ISSN 0019-4387

Volume 54 Number 3 November 2019

Journal of the Indian Anthropological Society

An international journal devoted to all aspects of the science of man

JOURNAL OF THE INDIAN ANTHROPOLOGICAL SOCIETY • NOVEMBER 2019 • VOLUME 54 • NO. 3 • PAGES 117-250

JOURNAL OF THE INDIAN ANTHROPOLOGICAL SOCIETY

General Information

The Journal of the Indian Anthropological Society, a refereed publication. It is an International Journal and accepts theoretical and conceptual articles as well as empirical and review papers in different areas of anthropology and social sciences, human biology, palaeo-anthropology and medical anthropology. The journal occasionally publishes special and contemporary issues which explore single topic. It also publishes research notes, reports and scholarly comments and book reviews.

Publication data : Published in three issues every year : March, July and November. Its contents are indexed or abstracted in *NISCAIR,* New Delhi, *Indian Documentation Service,* Gurgaon, Haryana, *and Sociological Abstract,* San Diego, USA. Royal Anthropological Institute, U.K. also index the articles contained in the Journal in their electronic bibliography ANTHROPOLOGICAL INDEX ON LINE on the internet at 'http://Lucy.ukc.ac.uk/A10.html', or on the RAI website 'http:/rai.anthropology.org.uk/'.

Editorial matters : Correspondence concerning manuscripts, book reviews and editorial matters should be sent to the Editor, Journal of the Indian Anthropological Society, 'Sukhavati Bhawan', Flat-2A, P-17D, Ashutosh Chaudhury Avenue, Kolkata- 700 019, India. **e-mail : anthsoc09@gmail.com**

Subscription and Business matters : Correspondence relating to subscription for individual members, institutional subscribers, advertisement and other business matters should be addressed to the Managing Editor, Journal of the Indian Anthropological Society, 'Sukhavati Bhawan', Flat-2A, P-17D, Ashutosh Chaudhury Avenue, Kolkata- 700 019, India. Remittance should be payable to JOURNAL OF THE INDIAN ANTHROPOLOGICAL SOCIETY.

Annual Subscription Rates :

Countries	**Institutional Subscribers**	**Individual Subscribers**
INDIA	₹ 2500.00	₹ 1500.00
FOREIGN COUNTRIES :	US $ 150.00 or equivalent	US $ 100.00 or equivalent

Registered under the Press and Registration of Books Act, 1867

Registration No. R. N. 16482/67

J. Indian Anthrop. Soc. 54:117-124(2019)

EDITORIAL

[Vinay Kumar Srivastava, Director, Anthropological Survey of India, was invited by the Indian Anthropological Society to deliver the N.K. Bose Memorial Lecture of 2018 in Guwahati. As a sequel to that, he has offered some suggestions in the light of his personal experience of giving memorial lectures, which have been reproduced below in the EDITORIAL column of this Volume. The views expressed are all reflections of author's personal thinking and realization.

Editor, JIAS]

Remembering Scholars and Academic Ancestors, Paying Them Tribute

VINAY KUMAR SRIVASTAVA
Anthropological Survey of India

I am constrained to write this article because of a not-so-easily-forgettable experience I had on 1 November 2018, while attending a seminar that Cotton University (which earlier was the famous 1901-established Cotton College) had organized on 'Contemporary Anthropology and North-East India.' The Anthropological Survey of India, which I am heading these days, had given some financial assistance to this seminar, which Cotton University's 1947-founded Department of Anthropology had organized in collaboration with the Kolkata-based Indian Anthropological Society(henceforth, 'the Society'). I had travelled to Guwahati to attend this seminar not only as a representative of one of its funding organizations, but also to deliver the prestigious N. K. Bose Memorial Lecture that the Society organizes every year.

The honour conferred upon me to deliver the Memorial Lecture excited me. In fact, when Barun Mukhopadhayay, General Secretary of the Society, extended me this invitation in September 2018, I considered myself privileged and started working on the Lecture immediately. With much effort, rowing against the demands of a busy and demanding schedule, I prepared the manuscript of the Lecture well in time. Since it was long, I pruned it to size so that it could be read within an hour. I thought, as has been my experience in the past, a Memorial Lecture (or Oration, as it is sometimes called) is generally of a total duration of an hour and a half, which also includes, besides the lecture, the opening remarks and introductions respectively of the person in whose memory the lecture is organised and the speaker of that day, and the final comments by the Chairperson of the lecture. If funding allows, the lecture is printed in advance and its copies are distributed among the audience. It

happened when I delivered the S.L Doshi Memorial Lecture (at Udaipur) for the second time on 9 May 2017.

The tailored manuscript I prepared for the Guwahati Lecture was 'bulleted' – meaning that it was reduced to a set of points. It was done with two objectives in mind: first, in case the reading of the lecture manuscript was not possible for a variety of reasons, or the Chairperson of the event did not want it to be read, rather delivered extemporaneously, I could do that referring to those points which provide an executive summary of the lecture; and second, such an exercise is also profitable for self-clarification. One understands one's thoughts well with the aid of these points. On an earlier occasion (2009), the Chairman (an economist) of the N.K. Singhi Memorial Lecture, which I was to deliver at the Department of Sociology, University of Rajasthan (Jaipur), dissuaded me from reading the manuscript, which was later published in *Social Change*, for he said that he had heard me earlier and thought that I would do a better job if I delivered the Lecture in a manner I conducted a post-graduate class. Doubly enthused with his comments – since he had attended my oration earlier and had made a high opinion of my ability –I presented the lecture from my memory of what I had written, and I was pleased with my performance. However, in the S.L. Doshi Memorial Lecture I delivered for the first time I had summarised the manuscript in points which I looked into while speaking. But till today, I have not used a power point presentation of my lecture.

The Jolt

The first blow I received at Guwahati was when I looked at the programme that the organisers had prepared. After the inauguration was scheduled the first session that comprised a Keynote Address (by Sarthak Sengupta), the N.K. Bose Memorial Lecture that I was to give, and the M.N. Saloi Memorial Lecture, for which they had invited B.K. Medhi, a retired professor of anthropology from Gauhati University. The entire session was of one and a half hours, and three lectures in it! How could it be done? I asked my seat mate about Saloi in whose honour the second Memorial Lecture was planned for the day. He was the founder of the anthropology department at Cotton College, I was told, and since the seminar was being held there, the Anthropology Department decided to hold one more Memorial Lecture, in addition to the three that the Society organises each year – the other two are in honour of S.S. Sarkar and D.K. Sen. For the N.K. Bose Lecture, the Society invites a social anthropologist, for the other two, a physical anthropologist and an archaeologist are respectively nominated. Fair enough, for this represents the major branches of anthropology.

While conversing with my neighbour, who told me about Saloi, I said an important thing to be noted about memorial lectures is that they should be duly held with the same periodicity as was decided in the beginning – for instance, if it is to be held annually, it should be done so. It should not be a one-time event, or held erratically. For instance, the Delhi University's

Anthropology Department in 1997 had, with much publicity and fanfare, the first P.C. Biswas Memorial Lecture, named after the founder of the Department. It was the fiftieth year of the Department's existence. For this Lecture, J.C. Sharma (of Punjab University, Chandigarh) was invited. His lecture on physical growth and development was printed in advance and circulated among the audience. This was the first and the last (hopefully not) Lecture in Biswas's memory. In 2018, the same Department had the first J.D. Mehra Memorial Lecture, which was given by one of his doctoral students, Subhadra Mitra Channa. I sincerely hope it would not be the last Lecture in Mehra's honour.

After the tea-break, which followed the inaugural session, the audience assembled in the big hall, having a capacity of more than three hundred people, at 11. 50 a.m., twenty minutes after the scheduled time of commencing with the first session of Memorial Lectures. By the time the lectures could begin, it was almost the noon. This session surprisingly did not have a chairperson, who would monitor the proceedings. The compère of the inaugural session introduced Sarthak Sengupta, the Keynote Speaker; he read out a short paper, which he described as a 'footnote' to the speeches that were to follow. While he was presenting his views, one of the organisers came to tell me that since the session had to be closed at 1.00 p.m. for lunch, and the following technical session was to begin an hour later, I was expected to finish my Lecture within 20 to 25 minutes. Medhi, who was fervently jotting down his ideas on a note pad, told the organizer, sitting next to me, that his presentation would last for ten minutes, indirectly conveying to me that from his allotted time, I could safely snatch quarter of an hour. Smilingly, I thanked him, but wondered how could one finish a memorial lecture within ten minutes? Is it a memorial lecture or an obituary? Even obituaries are longer!

Honouring Scholars: *Festschriftin*

The academic institutions have traditionally honoured their scholars primarily in two ways: one, by publishing *festschrift* volumes in their honour, which are generally edited by their students and colleagues; and second, by instituting an annual memorial lecture, to be given by an equally distinguished person. Whilst *festschrift* is usually attempted when a scholar is alive, memorial lectures are posthumous events.

