurbhanj, Odisha	8.15	4.44	Satapathy et.al. (2019)
Savar	Mayurbhanj, Odisha	3.66	6.10	Satapathy et.al. (2019)
Santal	Keonjhar, Odisha	5.20	1.30	Satapathy et.al. (2019)
Bathudi	Keonjhar, Odisha	7.69	2.56	Satapathy et.al. (2019)
Munda	Jajpur, Odisha	23.33	15.00	Satapathy et.al. (2019)
Santal	Mayurbhanj, Odisha	13.4	5.3	Barik etal. (2018)
Desia Kondh	Kandhamal, Odisha	2.72	6.80	Mohapatra & Satapathy (2018)
Amanatya	Nabarangapur, Odisha	1.66	6.66	Satapathy et.al (2017)
Bhatra	Nabarangapur, Odisha	5.0	5.0	Satapathy et.al. (2017)
Saora	Nabarangapur, Odisha	1.66	13.33	Satapathy et.al. (2017)
Santal	Odisha	10.7	8.4	Kshyatriya & Acharya (2016)
Bhumij	Odisha	12.9	16.4	Kshyatriya & Acharya (2016)
Bathudi	Odisha	5.0	19.0	Kshyatriya & Acharya (2016)
Bhumij	Mayurbhanj, Odisha	10.9	10.1	Mohapatra etal. (2015)
Bathudi	Mayurbhanj, Odisha	8.2	4.4	Mohapatra etal. (2015)
Savar	Mayurbhanj, Odisha	3.6	6.1	Mohapatra etal (2015)
Santal	Keonjhar, Odisha	5.2	1.3	Mohapatra etal (2015)
Bathudi	Keonjhar, Odisha	7.7	2.6	Mohapatra etal (2015)
Munda	Jajpur, Odisha	23.3	15.0	Mohapatra etal (2015)
Bathudi	Mayurbhanj, Odisha	8.2	4.4	Mohapatra etal (2015)
Savar	Mayurbhanj, Odisha	6.10	3.66	Paital (2013)
Bhumij	Mayurbhanj, Odisha	10.08	10.92	Paital (2013)

Conclusion

The human tendency for hypertension is a product of our evolutionary history. The indigenous community of India is experiencing unparalleled change in social, cultural, economic, life style and dietary habits for the past few decades. The indigenous communities are in transitional phase in terms of blood pressure but traditionally it was reported, hypertension was not so common among the tribes of India. However, recent studies show that there are increasing trends of hypertension among the tribes particularly those living in industrialized areas, and under the impact of modernization and rapid changes in their life style. Unlike other tribes in India, in the present study on the Juang, one of the PVTGs of Odisha, do not indicate hypertension cases in significantly large numbers yet there is high prevalence of pre-hypertension cases among them,

from which it may be interpreted that the present population exhibits a transitional stage in terms of hypertension. The cases of hypertension observed among the Juang tribe may be attributed to factors such as migration, high salt intake, traditional alcoholic drinks, malnutrition and exposure to modern lifestyle. Though it is too early to make any concluding remarks in the present context the present study advocates further investigation.

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Strengthening agro-ecological practices in millets production system in Koraput District, Odisha

Bijaya Kumar Nayak¹

ABSTRACT

Millets are considered as climate resilient and nutrition rich coarse cereals which enhance income, ensure food and nutrition security. The Post-Green Revolution has adversely impacted on agro-ecosystem in the tribal areas at Koraput District. The paper identifies various agro-ecological practices that can be adopted by the tribal farmers in changing agro-climatic condition and improve their socio-economic condition. It also critically analyses various agro-ecological practices and its impact on millet-based production system, crop diversification, change in cropping pattern, natural resource management, co-creation of knowledge system, food system, responsible governance, circular and solidarity economy that prioritizes local markets and supports local economic development by creating virtuous cycles. The paper is based on primary and secondary data collected from millets growers, agriculture officers, market players, consumers and staff of line departments of Semiliguda and Borigumma Blocks of Koraput District. The paper reveals various useful information from various action research projects implemented by civil society organizations and agriculture department towards promotion of millets, especially in tribal dominated areas. This paper reflects that millets play an important role among tribal farmers in enhancing income, food and nutritional security in the tribal areas.

Key words: Millets, crop diversification, civil society organizations, climate resilient, non-government organizations

Rainfed agriculture plays major role in the socio-economic development in the tribal areas. All over the world, about 82% of total agricultural land is rainfed. Moreover, about 70% of the world's staple food continues and will continue to be harvested from areas under rainfed agriculture. The importance of rainfed agriculture is obvious from the fact that 55 per cent of rice, 91 per cent coarse grains,

90 per cent pulses, 85 per cent oilseeds and 65 per cent cotton are grown in rainfed areas (Sharma, 2011). In India, coarse cereals are grown over an area of 27.67 million ha (22% of total food grains), with a production of 39.95 million tons during 2007-08 to 2011-12 and contributed about 17% to national food basket. Coarse grains like millets can be grown wherever annual rainfall is below 350 mm that may not suit

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cultivation of other cereal crops because of moisture stress as well as high variability in climatic conditions.

Protection of Plant Varieties and Farmers' Rights Authority (PPVFRA) identified Koraput district as an agro-biodiversity hotspot. Tribal farmers in Koraput district are cultivating various millets such as *Mandia* (Finger millet- *Eleusine coracana*), Suan (Little millet -*Panicum sumatrense*) and *Kangu* (Foxtail millet -*Setaria italica*), *Ganthia* (Pearl millet - *Pennisetum glaucum*) either as sole crop or as mixed crop along with various local varieties of pulses like black gram, green gram, red gram, cow pea (*Judanga*), *Bhodei*, *Dangararani* etc. These crops are hardy and quite resilient to varied agro-climatic adversities. These crops play important role in marginal agriculture more commonly in hilly and semi-arid regions as important source of food grain as well as highly valued fodder.

Over the years, the area of cultivation of millets is decreasing due to introduction of other high yielding cash crops that are preferred by the growers because of high production and profit. On the face of such cash crops, millets appear as low-profile crops. Additionally, growers too faced various constraints related to production, post-harvest, processing of millets etc on one hand, and no such promotional or incentivized schemes from the government side favouring millets cultivation. The farmers do not have better accessibility to various new technological interventions and towards upgrading knowledge and skills of farmers for enhancing yield. The total area under millets during the year 2014-15 was 1.80 mha. Five-yearly analysis of time-series data indicates a steady decline in the

area from 7.56 mha during 1951-55 to 1.92 mha during 2011-15; with a drastic decline in the area of millets other than finger millet from 5.29 to 0.73 mha (ICAR, 2017). Millet production has been inefficient through the years due to the lack of suitable higher-yielding varieties, poor quality seed, and unimproved cultivation practices adopted by tribal farmers. In addition, there is a lack of attractive recipes for adding value, a lack of awareness of the nutritional value of millets, poorly organized integration with markets, and generally unfavorable environmental policy. In fact, zero budget natural farming (ZBNF) is being another important intervention for safeguarding the agro-ecological practices among the farming community. The low-cost intervention models are highly appreciated by the farmers (Munster, 2017).

In the context as above, this paper has attempted to examine agro-ecological practices adopted by the tribal millet growers and to identify issues and challenges in enhancing production, consumption, processing and value addition through sustainable agriculture practices and crop diversification. The observations on the paper has been made on the basis of empirical studies in villages under Borigumma and Similiguda blocks of Koraput district.

Varietal diversity in millets

Adaptation of better context specific quality seeds plays major role in production enhancement in the context of climate change. It was found that around 11 per cent of finger millet farmers were using released/improved varieties. The remaining farmers were

cultivating local varieties. Similarly, 100 per cent farmers of little millet and foxtail millet growers were dependent on own-farm saved seeds. However, own farm seeds are having lots of mixtures and impurities which leads low germination and consequent low production. Farmers also do not adopt seed germination and seed treatment methods before sowing, especially in millets. Sometimes, sowing of high seed rate also impacts negatively on crop production. The existing finger millet varieties may be broadly classified under two heads, viz. i) released/improved varieties and ii) local varieties. Some released varieties existing among the sample households are called as *Bhairabi*, *Champabati*, *Chilika*, *Arjun*, *ML-365*, *Sri Chaitanya*, *GPU-28*, *GPU-48*, *GPU-66*, *GPU-67* etc. These varieties are sown within the project areas of various government and non-government organizations. An exploration of local varieties of finger millets being cultivated in different parts of the state includes varieties like *Dasarabodi mandia*, *Bada mandia*, *Sana mandia*, *Chilli mandia*, *Badu mandia*, *Modai Maskuli*, *Bodel mandia*, *Jana mandia*, *Dinda mandia*, *Kala Kerenga Mandia*, *Dudh Kerenga mandia*, *Deng Semili mandia*, *Raja mandia*, *Bagh Chhod mandia*, *Machbdim mandia*, *Sunamani mandia*, *Mati mandia*, *Bati*

mandia, *Richika mandia*, *Kada mandia*, *Bbalu mandia*, *Kadalipheni mandia*, *Ecbhai mandia* etc. These varieties may be further divided into three categories in terms of duration of production such as long duration, medium duration and short duration varieties.

Over the years, many of the local varieties have vanished from the farmers' field mainly due to variation in agro-climatic conditions as well as low yield. For example, farmers are hardly cultivating certain long duration varieties like *Bbalu*, *Sunamani*, *Badu*, *Machbdim*, *Chilli*, *Modai Maskuli*, *Bodel*, *Jana*, *Raja*, etc. are due to decreased and erratic rainfalls over the years. Now, there are only two to three local varieties that are being cultivated in every villages. However, conservation of indigenous varieties is facilitated through interested custodian farmers with the help of bio-diversity blocks (many varieties are grown with similar agroclimatic conditions). DHAN Foundation, a professional organization conducted a performance assessment of local varieties of finger millet in the land of Rabi Disari in a bio-diversity block during Kharif 2013-14 at Paraja Sirimunda village of Semiliguda Block. The details of the performance assessment have been given in Table 1.

Table 1: Performance of various local varieties of finger millet²

SL. No	Name of the varieties	Plant Populatin	Plant Height	No of tillers/plant	Length of finger	No. of fingers	Grain yield
1	Jana	47.29	63.23	1.37	5.89	5.1	487.86
2	Dinda	40.00	56.20	1.53	5.93	5.5	482.50

² During the particular agricultural season when the assessment was done there was relatively lower yield of the varieties due to long dry spell. However, yield parameter can be enhanced with adaptation of improved package of practices like System of Millet Intensification, intercropping operations, etc.

SL. No	Name of the varieties	Plant Populatio	Plant Height	No of tillers/plant	Length of finger	No. of fingers	Grain yield
3	Bhalu	51.21	59.54	1.71	5.57	5.1	482.38
4	Bodel	42.93	57.00	1.43	5.49	5.2	479.76
5	Machhadim	50.58	67.07	1.43	5.47	5.1	446.25
6	Kada	46.58	60.83	1.40	5.60	5.0	443.06
7	Sana	47.64	56.29	1.57	5.54	4.4	441.79
8	Badu	54.07	54.80	1.60	5.54	5.2	428.81
9	Bada	50.80	51.32	1.60	5.60	5.3	425.17
10	Kempu	47.50	49.00	1.27	5.20	4.7	412.50
11	MadaiMuskuli	40.21	56.54	1.57	5.30	5.1	404.64
12	Mati	44.00	54.49	1.49	5.49	4.7	396.90
13	Mami	43.14	51.60	1.51	5.17	4.7	396.90
14	Bodi	46.86	55.66	1.49	5.00	4.6	392.98
15	Gangabali	52.42	67.83	1.57	6.77	5.4	392.92
16	Karenga	53.79	62.46	1.54	5.60	5.4	386.43
17	Bag Chhod	55.14	56.69	1.46	5.80	4.9	382.44
18	Kadlipheni	59.50	60.40	1.40	6.20	5.8	373.33
19	Jam Mandia	47.83	56.03	1.43	5.42	5.2	371.25
20	Bati	46.43	54.23	1.37	5.07	5.2	365.24
21	Sunamani	40.50	49.36	1.64	5.24	4.8	363.00
22	Chilli	47.14	59.29	1.43	6.44	5.4	356.37
23	Deng Semili	45.57	61.14	1.57	5.37	5.3	349.88
24	Dasarabodi	51.79	56.71	1.86	5.31	5.2	348.81
25	Richika	42.71	54.97	1.40	5.29	5.3	346.43
26	Dudhkerenga	47.57	53.00	1.40	5.34	5.2	326.07
27	Kala Kerenga	37.80	64.28	1.72	5.88	5.3	301.33
28	Raja	35.00	53.20	1.40	6.20	6.0	293.33
29	Echhai	49.07	48.97	1.46	5.51	4.9	292.26

Source: Bio-diversity Block, 2013-14

Yield parameter doesn't alone play important factor for the conservation of varieties; however, many varieties are conserved based on the test, size of grain, fermentation quality, shelf life etc. *Dasarabodi mandia*, a short duration variety is preferred by the farmers for its early maturity which is harvested by *Dasshera* festival when farmers do have scarcity of food at family in the tribal areas. This variety plays an important role for food security and economic benefits during the lean or scarcity periods. The farmers prepare various recipes out of the millet

for festival food and also sell the domestic surplus in the market to meet their household expenditures.

In Koraput, there are no released varieties of little millet introduced by either government or any other non-government organizations in a large scale so far. However, farmers have been cultivating two preferred varieties of little millets such as *Mami suan* and *Bada suan* even though there were lots of local varieties like *Ganjei Suan*, *Bapa Suan*, *Gailanja Suan*, *Dhobli Suan*, *Sakra Suan*, etc.