In some cases, the preparation for the release of the *festschrift* volume may begin in advance, well before the scholar retires from his position in the university. In a separate ceremony, or on the day of retirement, the collection of the essays and articles written in his honour may be presented to him. The occasion may not necessarily be the day of retirement. It could be the sixtieth birthday of the scholar, or later, but generally, it is in the multiple of five (like, sixty-five, seventy, seventy-five, and so on). However, the *festschrift* volumes may be time-free as well, being released as and when ready, or in a series, one after the other. For instance, A.M. Shah, B.S. Baviskar, and E.A. Ramaswamy edited five volumes in honour of M.N. Srinivas under the title 'Social Structure

and Change Series', which Sage published. Ishwar Modi edited a set of four volumes in honour of Yogendra Singh, which Rawat Publications brought out. Two volumes have so far been released in honour of André Béteille, one in 1999 when he retired from the University of Delhi, the other, ten years later. The first volume that Jonathan Parry and Ramachandra Guha edited was on inequalities and institutions, the areas to which Béteille made a notable contribution. Malavika Karlekar and Rudragshu Mukherjee edited the second volume, on remembered childhood.

A *festschrift* may be on a particular academic interest of the scholar. Knowing that A.M. Shah always combined the historical perspective with the sociological, B.S. Baviskar and Tulsi Patel did a volume in his honour that had articles on the past and the present of Indian society. We have an example of a volume titled *Culture and Morality* that Adrian Mayer edited in honour of Christoph von Fürer-Haimendorf, commemorating his book *Morals and Merit*. The contributors to Mayer's book were expected to have read von Fürer-Haimendorf's work, especially the one which was the focus of discussion. And I also have the stance of a teacher of mine, J.D. Mehra, who was averse to the idea of a volume in his honour. I pursued such a venture to surprise him with this gift on his retirement in December 1988. I did not consult him about this and wrote to a number of his friends and students for their contribution to the Mehra festschrift, as I titled it. However, he came to know this from one of his friends that I was contemplating such a volume in his honour. One day, he met me in the corridor of the department. He stopped me and said: "You may have heard these lines of Alexander pope: Thus let me live, unseen, unknown/ Thus unlamented let me die; Steal from the world, and not a stone/Tell where I lie." He paused for a second and continued: "Don't embarrass me with a commemoration." I instantly dropped the idea. Incidentally, Mehra did a master's in English literature before reading anthropology.

Over time, the practice of producing *festschriftin* in anthropology seems to have declined. In so far as I remember, from my department, in its seventy-one years of existence, only one festschrift could be done, which Manoj Kumar Singh and I did in D.K. Bhattacharya's honour in 2004, the year he retired from the university. In all these years that I was in the department, from January 1985 to December 2017, nineteen persons retired; the only person to have retired before I joined the department as a teacher was P.C Biswas, the founder. I was told that in 1968, when he retired a seminar was organized in his honour and a booklet was released which carried his curriculum vitae, pictures, and messages from different anthropologists of the world conveying their best wishes for his post-retirement life. There was, however, no *festschrift* in his honour. For none of the nineteen persons who retired, I being the twentieth, there was even a talk of organizing a festschrift, barring my abortive attempt for Mehra; and these individuals were impressive in their respective research outputs and commanded great respect in the tribe of anthropology. In this list, however,

I am not including those who died during service or left the department to join some other institutions.

One of the reasons why a *festschrift* was not thought of for these men and women, and there would be several examples of this type from other departments, could be that in the contemporary postmodern world, hero-worship is on wane. This future-oriented world, in the words of Robert Redfield, is not impressed with the achievements of anyone. It dismantles icons, denigrates scholars, rejects entrepreneurs, punctures personality cult. In this estimate, no one comes close to the ideal for whom a commemorative volume could be attempted. Moreover, the retirees think they have a lot of scholarship left in them, which would flourish in the days of respite after their active working life has concluded, and whatever they have done till then was not much, or was unimpressive, to say the least, and so they themselves reject the offer of anyone who would like to do a *festschrift* on them. I also think that the relations between students and teachers have also changed; they have become more instrumental than what they were earlier.

Secular Performances

The retirement of a college or university teacher is marked by a 'send-off party', usually called the 'farewell', which is more or less an occasion of formality, with students and colleagues speaking in his honour. Fund for this celebration comes from individual contributions. The task of raising fund is usually assigned to a small committee, constituted by the staff council of the department, or it may be a group of volunteers, usually the younger colleagues and students of the retiree. On this occasion, the members of the audience deliver words of encomium for the retiring teacher, besides showering gifts on him. As I have seen, some of these occasions are highly elaborate, with speakers from other departments and universities, as was the case in September 1999 when André Béteille retired, and the entire event was filmed. Or, they may be humble and short, marked in some cases with the acrimonies between the colleagues being displayed, with some deciding to boycott the function. I also came to know the cases of a few who declined the farewell function in their honour, for they apprehended insults being lavished upon them on this occasion by their younger colleagues and acquaintances!

In 2003, when I.S. Marwah, a teacher of social anthropology in Delhi, retired, we planned a seminar in his honour a day prior to his farewell party that the department had organized. However, this tradition could not continue for a decade, but when I became the head of the Delhi anthropology department, I restarted this practice, and a day's seminar was held respectively in honour of V.R. Rao and S.L. Malik, my colleagues at Delhi, in the months of January and February of 2016. For Subhadra Mitra Channa, who retired in October 2016, the seminar was for half a day, and the rest of the day was spent in the department-organized farewell function. Although I always wanted the day's seminar to be an essential part of the farewell that the department organised

for the retiring colleague, it could not be held because some of them did not want the function to take place, as I had noted earlier. A variety of reasons were offered for this, and one of them was Mehra's, who refused a farewell for he wanted to continue teaching till the end of the academic year. His retirement fell in December 1988, and he wanted to continue with his teaching till April 1989, so there was no question of his accepting the farewell before that. He vacated his department office in June 1989. His was the first case of retirement without a send-off function in the Delhi department. Moreover, to quip, Mehra wanted to retire 'unknown, unsung, uncelebrated, unlamented!'

The farewell function also yields a 'mini *festschrift*', although it is more an enumeration of the personal qualities of the retiree than a serious look into his scholarly contribution. A *festschrift* is an academic venture, not just a catalogue of accolades. The latter, if they are in sizeable number, may be published as a separate volume, as Manoj Kumar Singh and I did for D.K. Bhattacharya; all these appreciation-notes and eulogies that Bhattacharya's students and colleagues had written and sent to us were published without editing so that the original flavour of sentiments remained. If the farewell ceremony, which has been happening for years in academic institutions, except when the person is unwilling to have it organised for marking his retirement, is symbolic of the rite of separation, the *festschrift*, by offering an evaluation of the academic works, builds up the continuity between the person and the future researchers. In that sense, the *festschrift* performs the rite of incorporation. The scholar has retired from the university, so his exit is marked by rituals of separation, but the researches he did in his life, the written material he produced, have a lot to teach the others. A *festschrift* thus establishes the continuity of the scholar with the academic fraternity after his retirement.

A farewell party is generally held on the day of a person's retirement, but a *festschrift* is independent of his 'retired status' – it may be launched as and when the academic community bearing proximity with him and his ideas thinks that the contribution he had made deserves to be examined or is worthy of commendation. It may be noted that a *festschrift* is not a ritual to be obligatorily performed as is the farewell, though both of them are modes of honouring a scholar.

To this list has also been added the 'life time achievement awards', following the example of cine awards, which are conferred upon those who have made notable contribution to a field of research and teaching. What is unmissable in these awards is the play of personal factors, when they are bestowed not as a mark of recognition of scholarship but to please people, keep them in good humour. Sometimes declamation contests are instituted in the name of a scholar, living or dead. For instance, the University of Delhi colleges teaching undergraduate courses in sociology hold M.N. Srinivas Declamation Contest. Once, in 1981, when the event took place in Hindu

College, Srinivas was the chief guest. He was not there to judge, but to give the concluding speech and distribute prizes.

Memorial Lectures, Memorial Orations

Another way of registering one's indebtedness to a scholar (more so, a teacher), is by instituting a Memorial Lecture or Oration in his name. By definition, a memorial lecture is a special lecture, distinct from the everyday, routine, quotidian speeches and lectures, happening usually once a year, or with a decided periodicity, once in two years or so, which besides keeping alive the name and memory of the departed soul also gives a prized opportunity to the body of his academic descendants and the others, to reflect upon his ideas, take lead from them, critique them, and move ahead. Funded by an academic institution or a trust – it may be set up by the family members of the deceased –a memorial lecture is neither adulatory, nor a piece of reminiscence, nor exclusively biographical, for the fact that a lecture has been founded in the name of a person is enough to say that he was distinguished and deserved commemoration, and his bio-facts are supposed to be known to all since they have been published in the past. A memorial lecture fails to perform its objective if it is replete with the details of the curriculum vitae of the honouree, or when it read like a testimonial for a job.