Similarly, there are predominately two varieties of Kangu (foxtail millet) such as Dhala Kangu and Ranga Kangu cultivated among tribal communities of Koraput district. There are only one local variety of Ganthia that is being cultivated in the tribal areas. It is cultivated as a mixed crop with finger millet and little millet.

Improving millet-based cultivation system

After Green Revolution, there has been a systematic decline in the production of millets. As compared to paddy and wheat, there has been very inadequate technological interventions in millets cultivation starting from varietal diversity to post-harvesting. Farmers took larger interest in diverse commercial crops including seasonal field crops and tree crops, for better cash income. The industrial crops like eucalyptus species intruded the tribal lands that promised better income to them. The demand for eucalyptus in pulp and paper industries made the tribal farmers divert substantial chunk of land towards the commercial tree crops. Consequently, the millet cropping was impacted typically. The tribal farmers confined millet cultivation to small patches for self-consumption only. Additionally, the subsidized rice under Public Distribution System (PDS) has impacted the food habit of the tribal communities which is also incidental to reduction in millets farming. To maintain the traditional food habit some farmers have been doing millet cultivation although confined to limited patches. The overall scenario impacts the cultivation and production of millets. The seed market is also not very viable for quality millet seeds. Hence, the farmers don't

have access to quality seeds. Around 90% farmers utilize the indigenous seeds conserved at household level which they cultivate in multi-cropping system. Thus, the millets are not harvested as single crop. Because the millets are cultivated under mixed cropping system, the farmers do not give special efforts for due agronomic practices especially, in timely weeding, inter-cultural operations as well as application of fertilizers. Thus, there seems to be misplaced priorities in promoting millet cultivation, research and technological interventions, and increasing area under cultivation.

In the study site, out of the total 100 sample farmer households, 95 farmers cultivated millets. Further, out of the 95 farmers, 78 farmers cultivated finger millet as single crop and others cultivated the same with crop combinations. Finger millet was cultivated with little millet as mixed crop by 16 growers. In mixed cropping, other crops cultivated with finger millet includes blackgram, horsegram, redgram, soyabean and foxtail millet. Besides, farmers also practice rotational cropping in millet growing fields. During interval between two millet cropping cycles the tribal farmers cultivate cash crops like ginger, and other vegetables. The crop residues left in the fields help nutrition provisioning to the field for which the farmers hardly require to apply fertilizers in the kharif seasons. That is how the farmers get comparatively better yield after successful crop rotation.

The study has also identified several potential constraints related to production. The major production constraints are weeding. Weeding is not done in about 67% of finger millets and

61% of little millet, for weeding consumes more labour and time, as well as it coincides with intercultural operations of other important crops.

Many NGOs involved in Odisha Millet Mission are facilitating system of millet intensification (SMI) methods for cultivation of millets, timely weeding, and other intercultural operations at a scale to enhance production of millets. Cases reveal that by adaptation of various improved package of practices, the yield of finger millet has increased up to 10qtl/acre among the tribal farmers. Even, in normal broadcasting method if quality seeds are used, intercultural operations are maintained and fertilizers in right doses in right time applied, the production enhancement goes up by about 30%.

Reducing drudgery in post-harvest operations

Manual post-harvest operations of millets are difficult mainly due to its small grain size as well as tedious process involved in threshing on the ground. After harvesting, tribal farmers have to dry it under sun and start threshing with the help of *Thenga* or *Mutla* (usually typically shaped stumps of different sizes) to separate grains from the straw. Again, they use *Musala* to de-husk the millets after which they pound it to make flour. In this traditional process of de-husking there is possibility of sand and pebbles getting mixed with the flour. However, this whole process is tedious and more time consuming. Women play major role in threshing and grading of millets which adds to their drudgery. However, NGOs like DHAN Foundation has demonstrated setting up processing units comprising grader

(separates grains based on the size), destoner (separates undesired particles based on gravity/weight) and dehuller (removes husk) at village level on experiment basis. This has reduced drudgery of tribal farmers and at the same time saves productive time of women. When the millets are properly processes the choice for the same for household level consumption increase. The issue is that, highly trained operators are required to run the processing units as they deal with small size grain. Interventions around setting up and finetuning processing units in the village or Gram Panchayat can enhance the local consumption as well as health and nutrition status of the tribal communities.

Enhancing consumption of millets

Millets are highly nutritious, and contain high amounts of fiber, vitamins and minerals as compared to other cereal crops. By any nutritional parameter, millets are rich in terms of their mineral content in comparison to rice and wheat. Finger millet has about thirty times more calcium than rice while any other millet has at least twice the amount of calcium compared to rice. The study “*Nutritional status of the Bonda high Landers of Odisha*” explains about the different dietary habits of tribal people in erstwhile Koraput district. According to the study, tribal communities frequently consume millets recipes in the form of rice, gruel, snacks, etc. irrespective of seasonality; they consume finger millet *Landa*, *Mandru*, *Anda*, *Tampa*, etc., and *Upma*, *Kbir* and *rice* from little millet. They make local beverages from millets called *Pendum*. The per capita consumption of cereals and millets-based food and derivatives during

harvesting is more (420 gram) than lean season (326 grams) as there is more laborious work (Modak & Das, 2009) during the post-harvest period. Tribal communities do believe that consumption of millets heals headache, body pain, and various gastro-intestinal problems and strengthen their immunity system. They can work for long time under scorching sun after consuming one glass of millet porridge. During the festivals, they usually prepare various traditional recipes with the use of Sal leaves, turmeric and some other plants from the forest. These recipes are served to *Nishanimunda* or any other village deities during *Push* or *Chita Paraba*. In festival delicacies and offering to gods and goddesses, millets are prioritized over any other grains. Millet recipes are prepared with addition of local pulses. Frequency of millet consumption varies as per the requirements of tribal communities and also depending on the economic conditions of the families.

Women in millet promotion

Women play an important role in the promotion of millets in tribal areas. They take decisions on selection of crops to be cultivated. They decide upon land, method of cultivation, package of practices that need to be adopted for the crop cultivation. While men chose crops that provide comparatively better financial benefits, women stand firmly by the crops for household food security. Hence, they focus on millets for ensuring food security for the family during lean periods rather than going for cultivation of cash crops and thus go against the decision of their husbands. Even though they face drudgery in terms of

weeding/transplanting seedlings, harvesting, drying, winnowing, threshing, cleaning, grading of the grains etc., they never feel averse to millet cultivation.

Women engage themselves in intercultural operations and prepare vermi-compost or Jeevamrutham for application in field to enhance nutrients of the soil. They have better understanding of good quality seeds and fingers containing the seeds. They employ their traditional methods in seed preservation for which they use various insect repellent plant parts. They store the seeds in *Duddi* (a traditional bamboo made and mud plastered storage bin). They maintain all types of post-harvest storage methods manually even though it is tedious. However, woman show keen interest in undertaking various interventions facilitated by government and other facilitating agencies in terms of adopting various agronomic practices for cultivation of millets in the tribal areas. By organizing self-help groups and by attending the capacity building training programs on millet cultivation, the women empower themselves and update their knowledge and skill related to millet cultivation. Moreover, they access instant credit from the self-help group for any agriculture operations. They are the key players behind the success or failure of any intervention in the agriculture operations. Once they understand about the new technologies/practices, they involve their families to adopt and make successful interventions.

Millets marketing

Tribal farmers cultivate millets for own consumption mainly, market is of second importance. While they consume larger

part of the harvest, they take care to save and preserve a good part of the harvest as seeds for cultivation in upcoming years. There are instances where farmers have stored little millet seeds up to five years. According to them, the millets preserved for longer duration are more nutritious and tastes better. However, there is apparent lack of proper scientific research evidences regarding the shelf life of different millets and variation in its nutrition parameters. Farmers sell millets in local market whenever they need money for their household expenditure, especially during festivals. They sell the millet grains without further processing to the middlemen at a low price compared to the minimum support price (MSP) fixed for millets. In Kharif Marketing Season (KMS) 2018-19, Odisha Millet Mission under Government of Odisha initiated ragi procurement through the Tribal Development Co-operative Corporation of Odisha Ltd. (TDCCOL) at Rs.2897 per quintal. The MSP of ragi procurement was increased further to Rs.3150 and Rs. 3295 per quintals for KMS during 2019-20 and KMS 2020-21 respectively. The increase in MSP of ragi has motivated and inspired the tribal farmers to take up millet cultivation at a scale. The tribal farmers have extended the cultivation to the fallowed lands that usually remained uncultivated for years. Thus, the land use under millets is increasing. In remote villages ragi is still considered a better commodity in barter system. The villagers exchange ragi with vegetables, grocery items and ready-to-food items under barter systems with local vendors. However, among the millets, it is only ragi that is transacted in the barter system.

Manually processed foxtail millet is being sold in the weekly market in local measures for Rs.10, Rs.20, and so on depending on size of the measure. The little millets, wherever they are sold, are sold with husks immediately after harvesting. In comparison to other millets ragi has a better acceptance in urban areas and hence ragi flour has made a good market access and sold for a better price in urban markets. Middle man from nearby Andhra Pradesh and Chhatisgarh play major role in marketing of millets in Koraput District.

Way forward for sustainable agro-ecological practices in millets

Millets are considered as nutria-cereals and are mainly grown in the undulated landscapes in hilly areas. A holistic approach is required for enhancing agro-ecological practices around millet production system. For enhancing production, intensive training and capacity building programme need to be organized for the tribal farmers especially on improved package of practices (PoPs) like adaptation of SMI, organic method of cultivation etc. Moreover, there is a need of support for supply of quality seeds, subsidy support for high cost inputs in farming implements, establishment of millets processing units, small scale entrepreneurship on developing value-added food products etc. Context specific interventions on seeds, farming equipment, technologies, and processing units need to be strengthened with the collaboration of producers, researchers, traders, market players, food industries, as well as policy-makers. For increasing consumption, people in urban and semi-

urban including local communities need to be educated about the health and nutritional benefits of the millets.

Conclusion

Millets are considered as the *future crops* in the context of climate change, food, income, and nutrition security in the tribal areas. Hence, it is the time to diversify local varieties for its conservation, cultivation and increase local level consumption. With

adaptation of new and innovative agro-ecological practices for the climate resilient crops like millets, not only the food and nutrition security can be ensured but also the household income of tribal farmers can be enhanced by good margin. Moreover, collaboration among several stakeholders will be helpful to create healthy and productive environment for implementing different innovations in millet conservation, cultivation and consumption.

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Contextuality of MGNREGA in the aspirational districts of Odisha – An analysis

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ABSTRACT

The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) is the largest ever anti-poverty employment generating programme for the rural India. Creation of durable and productive livelihood generating assets while generating employment at a massive scale towards countering migration are the most prominent features of the programme. The current study has been carried out to ascertain the outcomes of employment generation and asset creations through MGNREGA in the Aspirational Districts of Odisha in comparison with Aspirational Districts in other States of the country. The Aspirational District Programme (ADP) is a special strategy of the central government to overcome some specific development challenges in five priority sectors like health and nutrition, education, agriculture and water resources, financial inclusion and skill development, and basic infrastructures. There is different weightage assigned to each of these five sectors and this paper analyses the contribution of MGNREGS in two sectors of ADP such as agriculture and water resources and basic infrastructures. The launching of ADP is a bold and promising programme for the least developed regions of the nation, in 112 Indian districts (Porter and Stern, n.d.).

To address the multidimensional challenges in aspirational districts one of the key strategies is the convergence of different programmes in which MGNREGS is considered as one of the most important schemes. For the purpose of this paper, data has been sourced from the MGNREGA online platform and compared among the states, where ADP is operating, for the financial year 2020-21 up to November 2020. The employment generation and work participation by Schedule Castes (SCs) and Scheduled Tribes (STs) in comparison to others have been given importance in the analysis.

Key words: employment, assets, livelihood, aspirational districts

Introduction

The Mahatma Gandhi National Rural

Employment Guarantee Scheme (MGNREGS) is a flagship programme of

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the Government of India introduced in 2006 for assured employment in rural areas. The major target group for the programme are the unskilled rural population willing and able to go for unskilled manual works. The programme solely banks on the rural labour force of the nation to create durable assets and infrastructures relating to ecological and environmental restoration, land-based primary productions, individual infrastructures, irrigation infrastructures, water conservation measures, rural connectivity and the like. 'MGNREGA, one of the most creatively designed programmes in India, has a bottom-up, demand-driven structure with built-in social audits' (Desai, et.al., 2015: viii). Peoples' plan and priorities are at the crux of the programme and the whole employment generation process is demand driven with a basic cap of 100 person days in a year to each eligible household. Keeping in mind the long-term perspectives of the programme, scale of operation and size of public investments, this study is conducted to analyse and visualise the pathway of employment generation and creation of direct livelihood generation assets over a reference period.

The MGNREGS assumed to be a dependable coping mechanism during difficult times like COVID-19 lock down that induced large-scale job cutting and unemployment. During the lock down interval many state governments had instructed district administrations to engage people in MGNREGS (Sahu, 2020). In this context, MGNREGA is a platform to leverage resources for different livelihood options for

individuals and families. Options like farm ponds, dug wells, vermin compost, NADEP pits, goat-shed, cattle shed, poultry-shed, 90 to 95 days' work in Pradhan Mantri Awas Yojana-Gramin (PMAY-G), tree *patta* scheme plantation, land development/ diversification, sheds for livestock, with PMAY-G for the landless contribute to sustainable livelihood measures, assets creation and cash income through participation in MGNREGS at individual level. Similarly, at the community level the possibilities are water conservation measures, development of *gramin baats* for market transactions by producers, common facility centre for Women SHGs, solid waste management, village roads, parks, drains, Aganwadi buildings, Community Social Auditors/ Barefoot Technicians and many more. (Sinha A., n.d.).

Apart from the demand driven MGNREGS, the Aspirational District Programme (ADP) was launched in January 2018 to address the multidimensional development challenges in different sectors on priority basis. The current scale of the programme is 112 districts in the country with the aim to accelerate the socio-economic development outcomes (Niti Ayog, 2020). For immediate transformations required in terms of different development parameters, the ADP is operational in a sectoral approach with specified weight for each sector. As many as 49 indicators have been envisaged for real time tracking. The share of sectors under ADP is 30% for health and nutrition, 30% for education, 20% for agriculture and water resources, 10% for financial inclusion and skill development, and 10% for basic

infrastructure. Though there are some dedicated funds, the programme design lays larger emphasis on convergence of different plans and programmes of the government for resource bridging and broad-based impacts. In this context, in order to effectively implement ADP, the huge public investments under MGNREGS and its coverage across regional boundaries of the nation has the largest potential to address issues on agriculture and water resources and basic infrastructures in convergence mode.

Competition, convergence, and collaboration are the three pillars of the theory of change of the Aspirational District Programme' (Kumar & Abraham, 2019). The final results through competition-based accountability lies on the respective district administrations. Convergence among government programmes and collaboration with philanthropic institutions makes the programme more promising in terms of its commitment to the people. To ensure the success of ADP, different ministries including Niti Ayog have adopted different aspirational districts and playing a mentoring role in the development.

Materials and Methods

The paper is based on data obtained from different sources over a reference period since 2017-18 after launching of ADP. The leading information has been extracted from MGNREGS website and other government and non-government publications available in public domain. By and large, the study covered sample data for aspirational districts in Odisha and employed analytical methods to derive results.

An analytical framework was developed to structure the content and context of the paper. Data classification and analysis tools have been employed to enumerate the required insights and interpretation in different convenient forms. Utmost care has been taken to simplify exhibitions to make the inferences handy. Statistical analysis was relied upon in some ways for analysis.

Results and Discussion

Based on data collected from different sources and their analysis in relation to different areas of impacts and benefits the program created, the following observations have been made.

A. Persons enrolled for MGNREGS and provided with Jobs

i. The National Scenario

MGNREGA is a social safety net programme and targets the unskilled, unemployed rural masses who are willing to go for manual works and provide timely employment to the job seekers. In the process of participation in MGNREGS, durable and productive assets are created. Through providing 100 days of wage employment to the eligible households the programme not only provide them a cash income but also creates assets and multifaceted impacts as may be perceived from interventions in soil moisture conservation, afforestation, creation of irrigation infrastructures, flood control, rural connectivity etc. that are of paramount importance to sustain rural livelihoods especially the natural resources dependent livelihoods (Government of India, 2012). A huge lot of development infrastructure in the rural areas of the nation have already been formed since the

MGNREGA came into operation and every passing day the potentials of the programme for future has been expanding. The base norms to count the success of MGNREGS is the volume of employment provided to number of

households and scale of assets created during the employment generation process. Presented below is a brief account of employment generation across states, with emphasis on SC and ST, in the current financial year 2020-21.

Table 1: Employment Generation in 2020-21 Across States, India (April-November 2020)

State	HH issued Job cards (in lakh)				HH provided with Job (in lakh)			
	SCs	STs	Others	Total	SCs	STs	Others	Total
Andhra Pradesh	22.4	7.5	64.0	93.8	11.3	4.1	31.0	46.4
Arunachal Pradesh	0.0	2.3	0.2	2.5	0.0	1.9	0.2	2.1
Assam	2.7	7.5	39.9	50.0	0.8	2.7	13.2	16.6
Bihar	38.3	2.8	137.1	178.2	5.1	0.5	34.4	39.9
Goa	0.0	0.1	0.2	0.3	0.0	0.0	0.0	0.0
Gujarat	2.5	15.1	22.2	39.8	0.5	4.1	5.3	9.9
Haryana	4.4	0.0	6.5	10.9	1.7	0.0	2.1	3.8
Himachal Pradesh	3.4	0.8	8.9	13.2	1.5	0.5	3.7	5.6
Jammu & Kashmir	0.8	1.4	10.0	12.1	0.2	0.4	3.8	4.5
Jharkhand	5.6	16.1	30.2	51.9	1.9	5.1	12.4	19.4
Kerala	4.5	1.3	32.0	37.8	2.2	0.7	11.4	14.3
Madhya Pradesh	11.7	23.9	39.2	74.8	6.3	15.5	23.2	45.0
Maharashtra	8.3	12.2	67.6	88.1	1.2	3.2	8.1	12.5
Manipur	0.2	2.5	3.1	5.8	0.1	2.3	2.8	5.2
Meghalaya	0.0	5.6	0.4	6.0	0.0	4.4	0.2	4.7
Mizoram	0.0	2.0	0.0	2.0	0.0	2.1	0.0	2.1
Nagaland	0.0	4.2	0.2	4.4	0.0	3.7	0.2	3.9
Odisha	12.1	19.5	40.5	72.2	4.5	10.0	15.8	30.3
Punjab	11.9	0.0	6.2	18.2	5.5	0.0	2.5	8.0
Rajasthan	22.2	20.8	67.3	110.3	14.7	14.8	38.7	68.1
Sikkim	0.0	0.3	0.5	0.8	0.0	0.2	0.4	0.6
Telangana	11.9	9.0	33.8	54.7	6.6	5.4	17.7	29.7
Tripura	1.1	2.6	2.7	6.4	1.0	2.4	2.3	5.7
Uttar Pradesh	58.5	1.8	130.1	190.4	26.3	0.8	57.8	84.9
Uttarakhand	2.1	0.4	9.0	11.5	0.9	0.2	4.6	5.7
West Bengal	32.8	9.1	88.5	130.4	20.1	5.7	45.3	71.1
26 States Total	235.3	161.2	776.2	1172.6	101.3	86.6	306.1	493.9
Category Wise Weightage (%)	20.1	13.7	66.2	NA	20.5	17.5	62.0	NA

Source 1: <https://nrega.nic.in>

The data sourced from the MGNREGA online platform and compared among the states for the financial year 2020-21 up to November 2020 indicates that States like Madhya Pradesh (MP) Odisha and Rajasthan have provided employment to 10 lakh and more people belonging to Scheduled Tribe (ST) households. Data in the above table shows that in the category of ST households having job cards makes 13.7% of total job card holders of all the states taken together. Similarly, the ST households having job cards provided with jobs across all the states makes 17.5% of the total workers provided with jobs. It indicates that a significant 17.5% of work force in the MGNREGS are STs. In case of SC, the household having job card constitute 20.1% of the total job card holders of all the states taken together. Accordingly, the SC households having job cards provided with jobs across all the states makes 20.5% of the total workers provided with jobs. It may thus be construed that the STs and SCs together make about 40% of the total work force participation in MGNREGS across the states.

In case of Scheduled Castes (SC), Uttar Pradesh (UP), West Bengal, Rajasthan and Andhra Pradesh have contributed the most in employment generation. In Odisha, 72.2 lakh households have been provided with job cards out of which the SCs count 12.1 lakh, the STs count 19.5 lakh and 40.5 lakh belong to other communities. In the current financial year 30.3 lakh people have been provided with jobs including 4.5 lakh SC, 10.0 lakh ST and 15.8 lakh others. Among all the categories across the nation, the participation of ST households in

provided jobs is the highest, standing above 50%. Though MGNREGS is a demand driven project there is barely any difference between the job demanded and job supplied. Hence, for analysing the demand supply gap it is important to compare how far employment has been generated and eligible households with job cards are provided with employment. Over all, across all states, a total of 42.1% HHs issued with job cards are provided with employment till November in the financial year 2020-21. North eastern states are the best performers followed by Rajasthan and MP. Odisha remains as an average performing state until November 2020 in providing jobs to the registered ST households and stands below average in providing jobs to the SC households.

ii. Work Completion Rate: All Aspirational Districts Since Inception

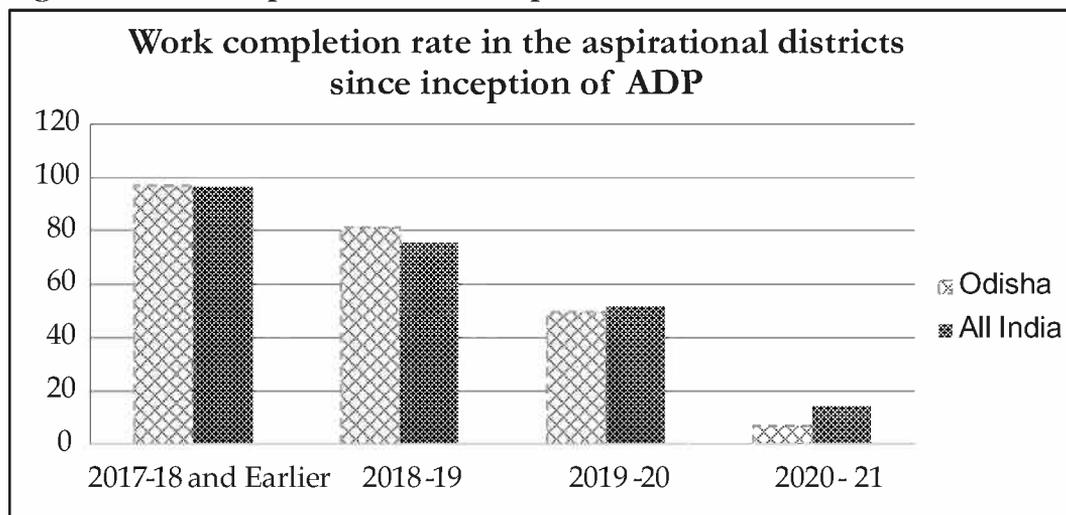
The work completion rate under MGNREGS has been compared and depicted in the following figure. The results indicate that the work completion rate from the inception of the ADP till end of November 2020 is not much encouraging. The trend at both National level and State level (Odisha) is declining consistently. For the financial year 2017-18 and its preceding years, the work completion rate was above 95% implying that almost all works that were opened and initiated were accomplished. Gradually, the work completion rate shrank by more than 10%, as compared between 2017-18 and 2018-19, both at the National level and State level. In 2019-20 the accomplishment rate was around 50% both at the national and state level

implying that one in every two works initiated were completed in the aspirational districts. From April to November 2020 the scenario is relatively discouraging. Though there may not be any direct implication of work completion rate on the households provided with job or number of person days generated, yet this clearly indicates that many works have remained incomplete for various reasons. While it is argued at many fora that the choice of work has direct bearing on work completion, if the plans of villagers are given due consideration then the work

participation rate might go better which will have its typical impact on work completion.

Considering the 7.01% work completion rate for the financial year 2020-21 up to November 2020, there is tremendous scope for improvement in Odisha. Relevant data on the website indicates that three years back the performance of Odisha in work completion rate was above the national average. However, in the current financial year Odisha has performed about half of the National level accomplishment.

Figure 1: Work Completion rate in the aspirational districts, All India and Odisha



iii. Employment Generation in the Aspirational Districts of the Country

All categories of works taken together in respect of jobs provided, indicates that above 50% of job card holders have not participated in employment opportunities. It cannot be considered that work was not provided to them because otherwise they would have been unemployment allowances provided. So, logically it cannot be stated that 50% of

the job card holders have not participated in MGNREGS in the given year.

The gap between the number of households issued with job cards and provided employment is undesirably high if the state wise performances cited above are compared. For all categories of households like SC, ST and others, less than 50% of the job card holding households are provided with

employment. Even in some cases it is less than one-third of the total. There are more than 50% households who are left out or not yet provided with employment. The reason could be that the job seekers have not duly exercised their rights of job demand. Even after 15 years since

MGNREGS came into operation, generation of job demand, disbursement of payment with dated receipts, and opening of work is a real concern. Hence, the aspirational districts demand special attention for proper convergence between MGNREGS and ADP.

Table 2: Employment Generation in the Aspirational Districts of the Country

Households Issued with Job Cards and Provided with Employment in the Aspirational Districts - All India						
Financial Year	HH Issued Job Card in lakh			% HH Provided Employment		
	SC	ST	Others	SC	ST	Others
2017-18	94.0	98.9	319.9	33.6	43.6	34.6
2018-19	96.8	101.4	338.1	32.4	42.8	33.6
2019-20	99.8	106.0	361.7	33.3	43.2	34.7
2020-21	102.2	109.0	382.7	37.8	48.4	40.5
Till Date (Annual Average)	98.2	103.8	350.6	34.3	44.5	36.0

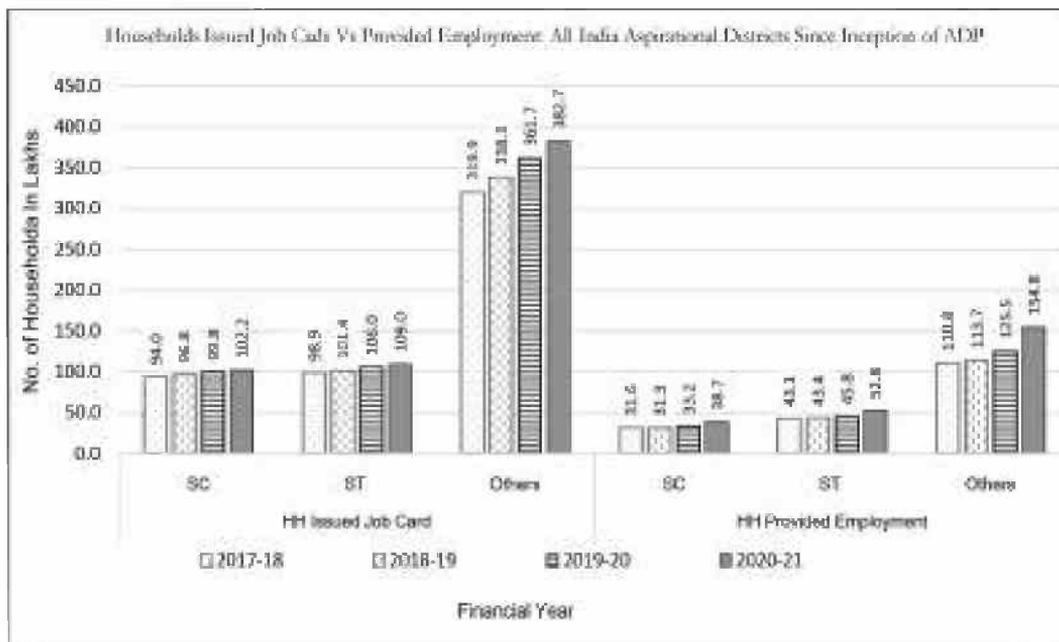
Source : <https://nrega.nic.in>

Based on the figure below, issue of job cards and generation of employment are improving consistently since the inception of the aspirational district programme. In 2017-18, 98.9 lakh ST families were issued job cards and the number increases marginally to 109.0 lakhs in 2020-21 till November and the number may increase further. In comparison, in 2017-18, 43.1 lakh households were provided with employment and the number increased to 52.8 lakh in 2020-21 till November and the number will obviously increase further till March 2021.