In other words, a memorial lecture is a serious academic exercise. Its deliverer should be given enough time for its preparation, since it would require a re-reading of the works of the scholar, mulling over his ideas, preparing the manuscript for publication; and later, revising it for publication. The memorial lecture may be distributed among the audience at the time of presentation, but it is subjected to editorial changes before it is sent to the press.

It is an ill practice to have too many memorial lectures because it often becomes difficult to sustain their regularity. Moreover, in the context of anthropology in India, because of its limited number of senior professionals, finding suitable speakers for these occasions may become difficult. If a memorial lecture is held once, then lapsing into slumber, it is as good as not being held. Thus, before announcing it, the institution that takes the charge of holding it should ensure that adequate funds are available for holding it, almost forever. Memorial lectures, thus, are not time-bound. Emotional factors should not guide its institution. For that the forum of obituary is available. However, it has been seen that the families of scholars, in case affluent, are prepared to fund these lectures with the aim of keeping their ancestors alive, but here the institutions through which these are routed should judge whether the person deserves to be the subject of a memorial lecture. Families are sentimentally-engaged, but academic bodies cannot afford this luxury. Kinship progeny and academic descendants work through different algebras – affinity reigns the first, intellectual charisma, the second.

A memorial lecture is written up and read. If it is tedious or monotonous to read, it may be presented impromptu, as I have done in the past, or, may be, with the aid of a power point. Its date may be fixed, well in advance – for instance, Doshi Memorial Lecture is held every year on 9 May; or, it may be flexible, but whenever it takes place, it is a 'standalone event', meaning it is not clubbed with any other lecture or programme. It is unheard that two memorial lectures and a keynote address are cramped in a session of ninety minutes! It may be included within a larger seminar, but its sanctity is maintained by setting aside for it a specific time schedule. The sole emotionality in a memorial lecture is the respect for the honouree, which is assailed when the dais he is to occupy unquestionably is shared with others. Inclusion at the expense of individuality is unacceptable in a memorial lecture. You may have scores of papers for presentation in a technical session, allotting barely five minutes to a speaker, but you should not do that for a memorial lecture.

The convention is that a memorial lecture is not discussed; questions are not asked, and it closes with the chairperson's remarks. Of course, once published, it is open to critical enquiry.

A memorial lecture has its own culture, solemnity, decorum, and etiquette. My objective in this article is to understand it.

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Reflection on Tribal Research and Tribal Research Institutes

P.K. MISRA

Former Professor, Department of Anthropology, North Eastern Hill University, Shillong

Premise: Research on tribes has reached dead end

If the above premise is conceded we have the following three questions before us.

Where we are now and what is wrong with that?

How we have reached to this destination?

Where do we go from here now?

Before we take up these questions let me highlight some of the paradoxes that are staring at us. There are many departments of Anthropology and Tribal Research Institutes with exclusive focus on tribes all over the country. There are no dearth of funds for tribal research and welfare. Tribes are most researched people in the country. Almost every aspect of their lives in different parts of the country has been studied. New proposals have not been able to generate challenging ideas or take into account the vastly changed conditions. An age old justification to take up the studies on tribes has been to record their way of life as they are changing fast. Tribal Research Institutes (here after TRI) apart from other things have done numerous evaluative studies-hardly referred to even by the stakeholders. Constitutional safeguards have been provided for tribes and several progressive legislations too have been passed. It is also a fact that but for several welfare measures some of the tribes would have suffered extinction. Apart from periodic reports of the SC&ST commissions there have been numerous other commissions and enquiry committee reports on tribes. Their problems have been in public domain for more than a century more specifically after the country became independent. There have been numerous seminar and conferences on tribal situation in India. In spite of the above and more the tribes are most poor, most deprived and most displaced people (Report of the High Level Committee on Socio-Economic, Health and Educational Status of Tribal Communities of India, Ministry of Tribal Affairs, Government of India, May,2014).

In addition, in spite of the fact that there have been scores of extremely sensitive, penetrating and in depth studies on tribes from different parts of the country, the notion prevails that they are peripheral and their way of life, their stock of knowledge and beliefs are backward and primitive. They must change, give up their world view, language, imaginations and orality, and should be brought in “mainstream”.

What is this mainstream? The question where do you fit in tribes in a highly stratified and intensive competitive world which are in direct conflict with their everlasting values is not even raised.

Where are we now?

It is the department of Anthropology which largely feed the research personnel at TRIs. There will not be much disagreement if it is stated that syllabuses of Anthropology have not been overhauled relating to tribal studies. There is no need to argue as to why they need to be changed but there is a bottle neck which has restricted the possibility of changing the syllabuses at least on tribes. In our university system research on tribal studies and teaching of courses on tribes are two independent activities. What is researched is not taught in the classrooms. Assumption is if the two were correlated, gaps in knowledge and understanding could have been identified in two way communication. One of the persisting complaints is that Anthropology Departments do not get quality students (In my view it is the most fascinating subject and has tremendous scope in understanding the human diversity in depth, yet like proverbial peacock which is not able to realize the strength of its ugly legs is more concerned with its beautiful wings which often get entangled). If there is scarcity of quality students it would eventually show it up in the quality of teachers in future if it has not happened already. Lack of quality teachers and students is directly correlated to the marketability of the subject. This problem is common in humanities and social sciences. But anthropology should not have suffered this problem owing to its holistic nature, methodology and its focus on small scale societies. Above all culture will ever remain the most popular subject matter across all disciplines, and, industry would love to hear from the anthropologists.

Tribal Research Institutes

Their problem begins with its feeder that is anthropology departments where fresh imaginative, challenging goals have not been set up. As stated earlier the courses in Anthropology have not been updated. Besides they have a critical problem of their own making that is they have to conduct researches on tribes as isolates. This notion is a hangover of colonial era. Tribes whatever it may mean are embedded in the socio-cultural, political, economic and political system. One cannot consider tribe in isolation of the larger universe of which they are part. The personnel of TRIs with some notable exception lack passion. Tribes cannot be studied or their welfare is looked after without total commitment, participation and dedication. In TRI it cannot be a job like in any government office, TRI is a mission with which one has to be sincerely involved. The prevailing attitude among the personnel there is that they are doing some peripheral job or at worst they have a paternalistic attitude towards those whose cause they have to take forward.

How we have reached to this destination?

I argue that is largely owing to the legacy of colonization. Here, I need not recount the history of British policy towards the tribes but the fact remains they were deprived of their rights on forest and land without providing them with reasonable alternatives. In the mainland they were left at the mercy of local rulers, traders, and revenue and forest officials. On the other hand the students of tribal studies have reached a blind alley. Neither they have been able to set new, relevant and challenging goals theoretical or otherwise nor have been able to gain confidence of the people they try to study. They have remained outsiders hungry for information- raw material for processing at academic centers while the people they study are systematically and consistently 'peripheralized'.

Anthropology and study on tribes grew in colonial era. While we applaud the monumental work done by ethnographers in the past we need to ask some hard questions. What were the dominant interests of the ethnographers of that time? Anthropology flourished during the hey days of colonial era. Therefore, whatever was being produced in the name of ethnography cannot be separated from the colonial interests and concerns. Routine justifications for undertaking research on tribes were promoting the cause of growing field of anthropology, to record variations particularly of the rapidly vanishing cultures. For discerning eyes these justifications were not enough, though the same are being still given, one will have to read in between lines. Elsewhere, I have made a strong plea that the anthropological literature produced during the colonial period need to be reread by native scholars with subaltern consciousness (Misra 2007:151-171).

Dominant ideas at that time were tribes were isolated from larger Indian society and they represented the earlier stages of human evolution- classical Victorian linear evolutionary thoughts prevailed and the belief was that the Europeans had "arrived". The political compulsions of the British Empire in India were expansion and consolidation of colonial administration and if there were any hurdles towards those objectives that should be summarily dealt with. Allow missionary activities which were in full flow during the entire colonial period particularly in the tribal regions of the country. Locate resources for home market for which forest were of special interest for a variety of reasons more particularly for its timber (see Guha 1983). Open up the areas and connect them with port towns facilitating movement of goods and troops. This policy opened up many of the tribal regions which not only made serious impact on the out flow of resources from their habitats but also rapidly changed the demography of those regions. The period also saw rapid expansion of plantation, market net work, military

establishment, urban development and centers for European recreation and retreat in regions inhabited by the tribes. As a result of all these there was massive movement of labor. In this emerging new scenario the tribes were a nuisance and but attracted attention as exotic. This is the time when a category of tribe emerged. Though the term tribe, remains undefined it persists. It has now a constitutional validity in shape of Scheduled Tribe (ST)

At one time one could say designating some people as tribe reduced the complexities of non-western societies of Africa, Asia, and America in the minds of colonists, administrators, missionaries and the western scholars. The term tribe has been used synonymous with the primitives or the people who could not develop and hence inferior. This kind of understanding gave right to the developed to kill tribes indiscriminately, enslave and displace them at will and to have control over the resources which the tribes had conserved for centuries. Although such Victorian and simplistic linear evolutionary scheme has been criticized, it remains in the background even in the informed anthropological discourses. The discourse on development/ "mainstreaming" exemplifies the hangover.