For all the categories, the employment generation pattern is uniform with marginal improvement over the years. On an average one from every three households has been provided with wage employment. As per a calculation, in the previous financial years, one from every three households was being provided with

wage employment. However, a better trend is seen in the current financial year 2020-21 where more than 40% employment have been provided with jobs till November 2020, for reasons that in the current year there has been focused thrust on MGNREGS because of COVID-19. In the previous years, the one third performance became the trend which would have been repeating itself every year had the COVID – 19 not been there. In development consideration there is every need to break the trend. The gradual improvement both in issue of job cards and employment generation is because of the inclusion of new eligible households including those who were ignored earlier and the ones who entered the adult age; and for splitting up of joint families into nuclear families and the consequent increase of jobs cards.

Figure 2: Household Issued Job Cards Vs provided Employment: All Aspirational Districts of the Country



Source : <https://nrega.nic.in>

iv. Employment Generation in the Aspirational Districts of Odisha

As per Niti Ayog, there are 10 Aspirational Districts in Odisha such as Bolangir, Dhenkanal, Gajapati, Kalahandi, Kandhamal, Koraput, Malkangiri, Nabarangpur, Nuapada and Rayagada. Attempt has been made to examine the performance of these districts in comparisons to the national averages on performance in MGNREGS of all aspirational districts of the country.

In the preceding years of 2021 a common trend was seen that excepting Odisha the work participation rate of job card holders in other states was just above one third for SCs and others while it was between 33.6% to 34.7% for STs. It is during that period, Odisha performed between 34.3% to 38.1% for SCs, 40.4%

to 44.2% for STs and 34.0% to 37% for others. If the participation of ST households in aspiration districts of Odisha is considered, it will be seen that except in 2018-19 the STs work participation has been higher compared to any other state in the preceding and succeeding years. However, in the same year i.e. 2018-19, Odisha performed better in the aspirational districts in comparison to any other states in the categories of work participation by SCs and others.

As depicted in the table 3 the gap between the number of households issued with job cards and provided employment is undesirably high. For all categories of households like SC, ST and others, less than 50% households having job cards have been provided with employment. The situation of the current financial year 2020-21 up to November may present a

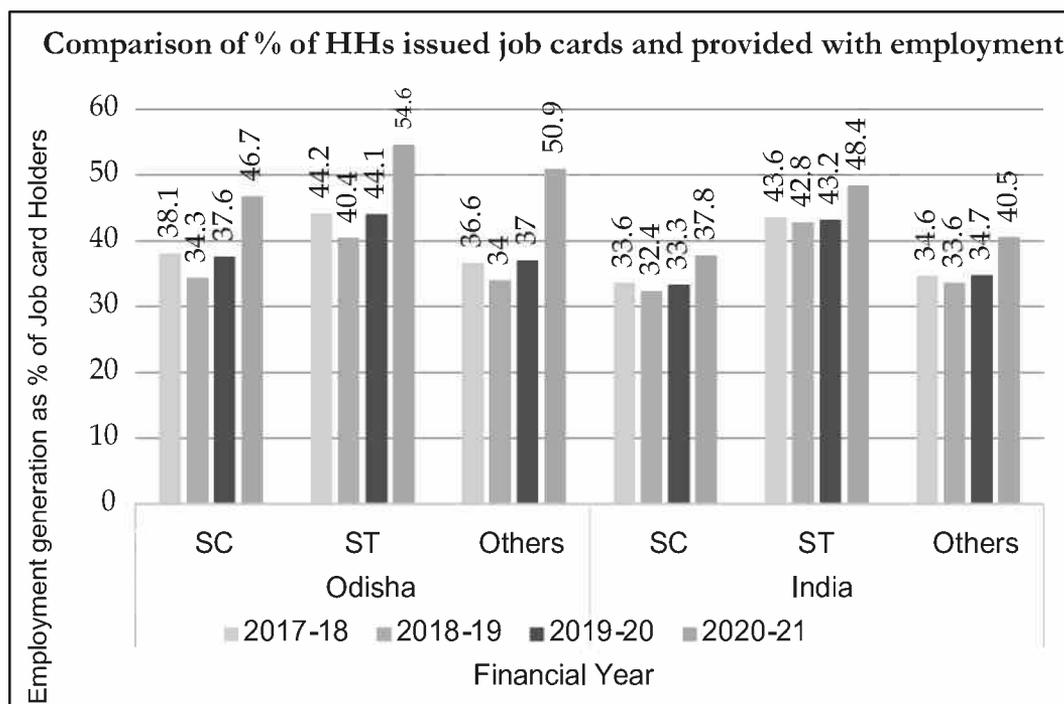
different scenario. The overall scenario of Odisha looks better in comparison to the combined progress of all the aspirational districts of the country.

Table 3: Employment Generation in the Aspirational District of Odisha

Households issued Job Cards & Provided with Employment in Aspirational Districts of Odisha						
Financial Year	HH Issued Job Card (in lakhs)			% HH Provided Employment		
	SC	ST	Others	SC	ST	Others
2017-18	3.4	8.3	7.8	38.1	44.2	36.6
2018-19	3.4	8.5	8.0	34.3	40.4	34.0
2019-20	3.5	9.0	8.6	37.6	44.1	37.0
2020-21	3.6	9.4	9.6	46.7	54.6	50.9
Till Date (Annual Average)	3.5	8.8	8.5	39.3	46.0	40.1

With reference to the figures 3 & 4, issue of job cards and generation of employment are improving consistently in the aspirational districts since the inception of the ADP. In 2017-18, 8.3 lakh ST families were issued job cards and the number increased to 9.4 lakhs in 2020-21 till November i.e. by more than 13% and the number and percentage may increase further.

Figure-3: Employment Generation in the Aspirational Districts of Odisha



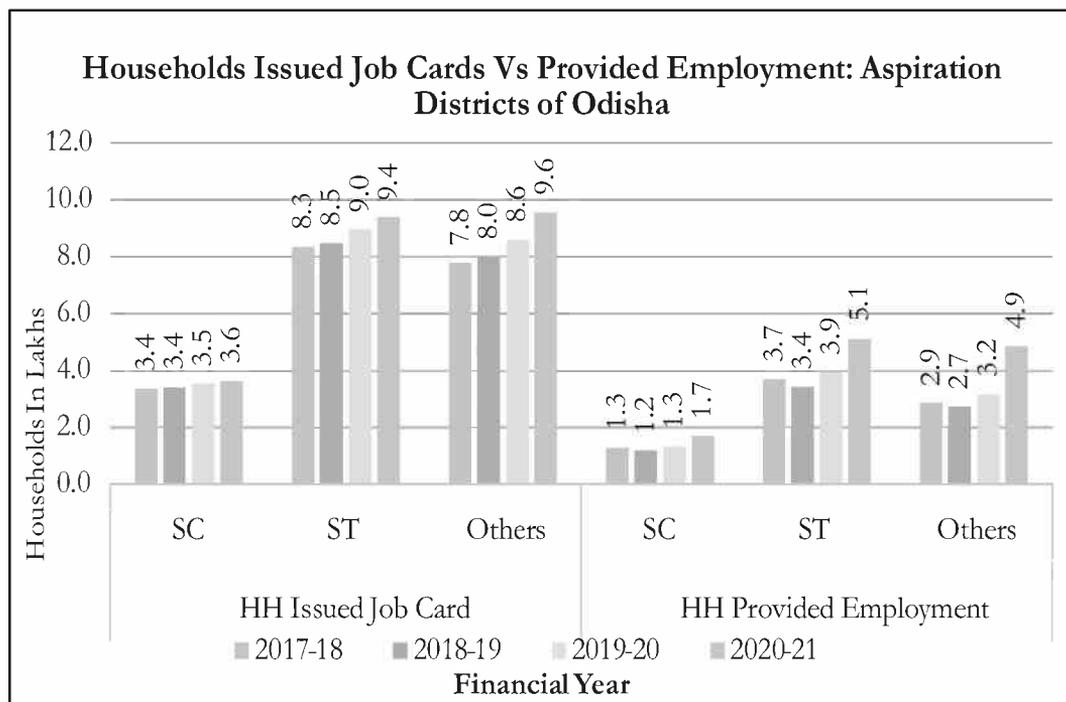
For all the categories the employment generation pattern is uniform with marginal improvement over the years. One out of every three to four households have been provided with wage employment across the year excluding the financial year 2020-21 in which over 50% employment has been provided till November 2020. The COVID 19 situation seemed to have triggered this better accomplishment as there was reasonable thrust on banking on MGNREGS to provide employment to migrant workers along with others. The uniform trend of relatively low participation was repeating itself every year and hence there is need to break the trend. With all possibility, by the end of 2020-21 financial year the situation will alter. The gradual improvement both in issue of job card and employment is

mainly because of the inclusion of new eligible households enrolled for the programme and splitting of families into more job seeking households and consequent issue of jobs cards in their favour.

v. Employment Generation in the Aspirational Districts of the country Vs the Aspirational Districts of Odisha

It is clearly evident from the above discussion that the 10 Aspirational Districts of Odisha are performing better than the national averages and better than their performance in earlier years. Absolute increase has been registered in case of issuance of job cards over the years in case of Odisha where as in the national scenario there is only a marginal increase in job cards across all the categories.

Figure 4: Comparison of Employment generation against issued job cards



In comparison, in 2017-18, 3.7 lakh ST households were provided with employment and the number increased to 5.1 lakh 38% to 5.1 lakh in 2020-21 till November that may further increase till March 2021. Though marginal, there is a clear difference between the performance of the country and Odisha. Taking all categories of job card holders together in the aspirational districts of Odisha, the state performed better in providing jobs compared to aspirational districts of other states in the country in the preceding and succeeding years of 2018-19. Exceptionally, in the current financial year the performance of the aspirational districts of Odisha has been remarkably higher than that of the national averages with coverage to 46.7% for SC, 54.6% for ST and 50.9% for others while the corresponding national average stands at 37.8% for SC, 48.4% for ST and 40.5% for others.

To conclude, despite the fact that aspirational districts of Odisha are performing better than the national average, there is still a rising concern about including non-participating households having job cards as they constitute more than half of the total job card holders. Making the job seekers to exercise their rights of demanding job as a primary stakeholder is the key to better performance in MGNREGS. Awareness generation and demand creation through

campaign and *rozgar diwas* will be undoubtedly helpful.

B. Key Sectoral performance through MGNREGS in Aspirational districts in Odisha

The aspirational districts program has allotted respective weightage to five major sectors such as health and nutrition (30%), education (30%), agriculture and water resources (20%), financial inclusion and skill development (10%), basic infrastructure (10%). Among these five priority sectors, two sectors such as agriculture and water resources, and basic infrastructure are directly related to MGNREGS. Hence these two sectors have the larger scope for development and growth in a long-term perspective with investments from MGNREGS. In other words, MGNREGS can be substantially leveraged for sustainable development in these two sectors.

The master work categories under MGNREGS such as public works relating to natural resources management (NRM), individual assets for vulnerable sections, common infrastructure for national rural livelihood mission (NRLM) compliant self-help groups (SHG), and rural infrastructure can be segregated into two broad categories fitting to the relevant priority sectors under ADP such as agriculture and water resources, and basic infrastructure as follows.

Table 4: Master Work Category under MGNREGS and their relation with development sectors under Aspirational District Programme

Category	Master Work Category under MGNREGS	Broad Category or Sector as per ADP	Sectoral Weightage in ADP
Cat -1	Public works relating to natural resources management (NRM)	Agriculture and Water Resources	20%
Cat -3	Common infrastructure for national rural livelihood mission (NRLM) compliant SHG		
Cat -2	Individual assets for vulnerable sections	Basic Infrastructure	10%
Cat -4	Rural infrastructure		

The MGNREGS master work category relates directly to the said two priority sectors under ADP for individual and community level employment generation and asset creation. Irrespective of the sectoral weightages as per the ADP, the performance of MGNREGS in the relevant sectors of ADP may be assessed from the following analysis.

i. Performance of Aspirational Districts in Odisha

The Category-1 and 3 of MGNREGA listed in Table 4 are complementing the agriculture and water resources sector of ADP, and Category-2 and 4 are complementing the basic infrastructure sector of ADP.

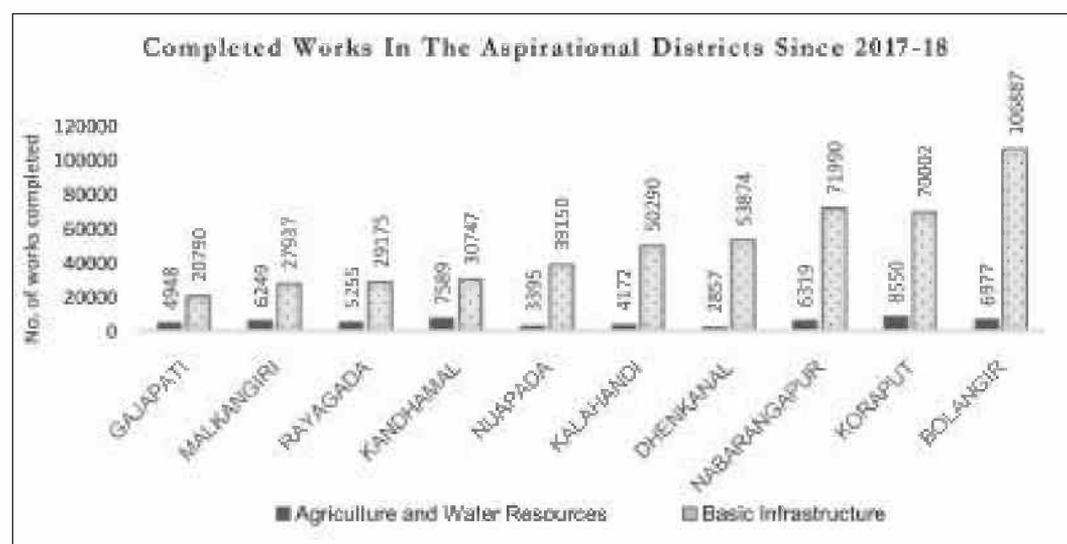
Table 5: Number of works completed in Aspirational Districts of Odisha in the two relevant sectors of ADP

Financial Year	Works Category							
	2017-18		2018-19		2019-20		2020-21	
Aspirational Districts	Cat 1&3	Cat 2&4	Cat 1&3	Cat 2&4	Cat 1&3	Cat 2&4	Cat 1&3	Cat 2&4
Bolangir	1857	18742	1140	18782	2120	53246	1860	16117
Dhenkanal	595	11968	195	15496	1004	24905	1063	1505
Gajapati	2094	5763	722	3472	2066	9621	66	1934
Kalahandi	1983	16170	825	1333	1012	25499	352	7288
Kandhamal	1850	6917	2345	7087	2863	15123	531	1620
Koraput	3257	19901	1031	11337	3405	31441	857	7323
Malkangiri	1107	7612	594	4587	3368	12288	1180	3450
Nabarangpur	1510	10144	1325	12191	1758	32551	1726	17104
Nuapada	1056	9646	579	8488	1189	17004	571	4012
Rayagada	1319	4852	377	5829	3499	17674	60	820

The data indicates that, in terms of execution of works relating to agriculture and water resources, the aspirational districts such as Koraput, Kandhamal, Rayagada and Bolangir have performed better in the reference years in comparison to the other aspirational districts of Odisha. In comparison, the common infrastructure

development for national rural livelihood mission (NRLM) compliant self-help groups are very limited. The works taken up for development of community assets in agriculture and water resources under the natural resources management (NRM) works perceptibly has higher level of impacts than individual works.

Figure 5: Completed works in the Aspirational Districts since inception



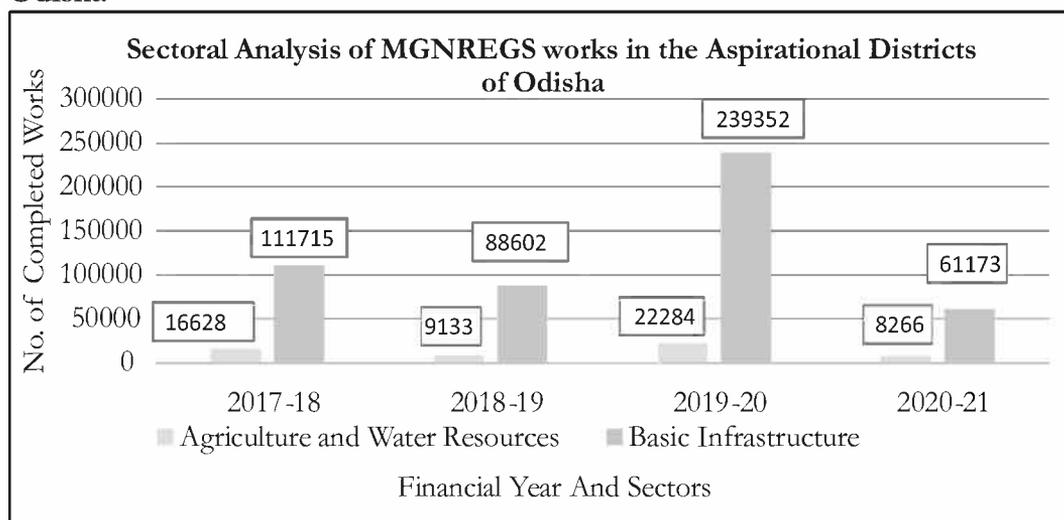
In terms of basic infrastructures, Koraput, Bolangir and Nabarangpur have performed better in reference years in comparison to the other aspirational districts of Odisha. Basic infrastructures include individual assets for vulnerable sections, and rural infrastructures that are considered vital in rural development perspective. Looking at the overall performance, the available data provides that two districts such as Bolangir and Koraput have been performing better compared to other eight districts in MGNREGS work categories which directly complement to the relevant sectors under ADP. In this order, the least

performing districts are Gajapati, Malkangiri and Rayagada.

ii. Sectoral Analysis of MGNREGS works in the Aspirational Districts of Odisha

In terms of numbers, the basic infrastructural works under MGNREGS are increasing since the inception of the aspirational district programme. The number of completed infrastructure works increased from 111715 in 2017-18 to 239352 in 2019-20. On the other hand, the agriculture and water resources related work are increasing at a different pace since 2017-18.

Figure 6: Sectoral Analysis of MGNREGA works in the Aspirational Districts of Odisha



C. Suggestion for Smooth Implementation of MGNREGS

MGNREGS has huge potential to contribute to different development programmes both in short-term and long-term perspectives. Creation of basic infrastructures, livelihood generating activities and assets, wage employment are better options in the short-term perspective as has been evident during the COVID 19 situation. During the COVID-19 pandemic situation, wage employment and creation of livelihood generating assets have been perceived as bliss for the home coming migrant labours. Simple issuance of job cards and treating the job seekers as mere wage earners cannot cash on the huge investment and opportunities embedded in MGNREGS. The 4th edition of the MGNREGS guidelines have designated the wage seekers as top listed stakeholders (Government of India, 2013). It provides space for constructive arguments that if job seekers merely remain at the recipient end and continue to work for wage then the essence of the

MGNREGS cannot be properly utilized. Whom we call job seekers are in matter of fact job demanders, if the true spirit of the people friendly Act MGNREGA is understood properly. Hence, there is need for an attitudinal shift to consider the job demanders as decision makers in participatory planning, plan prioritization, plan execution and social audits. The expenditure under MGNREGS should be turned to investments. If such steps are taken then the gap between job card issued and employment provided can be bridged and more important individual and community assets can be created.

Specific to the aspirational districts programme there is huge scope for development in the relevant two sectors such as agriculture and water resources, and basic infrastructures as the said sectors are directly related to four broader categories of work under MGNREGS. Thus, emphasis should be laid on creation of durable assets and infrastructures as outcomes of which wage may appear just a by-product. An irrigation infrastructure

provided to a family is perceived more meaningful than providing the family with wage earning opportunities through the years. The implementation process therefore should be revigorated and streamlined with reference to the underlying spirit in the operational guidelines. In other words, the operational guidelines should be implemented in letter and spirit.

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Tea Tribe of Assam: In the Quest of their Identity and Entitlement

Braja S. Mishra¹

ABSTRACT

A population, which has been living since more than a century and half, and contributing to the economic and cultural landscape of Assam has grown in its size and aspirations. They are the tea garden workers community, popularly known as 'tea tribe' community. Their quest for establishing a separate identity and getting a fair share in the resources for their development has resulted in a complex social mosaic in the state with increasing ethnic tensions and alienation among various communities. At present, the tea tribes form a distinct population of Assam and constitute about 20 percent of its population. Majority of them belong to various Adivasi communities of central India, who were once lured to come and work in the tea gardens of Assam and other parts of the North East during later part of nineteenth century. Many non-Adivasi communities too came along with Adivasis. Their socio-economic condition has remained at margin and their struggle for an identity and getting a just share in the resources and opportunities has been going on for long time. This paper is a critique on the identity and entitlements of 'tea tribe', based on some historical contours and continuum.

Keywords: Adivasi, Identity, Entitlement, Tea Tribe

Origin of the term 'tribe'

John Locke of British Enlightenment once argued that a society builds its identity not on the basis as a commonwealth but as a product of socially purposed institution building processes. Therefore, a society's identity is known more in terms of people's shared origins, history and emotional attachment to their occupation, culture, language and local territory. Each cultural unit is known as "tribe" who develop a distinct social, linguistic and cultural configuration shared by its members.

According to the Cambridge Encyclopedia of Anthropology, the very word 'tribe' is derived from the Latin term *tribus*, the administrative divisions and voting units of ancient Rome and the very word was being used in biblical texts till thirteenth century (Cornell 1995: 117). Towards sixteenth century the word got popularized and was used beyond biblical texts to identify a group of people of a particular race and lineage (Murray 1926: 339). Gradually with the European colonial expansion to different parts of the world the term 'tribe' got widely used

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to identify some ethnic communities which were considered to be of primitive order. With evolution of a discipline such as anthropology in the nineteenth century, the grand theories of historical progress reasserted the term 'tribe' as a primitive society governed by the principles of 'kinship'. The term 'Adivasi' in India is same as that of 'tribe' in the language of anthropology.

It is found that, the very interpretation of the term 'tribe' has undergone significant changes. Nevertheless, the term 'tribe' is being often used to identify a particular group of people irrespective of their racial and kinship background. They could be from a same occupation and profession, locality and the like, such as student tribe, teacher tribe, worker tribe and so on.

Tea Tribe in Assam

More than a century and a half ago menial labour from the eastern regions of India (presently the states like Odisha, Jharkhand, West Bengal, parts of Andhra Pradesh and Chhattisgarh), were brought to work in the tea gardens of Assam during the colonial period, as local community were averse to work as labour in the tea gardens, through labour contractors by giving false promises of getting better quality of life (Baruah, 2008). They mostly belonged to different indigenous communities (Adivasi Communities- some of them are known as Scheduled Tribes in the post-independence period) and other marginalized communities like *Dalits* (known as Scheduled Castes in the post-independence period) and others (Non-scheduled communities, who are classified now as other backward classes). Besides,

Catholic Mission Cooperative Society established in eastern India had also played the role of a conduit in facilitating the recruitment process of labours from the Adivasi communities of central India (Ekka, 2003). The labours were literally forced to enter into a contract and the entire process led to a clear case of constrained and bonded labour. They remained under absolute control of the tea gardens and far away from the public gaze and scrutiny and started living virtually as slaves (Das, 2016). With constant surveillance on them by the tea estate managers and prevailing difficult transport and communication system during those times, they accepted their situation as a *fait accompli* and continued to live.

Since generations they have been working in the tea gardens out of socio-cultural and economic compulsions. By virtue of their common characteristics – being migrants (leaving their places of origin for long time) and working together in tea gardens, they gradually got assimilated to form a new identity known as 'tea tribe' amidst all their diversities. Even they have developed a common lingua-franca (dialect), popularly known as *baganiya bhasa* (language of tea garden), which is a mixture of many languages and dialects such as like Sadri dialect of Central India Tribal region, Odia, Hindi, Bangla and Axomia (Assamese). There are many common festivals which they observe apart from their respective community-based festivals and rituals. Therefore, with all considerations, they have rightful claim to be called as a separate 'tribe'. The historical event of their migration and recruitment in the tea gardens of Assam was a determinant or marker of their

contemporary identity as 'tea tribe'. Their contemporary identity is different from their respective native places of origin as well as from the host society in their areas of settlement.

Needless to mention, Assam has been witnessing conflicts over identity, ethnicity and nativist sentiments at different points of time. Notable political scientist Myron Weiner (1978) analysed that the conflicts of Assam are between the original inhabitants of the area and recent settlers like tea garden workers and other immigrants. The “natives”(sons of the soil) enjoy accessibility to local resources, capture the largest space in the political power structure and begrudge the competition that arises from immigration.

Demographic strength of Tea Tribe

The 'Tea Tribes' now constitute approximately 20%(7 million) of Assam's 35 million population. They are spatially spread along the tea garden belts of various districts like Kokrajhar, Udalguri, Sonitpur, Nagaon, Golaghat, Jorhat, Sivsa gar, Charaideo, Dibrugarh, Tinskia in Upper Assam and Northern Brahmaputra areas besides three districts of Cachar, Karimganj and Hailakandi, in the Barak Valley region of Assam.

Their marginalized status

Right from the day they landed up in the tea gardens, the workers faced innumerable restrictions in their day to day life. Their mobility was restricted within the boundary of the tea estate, which remained completely isolated from the outside world. They are not allowed to go out of the estate and were under the constant watch by the tea garden security forces. This condition literally reduced

them to a state of slavery (Behal, 1984: 55).

When scheduling of Adivasi communities as 'Scheduled Tribes' during post-independence India was undertaken as a mandate of the Constitution, majority of the Adivasi communities working in the tea gardens raised their rightful claim to be scheduled. However, their claim was turned down by the state government of Assam a number of times on the ground that they are migrants and cannot be said to be as aboriginals (*Adivasi*), which is one of the criteria of the scheduling tribal communities. After a series of struggles Assam Government has accorded the status of Other Backward Classes (OBC) to the 'tea tribe' community. However, the Adivasi groups have not given up the struggle for getting the status of Scheduled Tribes.