Reflecting on the concept of primitiveness, its attributes are non-literate, non-civilized, arrested in development, non-industrial, non-urban, lacking in economic specialization, having simple and small scale tools and so on. But at some stage all human beings must have been at the same level. How is it that some broke out of those attributes and others could not? Was there any role of those who broke through and did not allow others to get out? This question is at once relevant for there are excellent monographs on the social formation of the primitives, their kinship structure, myths, beliefs, language, etc., but very little on the impact of expansionists on the people who have been called so.

Pre-historical and historical studies show that the so called primitive food gatherers have been in contact with food producers. This is not only the story of the remote past, there is a continuity to it which got exceedingly intensified during the colonial rule and incidentally this is the period when such designated people were anthropologically studied intensively to bring out their social, cultural and physical attributes which surprisingly qualified them to be called as primitives! It was ironic that such categorization emerged and is continued to be rationalized. With some notable exception, there has been indeed a sort of conspiracy of silence to discuss as to how such people were brought into the framework of State or putting the other way around what has been the contribution of such people to the development of the civilized state. Such questions have been continuously overlooked

and scholars have persisted with 'parachute' notion of civilization/ development that is as if the civilizations/development were dropped down from the high sky and there was no role of multitudes.

Tribe as a concept

The term tribe is widely used despite the fact that there is hardly any clarity about it. There is enormous amount of literature on specific tribes and regions inhabited by them but much less on the concept of tribe. It is well known that the people who have been called as tribe show great variety in all respects yet they are called as tribes. Quite early on the debate on this subject it was pointed out that the people called as tribe are not simple, or permanent units and there is no one universally valid principle binding them together. Why then call them as tribe? It has been generally assumed that they are the people without history and culture and even if they have, it is so exotic as to call them "head hunters', "half naked" or indulging in premarital sex, in brief irrational and primitive. Of course irrationality of the modern man in this debate is never discussed.

For decades, Redfield's concept of ideal folk society remained a sort of reference paper for discourse on tribes among anthropologists. The concept of ideal primitive society is neither empirically correct nor acceptable from evolutionary perspective. Food production has evolved out of foraging. There must have been long periods of transition. Besides in pre-industrial phase there has been substantial dependence of food producers on foragers. Redfield while trying to define the folk end of the continuum says besides being small isolated etc., their behavior is traditional, spontaneous, uncritical and personal, there is no habit of experiment and reflection for intellectual ends, and in brief they have "folk mentality" (1947:293-308). With whatever now we know of modern societies it would be difficult to say that tribes alone have "folk mentality".

Besides, Redfield's notion of "folk mentality" has not taken into account the older civilization where the folk societies not only lived in proximity with peasants and urban dwellers, interacted with them and contributed to the growth of civilization. The folks have persisted, have shown resilience and flexibility. They conserved environment, respected autonomy believed in social storage, egalitarianism, and had lasting values.

Present knowledge about tribes

Present knowledge about the tribes in India began to appear in the notes prepared by stray European travelers, missionaries, colonial administrators and later official surveys and compendiums. What was the ideological background of these people?. Their understanding of

the tribes was based on European experience in America, islands of Atlantic and other areas of the new world. In those places they ran through the vast regions and devastated the indigenous populations, introduced commercial agriculture and also slavery in a big way.

When the British entered India and were trying to consolidate their position in the country they were carrying with them that European attitude towards the native populations. In the post enlightenment era, the west took it for granted that it had "arrived' and the early man was savage and had been 'solitary, poor, nasty, brutish and short' (Hobbs 1973:64-65)). For Hegel savage was lazy. So called progressive thinkers were captivated by the evolutionary stages Morgan had created based on hopelessly scanty data.

However, those linear evolutionary thoughts became the basis for discourse for generations of scholars all over the western world and those who studied under their system and guidance. Nilsson wrote that the savage had few material demands but endeavors to satisfy for the moment. He thinks and acts for the day (1868: IXIV-IXV).

Echo of similar attitude continues. For instance, Breeks did an authoritative book "An Account of the Primitive Tribes of Nilagirs" (1873) while he was commissioner of the Nilgiris. The book was published by his wife after his death. In preface she writes that they had made best efforts to recheck the data which was however not easy owing to incoherent statements of the half-savage people utterly unused to describing their own habits and practices (1873:iii). Writing about the Irula Breeks himself observed that they were a jungle race and had no tradition of their own; they could recall only a few names of their females after a long interview. Much later a renowned scholar WHR Rivers came to the Nilgiris and wrote a book on the Toda which is highly acclaimed where he devised genealogical method, an important tool of research. Rivers, a trained scholar observed that the Toda had no aesthetic sense which is absurd (See Misra 2007:152). The later researches have shown how artful and poetic they are. They are extraordinary composers. They have songs for every occasion. They love music and dance.

These observations indicate the attitude of the European scholars who had taken for granted that the indigenous people were simple minded, their capacities of comprehension were low, they have short range notion of time and had no capacity of abstract thinking. Enormous amount of data on the symbols, art, music, stories, etc., of the indigenous people were of little consequence as far as their attitude towards them was concerned.

Such attitudes continue. Woodburn, a well recognized scholar has categorized foragers as 'immediate return people as against delayed

return modern people' meaning one in which the return for labor is immediate and in the other when it is delayed (Woodburn 1980: 95-117). This categorization has been hugely and affirmatively cited in literature overlooking the detailed studies on foragers which suggest that they are highly skilled and selective users of their environment, constantly making choices about which animals to hunt and which vegetables to gather. These choices have an effect on the future availability of the resources. In brief they try to control future food supplies (see Sarkar 2015). His observations on foragers for sustained and long period should remove many myths about them. The categorization of Woodburn raises several questions such as, how much immediate is immediate or delayed is delayed. Categorizing people as immediate return people paints them as if they are ready to devour as soon as they smell food. Such categorization overlooks their ability to think, develop cognitive mapping of the environment they live in and beyond, ability to innovate, efforts they make to circumvent the hurdles and develop concepts based on their experiences. Also overlooked are their sense of adventure, curiosity to explore the region beyond their own habitation, their sense of romance and entertainment. Also overlooked are their sense of beauty and attempt to decorate their self with whatever little they may possess. The idea of immediate return economic system does not pay attention to the profound investment of time and energy in resources they have collected or hunted but share them with family and others and also conserve them for future use. Sharing of resources, raw or cooked food between the members of a band is what I call a system of 'social storage', which is much more secure than physical storage and has profound social value. Similarly, conservation of resources not only ensures their supply on sustainable basis but is morally sound and bestows humanistic meaning to resources of nature. The categorization also overlooks deep philosophical thinking behind their simple ways of life. The idea of immediate return people is a perspective but who can say that modern economic system has any long term vision. It is just a question as to how the time is measured. The way modern societies are consuming the natural resources of this planet strongly suggests that they do not have any vision for tomorrow, in fact they have become 'instant return people'. May I be bold enough to say that the so called civilized have much to learn from those who have categorized as 'immediate return people'.

Tribes are not isolated

In order to illustrate this I will make use of the data from the Nilgiris. The Nilgiris is one of the most studied regions of the country. Apart from a number of excellent ethnographic studies the region has been

very well covered by the scientists of other disciplines and historians. Once Nilgiris was discovered by the agents of the East India Company, it became a hunting ground for European missionaries. Later, colonial power developed it as a health resort, introduced plantation and commercial agriculture for export, displaced indigenous populations for development activities and laid down rail and road connectivity. All such activities peripheralized the indigenous populations and also encouraged slavery directly and indirectly. It also became a safe haven for scholars to descend on the Nilgiris and conduct a variety of studies which of course enriched the knowledge of the region and also about the people and society, but in the process they earned their name, fame and prosperity and helped the British administration to exploit the local resources and strengthen their control. This statement may sound petty to the British sympathizers but I want to draw attention to two factors. All that what was being done in the Nilgiris was not done to promote the interests of the local population or of the region. The demand for such activities were located somewhere else.

It is also relevant to state that in the huge writings and even in the scholarly works of the Nilgiris the interests of the subaltern are not visible. It was a kind of blind spot and prejudice towards the people identified as primitives. There were hardly any studies attempting to assess social, economic, political, psychological and ecological impact of the colonial rule in the Nilgiris. It will be appropriate to suggest that while discussing the social structure of the Nilgiris the presence of the European population should also be added. They not only became the ruler but also set standards of living, discrimination and introduced new ethos in intercommunity relations. In spite of tremendous odds and merciless exploitation, including killings, tribes maintained their identities – apart from other things it could also be read as resistance as well as wearing an armor of self defense .

Indian society and its ethos

Both the concept of tribe and designating some people as tribe are indefensible. However not only the category of tribe emerged during colonial period but also during the colonial rule they lost their traditional rights on land, commons and forest. The dominant view that emerged then was that they were a separate category of people. On the contrary a serious study of the situation of tribes suggests that they have been a part Indian society and its ethos. Tribes have been embedded in the larger framework and have grown together in and out of each other. Such a consideration is supported by evidence and studies of

Sinha among Bhumij (1981) and my study on Inter tribal relations (Misra 1977).

Power dynamics

The above discussion showing that the tribes are embedded in the larger society would appear romantic if power dynamics is not brought into discussion that is those who rule and those who are ruled.

The fundamentals of the relationship between the two, are appropriation of the natural resources required by the ruling class and drawing on the labor and skills of the ruled. Though the ruling class may heavily draw on the intellectual resources of the subjugated population it never acknowledges them and such knowledge does not remain in that raw form, it is perpetually systematized and refined, and may feed back to the subjugated classes in the new form who may adopt them in their own medium, dialect and framework in general. In other words, the interaction between the great traditions of a civilization and little traditions of the general masses never takes place in power vacuum. Need for labor and resources is ever enlarging and therefore the net for appropriation for tangible and intangible resources also keeps on ever widening. Those who are brought into the net have their natural growth arrested which tend to be rationalized in social, political, economic and ideological terms—-'concept of tribe is constructed and tribe is made'.

Tribes are not exclusive

Tribes cannot be adequately understood without referring to the environment in which they exist. India has a long history and there have been many centers of excellence, specialization and seats of power at all-India, regional and local levels. These centers and their hinterlands were tied together in complex networks. Irrespective of the fact that whether the networks were strong and clearly identified or weak and vague, but they made it possible for the flow of ideas and values back and forth. Numerous deities that are found in the Hindu religion have either links or origin among the tribes and some have been adopted in the Hindu mythology. In Hindu mythology the abodes of Gods and Goddesses are often located on the top of the hills, forests or in rivers and oceans, and are considered sacred. Some animals have been depicted as incarnation of gods and also as their *Vahanas* (vehicles). Such animals are considered sacred and addressed as persons.

Complex political history.

The long political history of India entailed drawing and redrawing of political boundaries, which of course necessitated movements of troops through forests, deserts, hills and rivers. Such movements must have

led to interactions with local population for direction, guidance, support, food, water and other supplies, including establishing political domination in frontier zones. Such political domination, irrespective of the period it lasted or its strength, did not greatly disturb the structure of the traditional Indian society and its inter-relationships .

Autonomy within

The traditional Hindu society is highly structured in terms of *Varna* and *jati*.Each *jati* or caste defines a context, a structure of relevance, a rule of permissible combinations, a frame of reference, a meta-communication of what is and can be done. In traditional India, mode of production was mostly localized and catered to a region. A village community in India, the backbone of India's social structure was composed of a number of *jati*s. Each *jati* had its own hereditary occupation, culture and dialect. Each *jati* was enjoying autonomy of a sort and regulated its internal affairs, yet there was a great deal of social and economic interdependence between *jati*s while maintaining their hierarchical relationship which has been variously described as *jajmani* system. The goods and services were distributed through *jajmani* relationships, weekly markets, periodical fairs, pilgrimage and forest dwelling populations whom Fox (1969) had described like any professional *jati* in the Hindu caste structure. What was not available through these established sources was supplied by peripatetics who were always looking for gaps in the supply of goods and services. The Hindu text and actual practices emphasize mutually dependent relations among occupational specialists. In this regard one important question has remained unanswered and that is in spite of economic, social, cultural, relations for centuries appreciable convergence did not take place. Also what has not been adequately discussed is power equation between dominant and dominated.

Coercive cooperation

In the vast literature on caste system what has not been adequately discussed is the aspect of coercion, politics of domination, and how the ideology of hierarchy strongly supported by the concept of purity and pollution, had a strangle hold on the system which was extremely unjust, cruel and suffocating for the *jati*s lower in the order. A critical view of the system shows that the most suppressed *jati*s had no choice but to endure the suppression, and in the process internalized their inferior position, and suffered. Hockings has documented systematic massacre and suppression of the Kurumbas in the Nilgiris (Hockings 2013: 232-34). The suppressed classes had no escape route other than to migrate to a new location and for the foragers, they often withdrew themselves deep inside the forest for at least a limited period of time to refresh themselves and get over the stress caused by the power

dynamics. In pre-industrial India forest were a huge store-house of resources- firewood, animals, medicines, etc.

It is a truism in the world over that the most labor intensive, risky, dirty work is done by those who are considered/recognized weak and low in hierarchy. For the work they do is neither rewarded adequately nor allowed to get out of it.

Era of huge contradiction

Situation of tribes in post colonial era not only shows huge contradictions but also has created a serious dilemma for field based students of tribes. In colonial period tribes lost all traditional rights and were pulled into state system and were mercilessly exploited. Much of that did not change in the post colonial era except that the directionless development agenda has been thrown in a big way and also numerous legislations allegedly safeguarding the interest of the tribesmen, some of which are certainly progressive and forward looking, have been passed but their implementation has left much to be desired. But the irony of the ground reality is that every step of development peripheralizes them. There is a complex relationship between development and peripheralization.

Development does begin to benefit some individuals and some begin to "rise" on the ladder but the ladder itself begins to rise, the community is left behind and such individuals lose contact with the community- perfect example of alienation. The development environment is so shrill and compulsive that there are no options. The members of the community get confused and lose control over their lives and resources.

Distress and dilemma

The tribes, who are displaced in the name of conservation or development project, cause them much distress. It is ironic that those who observed restraint and lead a simple life and preserved the environment for thousands of years are themselves endangered categories. Their world view representing the values of conviviality, reciprocity, sharing, caring, egalitarianism and sensitivity to nature lie shattered. Their distress is compounded owing to burgeoning growth of population, urbanization, industrialization, deforestation in a massive scale and misplaced priorities. More specifically, it is the fragmented view of life. Whatever appreciation there is of exotic way of life is romantic and ornamental.

Where we go from here now?

The dilemma for the field oriented students of tribal studies is owing to the wearing of false masks of duality. For some historical reasons it was emphasized that the anthropologist in order to get insider's

perspective should wear a mask of participant observer and then he was advised to throw this mask in order to communicate with fellow academician. This has been called as 'twice born' phenomenon for the field anthropologists. I need not labor here to demonstrate how false it is. The issue is that the genuine practitioners of this mode of data collection have begun to realize its false nature and the studied people themselves have not only started seeing through the game particularly when they are perpetually pushed against the wall but also they are now posing difficult questions to the field anthropologists. It is open now that in some of the regions the tribes are fighting a grim battle and all the odds are against them. In such a situation a field anthropologist cannot be focusing interest on their family, clan, marriage systems etc.only, ignoring the burning issue of their survival. The duality has to go and a genuine grass root level 'participatory anthropology' has to grow.

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Address for correspondence: P.K.Misra**,** Former Professor of Anthropology, North Eastern Hill University, (Shillong) E 583, J.P. Nagar, 17th Main, Mysore 57003. Email Id: pramodkumarmisra@gmail.com.
Mobile: 9449821935.

J. Indian Anthrop. Soc. 54:137-169(2019)

The Burden of Non-Communicable Disease Risk Factors and Haematological Indicators of Infections among the Rural, Semiurban and Urban inhabitants of the Yanadi Tribal Population of South India

B MOHAN REDDY[1,2], SAA LATHEEF[2], R PRANAVCHAND[1]

[1] *Molecular Anthropology Lab, Indian Statistical Institute, Hyderabad, India*
[2] *Department of Genetics, Osmania University, Hyderabad, India*

Abstract: We evaluated the impact of transition from rural to semiurban to urban habitats on the epidemiological profile in general and particularly on the prevalence of non-communicable disease (NCD) risk factors among the Yanadi tribe of Andhra Pradesh, India. We compared the epidemiological profile of the Yanadi tribe with that of the other Indian tribes. A total of 683 adults aged ≥ 35 years were recruited from urban (n=154), semiurban (n=149) and rural (n=380) areas of the Nellore District in Andhra Pradesh. We took anthropometric measurements and blood pressure readings and analysed blood samples for red blood, total white blood, platelet and differential white blood cell counts, glucose and lipid profiles. These data were used to determine the prevalence of abnormal haematological indices, under nutrition, anaemia, hypertension, type 2 diabetes, dyslipidemia and metabolic syndrome. Overall, the Yanadi tribe showed a relatively high prevalence of undernutrition (21.66%), anaemia (33.52%), high RBC (30.16%) white blood (15.22%), platelet (17.56%), neutrophil(4.53%),lymphocyte (19.76%) and eosinophil (26.79%) and low monocyte (43.48%) counts, obesity (WHR, 72.47% and waist circumference, 25.03%), hypertension (27.81%), type 2 diabetes (9.95%), metabolic syndrome (34.55%), low HDL cholesterol (52.56%), high total cholesterol (21.22%), high triglycerides (38.65%) and dyslipidemia (70.42%). Significantly more prevalence of higher eosinophil count, anemia, LDL cholesterol level, isolated hypercholesterolemia, total cholesterol level, total cholesterol/HDL cholesterol ratio, LDL cholesterol/HDL cholesterol ratio ($p<0.01$) was observed in the urban adults than those in the rural habitats, albeit no clear-cut trend of increase in the prevalence of NCD risk factors was seen from rural-semiurban-urban habitats. Besides the potential for infectious diseases, the overall burden of under nutrition, anemia and risk factors for NCDs were considerably high among Yanadi, which appears to be generally the case with other Indian tribes as well.