Collective actions for identity and entitlements

As far as unfair labour practices was concerned, the tea garden workers revolted and resisted against the tea estate managements at different points of time, sometimes in bits and pieces and sometimes in a united manner. The response to such resistance was the promulgation of Labour and Emigration Act 1915, which prohibited recruitment through *thikedari* (labour contractor) system (Guha, 1984: 70-77), which hardly addressed the plight of the existing workers. However, the natural outcome of the collective actions of workers gave rise to increasing trade union activities. In course of time, trade unions have been formed with two main objectives such as economic and socio-political. Economic objectives are dealing with bargaining for better wage, welfare facilities and better

quality of life, while socio-political objectives are dealing with asserting their identity as 'tea tribe' and working as a pressure group in the political process.

Trade unions like Assam Cha Mazdoor Sangha (ACMS), Akhil Bharatiya Cha Mazdoor Sangh (ABCMS), and Assam Sangrami Cha Shramik Sangha (ASCSS) are three major fronts that have come into being to work for the welfare and empowerment of tea garden workers. (Toppo, 1999). Besides, two prominent students' organisations like Assam Tea Tribes Students Association (ATTSA) and All Adivasi Students' Association of Assam (AASAA) are working for the promotion and protection of the interest and identity of tea tribes.

The workers belonging to 36 *Adivasi* communities have been politically fighting for securing the status of Scheduled Tribes (for availing benefits under affirmative action) for last few decades without any tangible result. This issue gets political overtones before every assembly election as the community play a deciding factor in 35 out of the total 126 assembly constituencies of the state, and it goes into oblivion once the election gets over. The promise made by the existing central government to grant Scheduled Tribes status to them could not be fulfilled as The Constitution (Scheduled Tribes) Order (Amendment) Bill 2019 approved by the existing Central Government's Cabinet on 8th January 2019, to accord "Scheduled Tribe" status to at least 36 tribes of this community was tabled in the Parliament, however failed to be passed by both the Houses of Parliament. In fact, it couldn't be passed in Rajya Sabha on the last day of the Budget session due to lack of time.

This issue is likely to be raked up again before 2021 Assembly election.

Economy and quality of life

In the Tea sub sector of the world, countries like India, Kenya and Sri Lanka are considered to be the hubs, largest tea producers and exporters. The tea plantations in these countries date back to the British colonialism in the 19th century. India's tea industry is said to be the biggest private sector employer in the country, where about one million are employed directly and about 10 million indirectly. Only the state of Assam accounts for one sixth of the world's tea production, which is phenomenal! Thus, tea plantation constitutes a major part of the modern economy in Assam. It has inherently remained as a labour intensive industry.

Outrageous low wage in the tea plantations, even all pecuniary and non-pecuniary benefits have been a matter of concern and reason of economic unfreedom in poor human development context of the workers. They have been living in an infinite cycle of impoverishment and striving through denial of certain basic rights and entitlements. They live with abysmally low wage, sub-human living and undignified working conditions. Certain statutory rights and entitlements given under Plantation Labour Act, 1951 (popularly known as PLA) are violated in a number of plantations with all impunity. Now the low-cost tea garden model such as Small Tea Growers (STGs) is an emerging trend where small farmers employ their own labour and or wage labour for undertaking different activities. They are not covered under PLA as number of wage labours employed there

are less and amount of land used for plantation is less than the prescribed² area and number given in PLA. Pertinently, the number of small tea growers have been increasing over last two decades. It is estimated that about 50% of total tea produced is from these small tea growers.

The tea garden workers are still being categorised as unskilled workers with reference to the provisions of Minimum Wage Act 1948, though most of the work done in the tea gardens require fair amount of skills. At present, the tea garden workers in the Brahmaputra Valley are paid a daily wage of Rs. 167/- while the tea garden workers in Barak Valley are getting an wage of Rs. 145/- per day. A comparison shows that in the state of Kerala the tea garden workers are paid a minimum wage of Rs. 310/-, in Karnataka Rs. 263/- and in Tamil Nadu Rs. 241/-. The NDA government's assurance of enhancing the minimum wage to Rs. 350/- has been elusive as of yet. On the other hand the tea plantation owners have been arguing that the revenue being generated from plantations have not been enough and subject to market fluctuating risk, so as to enhance the wages of the workers. This argument and counter arguments have been dominating the political economic space of the sub sector quite for long time.

The wages in the tea plantations is revised on the basis of bilateral agreement between the trade union representatives and employer's associations. The negotiation process takes into account of the movement of consumer price indices

of industrial workers. An analysis by the author on estimate of the real wages at the year 2000 price level provides that the workers did not gain from the wage revisions; and the real wages paid to the workers remained below the revised wages. Although the real wage and the indices shows marginal improvement since 2001, yet two differing grounds as stated below need to be considered while assessing how decent the wages have been

- i) adequacy of the pecuniary and non-pecuniary benefits received by the workers; and
- ii) the wage rates in other economic sectors of the state.

Interestingly, wage received by unskilled workers in sundry jobs of agriculture sector (the lowest stratum of wage in the state) has been higher than the cumulative of tea plantation sector wage, the monetary value of all pecuniary and non-pecuniary benefits.

The wage advisory board of Government of Assam (2017) headed by the Labour Minister and the Secretaries of the line departments, representatives of tea plantation companies and workers' unions as the members, in March 2018 recommended a daily wage of Rs. 351/ for the workers. The amount was to include both cash and kind components. The recommendation has not yet been implemented presumably under the pressure from tea plantation managements.

From a study undertaken by Tata Institute of Social Sciences of its Guwahati

² To be covered under PLA, the land should have minimum five acres of plantation with at least 15 workers including office staff

campus in the year 2019 on 'Decent Work for Tea Plantation Workers in Assam: Constraints, Challenges and Prospects', the following pointers have been identified concerning entitlement and wellbeing indicators among tea garden workers.

- Poor infrastructure of primary schools with a student–teacher ratio of 1:75.
- 70 percent health centres in the estates have bare minimum services which include a bed, saline, a staff, and medicines for fever or cold.
- 54 percent tea estates provide crèche facility which is generally located far away from the workplace; they lack basic facilities including proper meals, owing to which women avoid sending their children to creches. During regular sickness of children, women lose a working day and wages.
- 52 percent workers do not receive pay slips.
- 95 percent women wage workers use firewood and suffer directly from indoor pollution.
- 75 percent workers suffer from monthly wage gap between what they are supposed to and what they actually receive after written and unwritten deductions.
- 38 percent workers' household monthly expenses exceed their income.
- 45 percent worker's bonus amount is spent on house repairing and medical expenses.
- 32 percent of the total food consumption is spent on rice and wheat, apart from the amount of ration that a worker receives from the estate.

- 56 percent of the household's per day per capita calorie gap is between -2000 Kcal to 0 Kcal.
- 19 percent of workers spend their wages towards repairing houses, obtaining firewood, children's education and healthcare.

A report of 2018 from the University of Sheffield's Economic and Social Research Council, namely, *The Global Business of Forced Labour*, affirms that Assam's plantation workers as akin to “forced labour”, which is quite significant and disturbing.

Suggestive way forward

Despite their significant contribution to the State's economy as well as socio-cultural enrichment, the 'tea tribe' has been living in the margin. Though the State has been trying to elevate their condition, it is very slow and inadequate. Establishment of an institutional structure to ensure human development in the tea sector has been a call of the hour. The state needs to ensure attainment of higher education and skills among the plantation youths so that they can explore and take up the opportunities offered by the expanding economy rather falling back on the plantations only. This process shall gradually break the asymmetry of surplus labour, underemployment and casualisation in the sector. Ideally the state can draw examples of Plantation Human Development Trust of Sri Lanka and its effort to ensure decent labour standard and better quality of life. Increasing access to expanding economic opportunities by the youth can significantly contribute in dousing and dissipating the discontentment amongst the community.

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Knowledge and Practices related to menstruation among the tribal women and adolescent girls of Odisha

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ABSTRACT

The current study was conducted to evaluate menstruation-related knowledge and practices among tribal women and girls. The study sample was composed of 120 girls and women in the 11-19 and 20-45 age groups, respectively. For the collection of the study group from different areas of the district, a mixture of snowball and random sampling techniques was used. To study the knowledge and practices related to menstruation among adolescent girls, an interview guide was developed and used. The menstrual history of the sample group was reported along with the Interview Guide. The findings revealed that before they began menstruating, sample girls lacked conceptual clarity about the menstruation process because of what they face several gynaecological problems. There were also menstruation-related socio-cultural taboos. It was discovered that the standard of personal grooming and menstruation management was very unsatisfactory. The results show several practices: cultural and social constraints connected with menstruation, myth and misunderstanding; the adaptability of teenage girls to it; their response, family reaction; recognising the significance of menstruation; and the changes that have arisen in their life since menarche and their resistance to such changes. The article further recommends methods for improving young girls' menstrual wellbeing and hygiene. The study concludes that menstruation-related cultural and social behaviours rely on the schooling, mood, family climate, history, and belief of girls.

Key words: Menstruation, taboos, gynaecological, hygiene

Introduction

According to the World Health Organisation (WHO) age group for teenagers is 10-19 years of age. Girls' puberty has been recognised as a special phase signifying the transition from girlhood to femininity. The initiation of Menarche, a major landmark, marks this transitional era. Society is interwoven through a collection of traditions, myths and misconceptions in the current Indian

cultural setting, especially about menstruation and related issues. The alienation of menstruating girls and the constraints put on them in the family have increased the pessimistic mindset of girls towards this phenomenon. Several studies have identified limits in everyday lives such as not being allowed to bath, change clothing, comb hair and join holy sites (Talwar 1997; Singh 2006; Paul 2007). In addition to these, dietary prohibitions

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(taboo for foods such as corn, curd, milk, lassi, potato, onion, sugar cane) during the menstrual period are also imposed.

In addressing related topics, social restrictions and parental negative attitudes have openly blocked the access of teenage girls to the right kind of information, notably in rural and tribal communities. Furthermore, their heavy bondage with cultural values, taboos and myths during menstruation has contributed to many severe health concerns. Bad personal hygiene and unhealthy health practises contribute to multiple gynaecological issues for children. Many reports have documented infections due to lack of grooming during menstruation (Greene, 1997). Until reuse, frequent usage of unclean cloth and inappropriate drying of used cloth contributes to the harbouring of micro-organisms that propagate vaginal infections among teenage girls (Paul, 2007).

The health conditions and problems are the product of unreliable and imperfect knowledge supplied by limited sources to the children. Several studies have found that the primary source of menstrual knowledge for teenage girls is mothers, family, peers, relatives, television and books. It is often seen, though that data derived from these sources is always unreliable and incomplete. Data on their level of menstruation experience and activities are helpful for designing interventions to increase the level of understanding of their life processes and enhance their quality of life.

The paper shares observations from a study on the awareness and practises of menstruation among tribal teenage girls,

taking into account the above. The objectives of the study are: to obtain baseline menstrual history data from teenage tribal girls and women; to determine the extent of previous menstrual knowledge of adolescent girls; to analyse the behaviours of sample girls during menstruation; and, to assess diagnosis and therapies used to treat menstrual disorders. The study was conducted on a group of teenage girls in tribal Odisha. The purpose of the study is to provide an insight into the cultural framework of the tribal groups with regard to the most vulnerable menstrual issue, which will help to foster an improved level of sensitivity and increase correct menstrual information.

Materials and methods

The study sample comprised 120 girls and women in the age groups of 10-19 and 20-45 respectively from different areas of the state. A mixture of snowball and random sampling techniques were used. To study the awareness and behaviours linked to menstruation among teenage girls, an interview guide was developed and used. Along with that, the menstrual history of the study community was recorded. The research instrument used was a pre-designed, pre-tested, standardised and self-administered questionnaire translated into the local language. The questionnaire was prepared to collect knowledge about age at menarche, menstrual understanding, menstrual information source, menstrual cycle practices, menstrual background, menstrual complications and care practises. The data thus collected was tabulated and statistically evaluated.

Results

Hygiene, especially during menstruation, is an important feature. The sexual health of teenagers is adversely influenced by good knowledge of menarche and private grooming during menstruation. The respondents' awareness on hygienic dimensions of menstruation is presented in Table-1. Most girls (53%) felt it was not important to change napkins more than once a day. Figure 1 reveals that mates (51%) were the major contributors to

learning about menarche, led by mothers (39%) and aunts / relatives (8%). A research by Singh (2006) on women's expectations and impressions about menstruation found that friends or other female relatives were the first individuals to inform girls about menstruation and there was a lack of information about menstruation. A research by Reddy et al. (2005) confirmed that prior to its inception, only one in seven teenage girls had experience of menstruation.

Table 1: Knowledge of hygiene maintained during menstrual periods

Sl. No.	Particulars	% of sample
1	Bath During Periods	
	Once in a day	28
	Twice a day	46
	More than 2 times	26
2	Sanitary Napkins to be Used	
	Homemade pads	64
	Readymade sanitary napkins	36
3	Frequency of changing Napkins	
	Once in a day	53
	Twice a day	30
	More than 2 times a day	17
4	Re - usage of cloth pads	72

A recent research by Sharma et al. (2008) clarified that while the menstrual cycle is a natural monthly feature in a stable female body, delayed menstruation, abnormal hormone fluctuation patterns and pain during menstruation are the key concerns. Table-3 offers descriptions of different girls' issues during menstruation, and it is clear that perception of lower abdominal pain (63%) and back pain (21%) are found to be strongest, accompanied by weakness/tiredness (9%), body ache (3%) and pain (3%).