Key words: Undernutrition, anaemia, haematological indices, non-communicable disease risk factors, Yanadi tribe, South India

INTRODUCTION

With 104.3 million individuals, tribes constitute 8.6% of the total Indian population (Ministry of Tribal affairs, Government of India, 2013), the second largest indigenous population of the world (Faizi and Nair, 2016). Because of their habitation in isolated environments and having been involved in traditional subsistence occupations, the tribal populations of India were

presumed to show relatively low burden of especially non-communicable diseases (Kshatriya, 2014; Das and Bose, 2015; Kandpal *et al.,*2016). However, recent studies suggest that, besides high prevalence of under nutrition, vitamin and micronutrient deficiencies, infectious as well as non-communicable diseases (NCDs) are common among them (Islary, 2014; Kshatriya, 2014; Misra *et al.,* 2014; Das and Bose, 2015; Kandpal *et al.,* 2016). Given enormous variation in their geography, culture, diet, behavioural traits, occupations and subsistence economy, Indian tribes are expected to show tribe specific risk factors and the identification of tribe specific NCD risk factors and other public health issues may help in devising the suitable preventive measures aimed at decreasing the disease burden among these people. The NCD risk factors such as obesity, hypertension, type 2 diabetes (T2DM), metabolic syndrome, and dyslipidemia and their prevalence were observed to differ among different ethnic groups. With exception to a few (Reddy *et al.,* 1999; Bhardwaj *et al.*, 2013; Geddam *et al.,* 2015; Kandpal *et al.,* 2016) the focus of most Indian studies on tribes was restricted to studying one or two parameters (Sarkar *et al.,* 2005 and 2006; Kapoor *et al.,* 2012; Laxmaiah *et al.,* 2015; Kshatriya and Acharya, 2016; Sen *et al.,* 2017). In view of the foregoing, as part of a larger project on *"Molecular Genetic Dimensions of Tribal Health in Andhra Pradesh (AP)"*, we undertook a study among the Yanadi tribal population living in the rural, semiurban and urban habitats of Nellore district of Andhra Pradesh (AP) during 2012-2013 in order to gauge the possible effects of change of lifestyles because of the transition from rural to urban habitations. Given the expected genetic homogeneity of these people owing to their practice of endogamy in all the three habitats, the underlying hypothesis is that the increased prevalence of the NCD risk factors/diseases would be proportional to the increased degree of urbanization from rural to urban areas. We presented here the results of our analyses of data on anthropometric and blood pressure measurements, haematological parameters, fasting plasma glucose and lipid profiles of a cross sectional sample of adults from Yanadi tribe and compared these results with the published data on other Indian tribes to get an overview of the health status of Indian tribes in general.

The Yanadi tribe is the second largest of the 33 Telugu speaking scheduled tribes of undivided AP which is distributed in 13 districts of the state, albeit numerically most predominant in Nellore, Chittoor and Prakasam districts. As per the Census (2011), the total population of Yanadi in the state of AP was 5,78,205 (District wise census of Scheduled tribes, undivided Andhra Pradesh, 2011). The place of origin of Yanadi was reported to be at Sriharikota in Nellore district (Thurston, 1909), the same place where the Indian Space Research Organization is presently located. The occupation of Yanadi varies from place to place, ranging from hunting, gathering, fishing, safeguarding the crops of villagers by rat trapping, agriculture labour, small agriculture farming, rickshaw pulling, scavenging, sweeping and holding government jobs (ITDA, Nellore website; Rao, 2004). This tribe has been under rapid transition from

rural-semiurban-urban habitats in the past several decades and a large number of them have migrated to semiurban and urban areas of the state (Latha and Raju, 2017) due to industrialization, urbanization and initiation of the development programs for the welfare of the tribes.

MATERIALS AND METHODS

During the year 2012, a cross sectional sample of 683 Yanadi adults aged ≥ 35 years [380 from the rural (169 male + 211female), 149 from the semiurban (54 male + 95 female) and 154 from the urban (62 male + 92 female)] living in the Nellore district in Andhra Pradesh, India were enrolled for this study. The categorization of urban, semiurban and rural habitats was based on the administrative criteria. While the participants for rural category were drawn from 13 villages spread over a few revenue divisions of the district, urban samples were drawn from Valikuntapuram, Deendayal Nagar, Nakkala Gunta and Bapuji Colony located within the Nellor Municipal Corporation area and those of semiurban category were from the Gudur, Rapur, Eguvasangam, Diguvasangam, Dakkili and Devudiyallapalle towns of the district. Given that our primary focus was to assess the prevalence of NCD risk factors in this tribal population, we collected data mostly from individuals aged above 40 years albeit a small proportion represented individuals aged between 35-40 years. The participation in the study was voluntary in nature. In each of the habitats, the participants were called at a convenient place including schools and community halls for data collection. Data includes personal information, anthropometric measurements and overnight fasting blood samples (intravenous) for the estimation of glucose and lipid and lipoprotein profiles and the hematological parameters.

A semi structured questionnaire was prepared, which included detailed information on age at the time of interview, sex and other socio-economic parameters of the participants. Height was measured in centimeter using the anthropometer and weight in kilogram with electronic weighing scale, and with minimal clothing on barefoot. The waist (between the costal margins and iliac crest) and hip circumferences (maximum extension of the buttocks) were measured using non-elastic tape. Body mass index (BMI) and waist-hip ratio (WHR) were derived from the anthropometric measurements. Blood pressure was measured using mercury sphygmomanometer in sitting position on the right arm after 5 minutes of rest. Systolic blood pressure was recorded when the Korotkoff sound became audible and diastolic blood pressure, when the Korotkoff sound ceased. Blood samples were collected in different vacutainers for different biochemical (lipid profile and fasting plasma glucose) and hematological parameters. Plasma total cholesterol, triglycerides and HDL cholesterol were estimated on Beckman coulter (AU5800) and hematological parameters on Beckman coulter (LH780). For analysis of both types of variables, Beckman reagents were used. The LDL cholesterol was calculated using the formula developed by Freidewald *et al.,* (1972). The criteria for determining

non-communicable disease risk factors (obesity, hypertension, metabolic syndrome, lipid abnormalities, dyslipidemia), anemia and the classification of hematological parameters are provided in Table 1. Basophils could not be detected in any of the participants and hence data not presented.

Statistical analysis

Normality of the distribution of continuous variables was ascertained using Shapiro-Wilks test. As most of the continuous variables had non-normal distribution, the homogeneity of the means and variances were evaluated by Mann-Whitney U test and Kruskal-Wallis H test. The homogeneity of frequencies of categorical variables was ascertained using Chi-square test. The multiple logistic regression analysis with forward selection of independent variables were done for each of the NCD risk factors as dependent variables. All the statistical analyses were performed using IBM SPSS version 20.

RESULTS

Quantitative variables

Mean and SD values of different quantitative nutritional, hematological and lipid variables, according to sex, habitat and for the total Yanadi are provided in Table 2. The mean values of height, weight, waist circumference, waist-hip ratio(WHR), hemoglobin level and red blood cell (RBC) count were significantly higher in males when compared to the females ($p<0.01$). On the other hand, mean body mass index (BMI), hip circumference, fasting plasma glucose (FPG), platelet count ($p<0.01$), total cholesterol (total-C) and LDL cholesterol (LDL-C)($p<0.05$) were significantly higher in females than the males.