Table 2: Girls perceptions regarding different health problems associated during periods

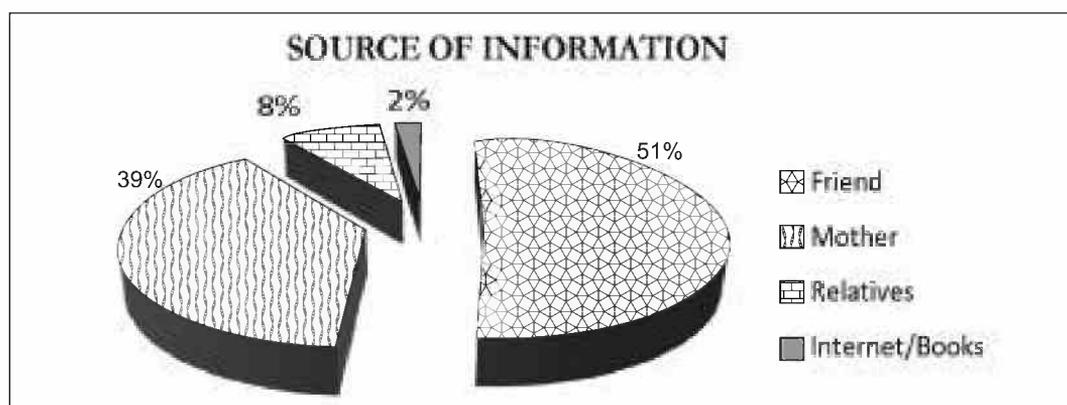
Sl. No.	Problems	% of sample
1	Abdominal pain	63
2	Backache	21
3	Weakness/tiredness	9
4	Bodyache	3
5	Pain in thighs/ legs	3
6	Headache	1

Practices during Menstruation

During menstruation, the group displayed a strong network of social and cultural traditions. It was noticed that these behaviours were believed and followed for many centuries. During menstruation, there were also social and religious limitations on females. These instructions for do's and don'ts were

provided to girls by mothers, elder sisters and peers. All the samples recorded restrictions especially linked to prohibitions on going to religious sites, offering prayers and keeping fast. Taboos/myths have been observed by them too. The elders of the family were asked to prevent all the girls from looking in the mirror.

Figure 1. Percentage distribution of girls related to awareness of source of information about menarche



Use of ethno-medicine for the treatment of menstrual disorder

The belief of the people in the study area is that herbal medicine is superior to other medicines and gives them a pivot elevation point towards herbal medicine regardless of the efforts of the Government towards the provision of health care facilities.

Where Government healthcare facilities exist, herbal medicine is either used concurrently or in isolation while the orthodox care serves as immediate first aid. This is because an average tribal, particularly in the remote areas believe that the hospital-based care is only efficient to the extent that it suppresses the ailment only to recur later.

Table-3: Ethnomedicinal plants used for menstrual disorders

Sl. No.	Botanical Name & Local Name (LN)	Family	Parts Used	Used For	Mode of Use
1	<i>Abrus precatorius</i> L. LN: Kaincha	Fabaceae	Whole plant	Gonorrhoea	Two spoonful decoctions of plant are taken orally twice a day for a week.
2	<i>Asparagus racemosus</i> Willd LN: Satawari	Asparagaceae	Root	Quick Delivery	Root paste is applied externally on abdomen for quick delivery.

3	<i>Desmodium heterocarpon</i> (L) DC LN: Salparni	Fabaceae	Root	Regulate Menstrual cycle	A cup of decoction of roots is taken in the morning every day for seven days to regulate menstrual cycle.
4	<i>Enhydra fluctuans</i> Lour. LN: Hidimicha	Asteraceae	Leaves	Gonorrhoea	Half cup of infusion of leaves is taken as remedy against gonorrhoea till cure.
5	<i>Tephrosia purpurea</i> (L.) Pers LN: Bano Kulthi	Fabaceae	Leaves	Post- natal complications	Decoction of leaves is mixed with honey given to women twice a day continuously for one month against post -natal complications
6	<i>Annona squamosa</i> L. LN: Maghua Ata	Annonaceae	Dried root Powder	Abortion	Dried root powder is taken once in morning for five days by women for abortion of 3 to 4 months of pregnancy
7	<i>Millettia pinnata</i> LN: Karanja	Fabaceae	Stem/ bark	To control excessive bleeding and gain strength after delivery	Extract of stem bark is taken and filtered and a heated iron rod is dipped into it, about half cup is given to the mother once in the morning
8	<i>Ricinus communis</i> LN: Jada	Euphorbiaceae	Fruit	For easy delivery and for reducing delivery pain	The oil is massaged gently on the belly
9	<i>Zizyphus mauritiana</i> LN: Barkoli	Rhamnaceae	Stem/ Bark	To get relief from abdominal pain during pregnancy	Stem bark paste is taken twice a day after food.
11	<i>Clitoria ternatea</i> L LN: Aparajita	Fabaceae	Leaves	Gynaecological disorder	-
12	<i>Woodfordia fruticosa</i> (L) Kurtz. LN: Dhatuki	Lythraceae	Flower	Used in leucorrhoea, gynaecological disorder, skin diseases	Powder-1-3gm is prescribed
13	<i>Cissus quadrangularis</i> L. LN: Hadabhanga	Vitaceae	Stem	Preventing conception	Paste of the stem with banana flower is placed the head women for ten days or so to prevent conception

Conclusion

The results of the study show that among tribal adolescent girls, there is a low level of knowledge about menstruation and its related problems. In most of the subjects under research, the age of menarche

shows delayed menstruation. Poor nutritional status may be attributed to delayed menstruation in the sample population. It was also observed that conceptual clarity about menstruation was lacking among the girls.

During menstruation, the sample population used to remain confined to traditional socio-cultural practices. Cultural practices are followed without much questioning across different generations. The level of personal hygiene these girls practiced is not satisfactory. Among most of the girls (72%) under study, reuse of used tissue/napkin for menstrual blood absorption was found.

As an inference it may be stated that it is necessary to sensitize the tribal teenager girls about menstrual problems so that they can shield themselves from different infections and diseases. This would further help them lead a healthier life. The study data can be used for programme planning, in particular for tribal adolescent girls, to create new policies to improve the level of information.

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Emerging trends of tribal studies in India: An anthropological assessment

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ABSTRACT

Tribal studies have assumed significance in the current times especially in relation with the changing scenario of tribal development. The subject that was by and large being considered within the domain of anthropology is perceived as a multi-disciplinary study in which scholars from disciplines beyond anthropology have been taking interest. As such the nature of the study have undergone paradigm shift from confining it to ethnographic studies as was the case during colonial regime to broad based and diagnostic studies considering culture, worldview and development as inseparable whole. This paper has laid focus on understanding the emerging trends of tribal studies in India with particular reference to Odisha. The paper adopted a review-based approach and is thus based on secondary sources of information. The analysis underlined the potentiality of tribal studies in general from anthropological view point, and in particular its emergence as an academic discipline for development discourse and its future scope.

Key words: Anthropology, Tribe, Tribal Studies

Introduction

Tribal societies have some special features, such as, society is kin-based, relatively closed, homogeneous, segmentary, isolated from others, simple techno-economy, lack of motivation to generate capital and make profit, ideological order is changed with animistic and fatalistic orientation etc. Therefore, Morgan (1871) looked at the concept of 'tribe' as a form of social organization whereas; the Marxists perceive it as a stage in the evolutionary order. With the emergence of structural-functional theory tribal societies were no longer considered as representatives of stages of evolutionary

order, but certainly as a type of society (Behura and Mohanti,1998). With autochthonous primitiveness tribes inhabits almost all forest-based regions of our country. For centuries they have been living a simple life in the lap of nature and have developed culture patterns congenial to their physical and the consequent social environment. Being nature- oriented and kin-based, they have set their social structure and life style in such an ideal manner that, study of their society and culture will reveal nothing but human values in the most realistic form. When modern man has adopted all artificial means (*as a result of modernization*) and

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shifted far away from the natural/ cultural human base in its beginning and forgotten its culture, the mere empirical study of tribal societies will essentially provide the nature, feature and structure of a human society in its idealistic form. In a sense, the tribal societies not only preserve the cultural heritage of mankind, they also signify the justifications for the study of the contemporary or the living societies. Their socio- economic systems were in primordial forms and even the political institutions, though rudimentary and non-explicit, were present with definite roles and functions. However, they live in a relatively static state and before so much of transformation in their traditional institutions, they need to be properly studied, documented, otherwise like that of the so-called modern societies, the cultural background of such societies will be forgotten forever. Though the rich assemblage of myriad cultures and languages of tribal people has attracted scholars and academicians over the decades, very little headway has been made in the proper preservation, promotion and projection of their treasured cultural heritages and invaluable and incredibly rich indigenous knowledge systems. Besides the academic and research fields of interest, the most vital of all is that such tribal are vulnerable to economic backwardness and of their all-round simplicity. Their need for proper protective measures has been revealed through scientific studies or researches.

Thus, with a bi-fold objective to understand and explain the nature-based human life in its primordial form as well as to develop them from the economic backwardness through welfare or

developmental measures, there is certainly an urgent need to understand and analyze the situation of tribal societies in cultural and developmental context. Mainly because of this, anthropologists around the world have been venturing their approach to mankind invariably through the study of tribal societies. This paper follows such an approach looks at tribal studies from anthropological, allied and interdisciplinary perspective.

Tribal studies in India and Odisha : An overview

Tribal studies in India, by and large, can be attributed to the discipline of anthropology. Under the aegis of anthropology, starting from formative to analytical phases of development of Indian anthropology, tribal studies is carried out at par with researches on Indian anthropology. The development of tribal studies in India is broadly divided into two traditions namely British and Indian. At the initial stage of tribal studies, the British administrators and scholars, Christian missionaries and a few travelers were engaged for their respective purposes of colonial administration; historical study of culture and society; expansion of Christianity; and adventurous memoirs. Noted British administrators such as Risley, Dalton, O' Malley, Russel, Thurston, Elwin and Crooks made significant contributions in tribal studies in their times. Some missionaries like P.O. Bodding and J. Hoffman have made important ethnographic and linguistic studies on tribal people in Odisha. W.H.R. Rivers, Seligmann and A.R. Radcliffe-Brown produced excellent monographs (Vidyarthi and Rai, 1976) on tribes of India.

Indian tradition of tribal studies have been listed and reviewed by a number of scholars like S.C. Roy, D.N. Majumdar, G.S. Ghurye, S.C. Dube, N.K. Bose, L.P. Vidyarthi, S.C. Sinha and L.K. Mahapatra. The Indian tribal studies are broadly divided into the historical phase and regional basis. The historical phase may be further divided into three chronological phases of development, viz. formative (1774-1919); constructive (1920-1949); and analytical (1950 onwards). During formative and constructive periods ethnographic and monographic studies were given ample importance. Analytical phase accrued to theoretical paradigms of anthropology and infused the methods of systematic scientific endeavors through the formulation of hypotheses, to the analysis of field data. Tribal studies in India also has geographical references having been conducted in different regions like Himalayan region, Eastern, Western, Southern and Island (ibid.).

Dalton in 1872 published 'Descriptive Ethnology of Bengal' which contains the ethnographic accounts of Juang, Bhuiyan, Saora, Bondo, Gadaba and Santal. These studies may be viewed as maiden tribal studies in Odisha. Indian anthropologists like S.N. Roy, S.C. Roy, C. Mukherjee and N.K. Bose conducted extensive and intensive research on tribal culture of Odisha. The credibility of richest ethnographic research on tribes in Odisha with longest fieldwork goes to Verrier Elwin who explored many aspects of tribal culture in its original form. The analytical phase of tribal research in Odisha was led by Prof. F.G. Bailey, Herman Niggermeyer from Germany and K.G. Izikowitz from Sweden who made

substantial contribution in setting new perspectives. While many sporadic studies on Odishan tribes were conducted by non-Indian anthropologists, tribal studies in Odisha became a regular academic discourse after the establishment of P.G. Department of Anthropology at Utkal University (1958), Bhubaneswar under the academic leadership of Prof. A. Aiyappan who initiated extensive fieldwork on tribal society and culture of Odisha. Later on, social anthropologists like L.K. Mahapatra, N.K. Behura, N. Pattanaik, K.K. Mohanti, U.C. Mohanty, P.K. Nayak. J. Dash and K.K. Mishra continued the tradition of tribal studies in Odisha (Dash,2015). Scheduled Castes and Scheduled Tribes Research and Training Institute, Bhubaneswar and Nabakrushna Chaudhury Centre for Development Studies, Bhubaneswar, in the meanwhile, came up as relevant institutions for conducting research on tribal communities of Odisha. The research and studies conducted by these two premier institutions added up perspectives and dimensions to contemporary tribal studies in Odisha.

Emerging trends of tribal studies

From an overview of tribal studies in India and Odisha it appears that earlier tribal studies mostly concentrated on ethnographic studies of tribal life and culture. Over the years there has been many changes in tribal life and culture given the changing development priorities and paradigms. From simple culture studies the realm of tribal studies now encompasses a broad range of the tribal issues in cultural, developmental and political contexts. Thus, the scope of tribal studies expanded geographically,

contextually and academically for which tribal studies have assumed the status of regular academic activities in universities in recent years as reflected from introduction of courses and studies in different educational institutions of India and Odisha.