No systematic trend in the mean values of quantitative variables, either increasing or decreasing, was apparent from the rural – semiurban - urban areas. However, a significantly higher mean values of weight, hip circumference, WHR, eosinophil count, monocyte count, total-C, LDL-C, total-C/HDL-C and LDL-C/HDL-C were observed in urban areas when compared to rural areas ($p<0.01$). On the other hand, while mean hemoglobin levels, neutrophil count, FPG and HDL cholesterol (HDL-C) were significantly higher in rural adults than the urbanites, semi urban adults show higher mean WHR and lymphocyte count when compared to rural and urban people ($p<0.01$).The two-way ANOVA suggests gender-habitat interaction to be significant only in height and waist circumference ($p=0.001$), contributing 33.9% and 8.1% variation in these variables, albeit gender difference was significant in weight, BMI, WC, Hb, RBC count, platelet count, height and WHR ($p=0.0001$), which may justify pooling samples of males and females in case of most of these variables. On the other hand, significant heterogeneity among the three habitats was observed in weight, BMI, WC, Hb, neutrophils, lymphocytes, monocytes, total-C, LDL-C, total-C/HDL-C, LDL-C/HDL-C, height, WHR($p=0.0001$) and platelet count ($p=0.02$).

Table 1: *Criteria used for determining the NCD risk factors, anaemia and classification of haematological parameters*

Variable	Criteria
Underweight or chronic energy deficiency	BMI <18.5 Kg/m^2 (Bharati *et al.,* 2008)
General obesity	BMI >25 Kg/m^2 (Zachariah *et al.,* 2013)
Central Obesity	WHR(Males:>0.9; Females:>0.8) (Zachariah *et al.,*2013)
High waist circumference(WC)	WC (Males>90; Females>80 cm) (Zachariah *et al.,*2013)
Hypertension	SBP/DBP:>140/90mmHg (Zachariah *et al.,* 2013)
High LDL cholesterol(LDL-C)	LDL-C >130mg/dl(Zachariah *et al.,* 2013)
Metabolic syndrome	Presence of three of the following components (fasting glucose ≥100mg/dl, HDL-C<40mg/dl in male and <50mg/dl in female; triglycerides >150mg/dl; SBP >135mmHg or DBP >85mmHg; waist circumference >80cm in females and >90 cm in males(Zachariah *et al.,* 2013)
Low HDL cholesterol(HDL-C)	HDL-C<40mg/dl in male and <50mg/dl in female (Zachariah *et al.,* 2013)
Isolated hypercholesterolemia	Total cholesterol ≥200 mg/dl and triglycerides <150 mg/dl (Joshi *et al.,* 2014).
Isolated hypertriglyceridemia	Triglycerides ≥150 mg/dl and total cholesterol <200 mg/dl (Joshi *et al.,* 2014)
Isolated HDL cholesterol	HDL cholesterol (male<40 ; female <50 mg/dl in the absence of hypertriglyceridemia or hypercholesterolemia (Joshi *et al.,* 2014)
High total cholesterol(total-C)	Total-C ≥ 200mg/dl (Zachariah *et al.,*2013)
High triglycerides	Triglycerides ≥ 150mg/dl (Zachariah *et al.,*2013)
Dyslipidemia	Presence of one or more lipid abnormalities (Joshi *et al.,* 2014)
High Total cholesterol/HDL cholesterol	Total-C/HDL-C >4.5(Joshi *et al.,*, 2014)
High LDL cholesterol/HDL cholesterol	LDL-C/HDL-C(Male: >3.5; Female: >3) (Chen *et al.,*, 2016)
Type 2 diabetes	Fasting glucose >126mg/dl (Zachariah *et al.,*, 2013)
Prediabetes	Fasting glucose:110-126mg/dl (Zachariah *et al.,*, 2013)
Anaemia	Male <13g/dl; Female <12g/dl(WHO scientific group, 1968)
Red blood cells	Male: 4.5-5.5; Females:3.5-5.2 million/cumm (Sairam *et al.,*, 2014)
White blood cells	Male:4200-9800; Female: 4000-10400 cells cumm (Sairam *et al.,*, 2014)
Platelets	Male:1.3-3.8; Female:1.3-4.2 lakhs/cumm(Sairam *et al.,*, 2014)
Neutrophils	Male: 42-74%; Female: 44-75% (Sairam *et al.,*, 2014)
Eosinophils	Male and Female: 1-8% (Sairam *et al.,*, 2014)
Lymphocytes	Male and Female: 18-45% (Sairam *et al.,*, 2014)
Monocytes	Male: 2-10%; Female: 2-9% (Sairam *et al.,*, 2014)

Table 2: *Comparative means and SDs of anthropometric, physiological, hematological and biochemical parameters of the adult males and females in rural, semiurban and urban habitats of the Yanadi tribe*

Variable	Rural			Semi urban			Urban			Total		
	Males (n=169)	Females (n=211)	Total (n=380)	Males (n=54)	Females (n=95)	Total (n=149)	Males (n=62)	Females (n=92)	Total (n=154)	Male (n=285)	Female (n=398)	Total n=683)
Age (years)	52.73± 10.19	51.96 ±9.77	52.30 ±9.96	51.81 ±11.06	50.29 ±11.70	50.85 ±11.46	51.71 ± 9.09	52.26 ±10.08	52.04 ±9.66	52.33 ±10.11	51.63 ±10.33	51.92 ±10.24
Height (cm)	161.43 ±6.28	149.81 ±6.24	154.98 ± 8.51**	161.74 ± 5.82	150.96 ±5.31	154.87 ± 7.55**	155.47 ± 8.17	154.18 ±9.24	154.70 ± 8.82	160.14 ±7.15**	151.09± 7.06**	154.86 ±8.38**
Weight (kg)	54.13± 10.75	49.58 ±9.89	51.60 ± 10.51**	59.92 ±13.31	51.33 ±9.95	54.42 ± 11.97**	56.27 ± 10.71	51.45 ± 11.46	53.40 ± 11.38**	55.76 ± 11.39**	50.52 ± 10.29	52.70± 11.06*
BMI (Kg/m^2)	20.75± 3.52	22.06 ±4.00	21.47 ± 3.85**	22.81 ±4.47	22.54 ±3.97	22.64 ± 4.15	21.25 ± 3.90	22.94 4.56	22.26 ±4.37*	21.26 ± 3.88**	22.37 ± 4.15	21.91± 4.07**
Waist cir (cm)	79.42 ±10.35	75.18± 10.05	77.03± 10.38**	89.18 ± 12.87	76.36± 12.30	81.19± 13.92**	81.10± 11.06	76.04± 11.11	78.07± 11.33**	81.09± 11.25**	75.66± 10.66	77.93± 11.23*
Hip cir (cm)	83.00 ±7.52	88.74± 49.46	86.23 ± 37.49**	87.86 ±7.24	87.76 ±10.51	87.19 ± 9.36**	84.39 ± 6.77	89.79 ± 10.59	87.62 ± 9.60**	84.02 ± 7.44**	88.95± 38.49**	86.89± 29.83
WHR	0.88 ± 0.25	0.83 ±0.21	0.91 ± 0.08**	1.01 ± 0.10	0.86 ± 0.06	0.92 ± 0.10**	0.95 ± 0.06	0.87 ± 0.08	0.89 ± 0.08**	0.96 ± 0.07	0.86 ± 0.07**	0.90± 0.08**
SBP (mmHg)	130.83 ±18.00	129.95 ±20.24	130.34± 19.26	134.07 ±17.43	127.29 ±17.44	129.73 ±17.68*	128.71 ±15.93	129.78 ±18.55	129.35 ±17.49	131.23 ±18.09	129.27 ±19.20	130.08 ±18.76
DBP (mmHg)	84.62± 10.57	83.93 ±10.33	84.24 ±10.43	84.07± 9.01	81.77± 9.06	82.60 ± 9.08	82.26 ± 7.77	83.41 ±10.35	82.94 ± 9.38	84.15 ±9.99	83.29 ± 10.06	83.65 ±10.03
Haemoglobin (g/dl)	14.03 ±2.10	11.48± 1.85	12.61 ± 2.33**	14.42 ± 1.83	11.51± 1.80	12.56 ± 2.28**	13.36 ± 2.16	10.86 ±2.19	11.87 ± 2.49**	14.00 ± 2.11**	11.39 ± 1.96*	12.48± 2.39**
RBC count (million/ cu mm)	5.46 ± 0.73	4.79 ± 0.60	5.09 ± 0.74**	5.65 ± 0.68	4.85 ± 0.59	5.14 ± 0.73**	5.50 ± 0.73	4.96 ± 0.66	5.18 ± 0.74**	5.52 ± 0.79	4.84 ± 0.67*	5.13 ± 0.79**

Table 2: (continued)