The North Orissa University, established in the year 1998, in Baripada of Mayurbhanj district, Odisha is the eighth university of the state of Odisha. The university was set up with a view to fulfill academic aspiration of the people of Mayurbhanj and Keonjhar districts of Odisha in terms of imparting higher education and learning. These two districts epitomize and champion a characteristic structure of ethnic mosaic since ages with vivid manifestation of multiculturalism constituting 58.72 per cent (Mayurbhanj) and 45.45 per cent (Keonjhar) tribal population respectively (Census,2011). Obviously, the setting up of North Orissa University in the northern part of Odisha and its jurisdiction spreads over Mayurbhanj and Keonjhar districts hopes to fulfill aspirations and desires of the people, and the University has played a catalytic role in fostering an ambience of higher learning in several frontiers of knowledge including anthropology and tribal studies. The North Orissa University because of its strategic location in the tribal dominated district of Mayurbhanj with headquarters in Baripada established a centre for tribal studies in 2001 with an objective to understand and explain tribal values, and document their indigenous culture as well as language on one hand and to assess as well as evaluate the implementation of various welfare

measures for their economic development. The centre for tribal studies of North Orissa University is first of its kind in Odisha. North Orissa University from its own source and from MPLAD fund of former Rajyasabha MP S.J. Birabhadra Singh of Mayurbhanj district of Odisha constructed a building for the Centre for Tribal Studies. From 2001-02 academic session the centre for tribal studies started Master's degree in Tribal Studies on self-financing mode. The content coverage of the curriculum was revisited in the meanwhile and since 2009-10 the course was renamed as Anthropology & Tribal Studies. The course of Anthropology & Tribal Studies also imparted in semester and CGPA system, and adopted choice-based credit system (CBCS) as per the UGC guidelines (Sahoo,2014).

In Odisha NGOs like Council of Analytical Tribal Studies (COATS), Koraput was established in 1993, by affiliation of Berhampur University. Since the year 2000 it has been imparting M.Phil and Ph.D in tribal studies. Kalinga Institute of Social Sciences (KISS), Bhubaneswar started in 1993, housed 27,000 tribal students imparting education from Kindergarten to Masters in tribal studies. KISS has been granted Deemed to be University status in 2017 by the ministry of Human Resource Development, Government of India and declared a Deemed University under De-Novo category. It has become the first tribal Deemed to be University in India. Though other institutions in India enrolling students from all categories of students to impart education in anthropology and tribal studies, exclusive

courses on tribal studies, KISS enrolls only tribal students. KISS has been providing completely free education to tribal students, thereby dragging more and more tribal students for tribal studies at different levels. The students of KISS have excelled in academics, vocational activities, tribal language training, multilingual education and earned global recognition in sports. In a major achievement, KISS has darted into the list of top 223 NGOs of the world (KISS,2018).

In the historical phases of development of tribal studies in India, during constructive period it was observed that social anthropology received its real place after its inclusion in the curriculum of sociology of Bombay University in 1919 and department of anthropology was started at Calcutta University in 1921. These centers vigorously engaged themselves in academic and research activities. Ranchi University, Jharkhand was established as exclusive department of Regional Tribal Language in 1980 offering courses on tribal languages at under graduate, post graduate and doctoral level. Many other Universities of Odisha, Jharkhand and West Bengal have also been offering courses on tribal languages at under graduate, post graduate and doctoral level. Mention may be made here that in the early stage of twenty first century, particularly since the year 2000 onwards some government institutions in India such as Arunachal Institute of Tribal Studies; Rajiv Gandhi University, Itanagar; Indira Gandhi National Tribal University, Amarkantak, Madhya Pradesh; Guru Ghasidas Viswavidyalay, Bilaspur, Chhattisgarh;

Sidho-Kanho-Birsha University, Purulia, West Bengal; Central University of Jharkhand; and North Orissa University, Baripada, Odisha; started imparting joint courses on anthropology and tribal studies and exclusive courses on tribal studies at post graduate to doctoral level. This kind of academic development in tribal studies have not only promoted research and teaching in the field of tribal studies, but also signifies that tribal studies has emerged as an independent academic discipline, although, tribal studies is still being considered part and parcel of anthropology.

The history of tribal studies in India and Odisha over the recent years, it has been observed that tribal studies exhibits shifting perspectives from ethnographic studies to issue-based development studies including impact evaluation of development programs, from qualitative aspects to quantitative aspects, from administrative purposes to political intents, from national level macro perspectives to regional micro perspectives, and from anthropological to interdisciplinary studies.

Relevance of tribal studies

Since the dawn of human civilization, the tribal people have been designated as the 'original people', 'indigenous people', 'first people' etc. to testify their contribution to the human civilization around the world. Though they have been distinguished from the non-tribal or caste societies in terms of economic backwardness, isolated habitats, larger dependency on nature, they are inseparable from our society. In view of their significant cultural contribution to Indian society, they continue to maintain socio-cultural

continuity in all respect with the rest part of Indian society. With 8.06 per cent population of the total Indian population occupying 15 per cent area of the geographical area of the country they claim an essential structural part of Indian society. In Odisha they make 22.85 per cent of total population of the state (Census, 2011).

In Odisha, they not only show a significant demographic profile, but also count in terms of cultural contribution. With the largest number of scheduled tribe communities in Odisha and having representation of the major linguistic communities like Dravidian, Austro-Asiatic and Indo-Aryan, they have been found at varied levels of acculturation, integration and assimilation with the caste societies in the state. Looking at their cultural richness, participation in freedom movement, relative isolation, greater dependence on nature and economic backwardness, both the central and state governments have expressed grave concern about their socio-economic development. Several strategic plans and policies have been implemented in order to mainstream them without destroying their indigenous culture. However, to further strategize such efforts there is every need to understand the dynamics of tribal societies in the national and state contexts in which the tribal studies draws relevance.

Despite rich cultural heritages of tribal communities, poverty, hunger, malnutrition, impoverished health condition, economic and social deprivation, genetic disorders used to plague large section of tribal communities of India and Odisha. The rise of left front

extremism in different areas further posed a serious threat to peace and harmony in India including its states. The tribal people of India/ Odisha in general are now passing through a process of rapid transformation. They have been adversely impacted by the rapid process of globalization, industrialization, urbanization, and the like. The recent rapid technological advancement and unrivalled economic and political strength of world capitalism have created conditions for the invasion and extraction of natural resources from tribal regions of India/Odisha. The penetration of market economy and the ongoing process of industrialization resulting in massive deforestation and resource depletion have completely destabilized the economy of these underprivileged and marginalized people. These have irretrievably mutilated the indigenous knowledge and distinguishing socio-cultural cognitive framework of the tribal communities. Such situations have expanded the realm of tribal studies and so also its scope in interdisciplinary perspective.

Prospective role of Universities

No culture is static. Change is inevitable, and in the process of change, several tribal communities of India/Odisha have shifted away from their traditional cultural mores and patterns due to impact of culture contact and development initiatives. The role of cultural values and attitudes as obstacles to or facilitator of progress has been largely ignored by government and aid agencies. The concept that culture as 'human resource' in development is not realized in the planning process and the positive ingredients of culture are hardly

integrated and harnessed in the processes of development. Thus, the call of the day is to make efforts for the preservation, documentation and popularisation of diverse cultural treasures of the people like age-old indigenous knowledge systems, languages, values, narratives, ethno-science and technology, ethno medicine, ethno music, dance, handicrafts, ethno-farming etc. as insignia of cultural identities of tribal communities of India/Odisha. The Universities are the harbinger of knowledge in diverse domains and has the moral responsibility to promote the essence of cultural pluralism as inputs of development. Furthermore, university can play a role in developing curriculum, methodology to integrate the positive elements of local knowledge, culture and indigenous technologies with the targeted development action programs of the central and state governments within the frame work of sustainable development goals and economic advancement keeping in harmony with natural resources of the local area.

Emerging scope of Tribal Studies

Tribal studies have no more remained the only domain of anthropology, although anthropologists were the pioneers to promote ethnographic studies among tribal communities in the colonial periods. Since the problems of tribes are varied in nature, no single academic discipline may be able to comprehend and address the issues properly. What is required is to prepare a platform for dialogue and discourse among scholars having expertise and experience of working on problems of tribal people and devise methods to alleviate their problems and sufferings.

Tribal studies may play instrumental in integrating the perspectives of natural, biological, health and social sciences in addressing the issues of promotion and preservation of tribal culture and their knowledge systems towards addressing issues of poverty, unemployment, hunger, malnutrition, morbidity and mortality, social and economic empowerment, social justice, peace and harmony etc. Teaching, research and action programs are necessary, as research has a limited audience and consumption. It is essential that both tribals and non-tribals have larger participation in action learning cycles than limiting only to research activities.

There are centres, institutes where tribal studies are being carried on only in a limited perspective. It is essential that tribal studies must integrate diverse domains of knowledge to address contextual issues and concerns. For example, the knowledge of agricultural science is highly essential when we plan for restoration of land-based livelihoods of tribal people. Mere description of economies in a social science perspective is too inadequate to solve the problem. We are now witnessing revolution in biotechnology and human genomics, and personalised medicine is in the offing. This is going to benefit the tribal people in the days to come as we may be able to predict the genomic vulnerability of tribal people to several infections and diseases including genetic disorders like sickle cell anaemia, thalassemia etc. With the application of agri-biotechnology methods, the tribal people can preserve their endemic crops, store the harvests for a longer duration and improve cropping

pattern. The genome of rare medicinal plants can be preserved and propagated with the involvement of tribal people. Hence the curricular or applied content and context of tribal studies should be broad and integrative in character. Tribal communities are exposed to various external forces be it modernisation or globalisation or Hinduization or acculturation. These forces have different repercussions which are not conducive to the preservation of tribal culture and identity. For example, English language is by and large linked to the job market. A state language also plays same role to reasonable extent and acts as a lingua franca for a larger population. Moreover, the formal system of education promotes knowledge systems which is alien to tribal world view. At some level of thinking, speaking the language of a major population adds to the status of the speaker who does not belong to the major group. So, it will be difficult to preserve tribal language if it is not used.

Academic programs in tribal studies tend to address and integrate different aspects of tribal society; culture and development form an inter-disciplinary perspective. Thus, tribal studies assume independence to address the above issues in a holistic perspective. If tribal issues are clubbed with issues of other communities then the thrust areas will go on shifting and the focus will be diluted. That is why in spite of all the sincere efforts no much headway has been achieved in the holistic development of tribes in all these years.

Envisaged objectives of tribal studies

In consideration to the dimensions and perspectives of tribal studies as an independent but integrated domain of

study, the overarching objective comprises teaching, research, training and capacity building among students, researchers and others at all level. Apart from the objectives the tribal studies as a curriculum elsewhere is covering the following may be considered for necessary incorporation in order to make the subject holistic and integral in nature.

- To develop tribal studies as an independent academic discipline.
- To produce highly skilled manpower in tribal studies and place them in different sectors in regional and national level.
- To conduct seminars, workshops, conferences on various aspects of tribal society, culture and development.
- To make collaboration with other universities, research institutions inside the country for the achievement of academic excellence in the field of tribal studies.
- To take up research projects on tribal life, society and culture, and bring out publications.
- To organize memorial lecture on history and contemporary situation of tribal people.
- To promote tribal art, language literature and social work through documentation and dissemination of life and work of important tribal personalities who have excelled in different domains.
- To establish tribal chairs in tribal studies departments.
- To establish tribal history museum and archives.

- To disseminate database on tribal people in public domain.
- To document tangible and intangible cultural heritage including traditional knowledge systems of tribal populations.
- To undertake action research and facilitate preparation of strategic action plans for short term and long term developments in the areas of sustainable livelihoods, eco-tourism, ethnic tourism and such other economic development perspectives in other sectors.
- Creation of tribal genome data banks for the promotion of research in the field of tribal health, disease and infection in collaboration with International /National/State institute or Universities.
- Conduct studies on social and environmental impact analysis.
- Conduct studies on ethno-archaeology of tribal communities.
- Consultation work on tribal affairs.

Educational objectives in relation to Tribal Studies

Though education is very much linked to job market, still it has a greater social role to play in cognitive domain. The impact is invisible like that of the contributions of philosophy, literature, etc., but it has enduring impact on developing the finer qualities of human beings for a cohesive social order. A degree/diploma in tribal studies along with another course will help in understanding and appreciating the needs of the tribal people in a better perspective and help to solve their problems in a scientific way. Additionally,

in recent years new areas of studies are emerging as these could not be properly dealt within the broader frame of the discipline in which it was a part. Cultural Studies, folklore studies were studied in anthropology but now they have been established as separate disciplines of studies. Studies on tribal health, alternative medicine and genomics are given prime importance in national planning, especially to restore the basic quality of life of underprivileged communities.

Nevertheless, there is a demand in NGOs for personnel with degrees in tribal studies. Tribal studies with interdisciplinary focus have a potential demand base elsewhere which needs to be explored. Short term course on tribal studies on regular mode or distance learning would help police and army personnel, tour operators, Civil Society Organization functionaries, etc. working in tribal areas to understand the tribal world in right perspective. Course of studies on the status and empowerment of tribal women, tribal language and literature, ethnography, change and development in tribal society should be given importance.

Conclusion

The discussion as above sets the agenda to make tribal studies a full-fledged academic discipline in Indian Universities. Tribal studies would go a long way in future by imparting degree and diploma courses relating to their unique cultures, language, social change and economic development, health and nutritional hazards and their remedies, indigenous knowledge system, forest-dependency, movements and aspirations, status of women, their rights and customary law. If

academic programs in tribal studies would be impart properly to cross section of people working in tribal areas or working on tribal issues then the outcome may be much better compared as it is today. Ministry of Tribal Affairs, Government of India in its report of the 'High Level Committee on Socio-economic, Health and Educational Status of Tribal Communities of India (2014)' recommended that 'Tribal Chair' be

established by the UGC in Universities in every state comprising fifth schedule areas. Further the ministry has established 'Centre of Excellence in Tribal Studies' at five national level institutes of India in 2017 and have been providing Grant-in-Aid to these institutes for conducting higher level research among tribal people (MoTA,2018). Hence, it will be a timely intervention to offer academic programs in tribal studies at higher level.

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