WBC count (cells/ cumm)	8152.66 ± 2185.12	8066.35 ± 2116.07	8104.74 ± 2144.63	8535.19 ± 2818.48	7903.13 ± 2061.44	8130.67 ± 2372.29	8124.19 ± 1943.01	8113.12 ± 2466.24	8117.58 ± 2263.36	8232.04 ± 2268.85	8037.86 ± 2184.89	8118.60 ± 220.61
Neutrophils count (%)	55.54 ± 9.75	54.64 ± 10.23	55.04± 10.02	50.78± 9.73	51.21± 10.24	51.05 ± 10.03	51.90 ± 10.34	53.92 ± 9.32	53.11 ± 9.76	53.93 ± 10.03**	53.64 ± ±10.11*	53.76 10.07
Lymphocytes count (%)	38.27 ± 7.60	38.51± 7.43	38.40 ± 7.50	41.59 ± 8.44	42.21 ± 8.70	41.99 ± 8.58	37.27 ± 9.71	39.09 ± 8.23	38.36 ± 9.00	38.68± 8.37*	39.53 ± 8.12	39.17± 8.23
Eosinophils count (%)	6.44 ± 7.41	6.79 ± 7.80	6.63 ± 7.62	7.48 ± 6.41	6.56 ± 6.81	6.89 ± 6.66	9.71 ± 8.85	7.02 ± 6.30	8.10 ± 7.52	7.25 ± 7.61**	6.78 ± 7.23	6.98 ± 7.39
Monocytes (%)	0.01 ± 0.10	0.00 ± 0.06	0.01 ± 0.08	0.07 ± 0.42	0.02 ± 0.14	0.04 ± 0.281	0.18 ± 0.58	0.13 ± 0.39	0.15 ± 0.48	0.05 ± 0.34**	0.03± 0.21**	0.04 ± 0.22
Platelets count. (Lakhs/ cumm)	316591. 72 ± 97381. 94	352345. 97± 90884. 85	336444. 74± 95378. 12 **	324574. 07± 91812. 07	366541. 67± 103202. 09	351433. 33 ± 100983. 24**	301854. 84 ± 74046. 03	324574. 07± 99432. 017	316561. 04 ± 90625. 60*	315676. 05 ± 91846. 20	349795. 48 ± 96736. .44	335608. 19 ± 96149. 55**
Fasting Plasma glucose (mg/dl)	98.13 ± 32.23	107.98± 43.93	103.60 ±39.42 **	95.76 ± 21.68	104.26 ±53.23	101.20 ± 44.62	99.98 ± 65.36	97.77 ±31.00	98.66 ± 47.71**	98.00± 40.33**	104.73 ±43.95 **	101.93 ±42.58 **
Triglycerides(mg/dl)	152.85 ± 100.57	148.27± 73.57	150.30 ± 86.53	169.56 ± 105.24	156.95± 104.39	161.49 ± 104.52	180.16± 130.69	151.46± 66.42	163.09± 98.32	162.47± 108.99	151.09± 80.52	155.83 ±93.53
Total-C (mg/dl)	158.12 ±34.20	167.54 ±34.73	163.35± 34.77**	158.44 ±28.11	159.90 ± 35.90	159.37 ±33.22	193.68 ±42.03	196.32 ±41.66	195.25 ± 41.69	166.26 ± ±38.23**	172.27± 39.00**	169.77 ±38.77*
LDL-C (mg/dl)	84.10 ± 28.14	91.77± 29.29	88.36 ± 29.00**	87.09 ± 26.84	84.05 ± 25.77	85.15 ± 26.11	114.74± 34.01 ±	122.23 35.78	119.20 ± 35.15	91.52 ± 31.87**	96.87± 33.22**	94.64± 32.75*

Table 2: (continued)

HDL-C	48.77 ±	46.56 ±	47.54 ±	44.85 ±	46.26 ±	45.75±	44.65±	44.29 ±	44.43 ±	47.19 ±	45.96 ±	46.47
± (mg/dl)	33.30	11.27	23.73	11.28	12.20	11.86	10.27	11.08	10.72	26.66	11.47	19.29
VLDL-C	31.33 ±	29.63 ±	30.38 ±	36.59±	31.27 ±	33.18 ±	36.32±	33.24 ±	34.49 ±	33.51 ±	30.84 ±	31.95
(mg/dl)	20.31	14.83	17.48**	22.49	21.62	22.01	25.95	29.41	28.02	22.14	20.65	±21.31
Total-	3.60 ±	3.79 ±	3.70 ±	3.71±	3.55 ±	3.61 ±	4.53±	4.67±	4.62 ±	3.83 ±	3.91±	3.88 ±
C/HDL-C	1.10	1.17	1.14	1.00	1.06	1.04	1.36	1.30	1.32	1.24**	1.28**	1.26
LDL-	1.92 ±	2.10 ±	2.02 ±	2.03 ±	1.90 ±	1.95 ±	2.73±	2.90 ±	2.83 ±	2.09 ±	2.25 ±	2.18 ±
C/HDL-C	0.79	0.86	0.83	0.77	0.70	0.73	0.97	1.02	1.00	0.93**	0.99**	0.97

BMI: Body mass index; Cir: Circumference; WHR: Waist-hip ratio; SBP: Systolic blood pressure; DBP: Diastolic blood pressure; RBC:Red blood cell count; WBC: White blood cell count; C: Cholesterol;HDL-C: High density lipoprotein cholesterol; LDL-C: Low density lipoprotein cholesterol; VLDL-C: Very low density lipoprotein cholesterol

*p<0.05; **p<0.01: While the asterisks under 'total' column of each habitat category and also under the pooled Yanadi indicate significance of gender difference, the asterisks under the male and female columns of the pooled Yanadi indicate significance of habitat heterogeneity in males and females.

Prevalence of under nutrition and hematological factors

The results on the prevalence of nutritional and hematological factors for adult male, female and pooled sample of Yanadi tribe are presented according to habitat categories in Table 3. Overall, the adults of Yanadi tribe bear considerable burden of under nutrition/CED (21.7%), anemia (33.5%), relatively more prevalence of high eosinophil count (26.8%) and WBC (15.2%) making them vulnerable to infections. While statistically significant and relatively greater burden of CED (25.6 vs. 18.3%), high WBC (21.8 vs.10.6%) and eosinophil counts (30.5 vs. 24.3%) were observed in males ($p<0.01$) when compared to females (Table 3), the females bear relatively greater burden of anemia (44.2 vs. 18.6%; $p<0.01$) and platelet counts (20.6 vs. 13.33%; $p<0.05$). On the other hand, while significantly greater prevalence of anemia, high eosinophil and low monocyte counts ($p<0.01$) were observed among the urban participants (Table 3) when compared to the rural ones, prevalence of high platelet counts ($p<0.01$) was found more among the rural participants than the urban ones. The semiurban participants showed more prevalence of high lymphocyte counts compared to both urban and rural participants ($p<0.01$). However, no systematic trend of either increase or decrease in the prevalence of these hematological indicators of health and/or under nutrition was observed from the rural-semiurban-urban habitats.

Prevalence of non-communicable disease risk factors

The results on the prevalence of non-communicable disease risk factors are furnished in Table 4. While the males show significantly higher prevalence of only central obesity ($p<0.01$), females showed significantly higher prevalence of abnormal waist circumference, high LDL-C ($p<0.05$), metabolic syndrome, low HDL-C, isolated HDL-C, high total-C, and dyslipidemia ($p<0.01$) than males. Furthermore, there was no systematic trend of either increasing or decreasing frequency of the NCD risk factors from rural-semiurban-urban habitats. However, significantly higher prevalence of high LDL-C, isolated hypercholesterolemia, high total-C, high total-C/HDL-C ratio and high LDL-C/HDL-C ratio was observed in urban habitats compared to the rural ones. On the other hand, the prevalence of isolated hypertriglyceridemia and isolated low HDL-C ($p<0.01$) was significantly higher among rural participants when compared to the urban participants. Significantly lower prevalence of central obesity and higher LDL-C was observed among the semiurban participants than both the rural and urban participants ($p<0.01$). Overall, the adults of Yanadi tribe bear very high burden of NCD risk factors, particularly in central obesity (73%), dyslipidemia (70%) and metabolic syndrome (35%), hypertension (28%) and in their component variables (Table 4). Even the prevalence of T2DM (including pre-diabetes) is relatively high at ~ 18%. Further, it is apparent that urban participants show relatively higher prevalence in most of these NCD risk factors albeit no systematic trend of increase was observed from rural to semiurban to urban habitats. The relative prevalence/

Table 3: *Prevalence of nutritional and hematological parameters in the adult males and females of the Yanadi tribe living in the rural, semiurban and urban habitats*

Variable	Rural			Semi urban			Urban			Total		
	Males	Females	Total	Males	Females	Total	Males	Females	Total	Male	Female	Total
	(n=169)	(n=211)	(n=380)	(n=54)	(n=95)	(n=149)	(n=62)	(n=92)	(n=154)	(n=285)	(n=398)	n=683)
Chronic energy deficiency (BMI<18.5)	28.99	20.37	24.21*	16.66	14.73	15.43	20.77	18.40	21.43	25.61	18.84	21.66*
Anemia	17.75	41.70	31.05**	11.11	41.05	30.00**	27.41	53.26	42.85**	18.59	44.22	3.52**
RBC count												
Low	9.46	1.42	5.00**	3.70	1.05	2.01**	8.06	3.26	5.19	8.1	1.75	4.39**
Normal	37.27	87.67	65.26	35.18	83.15	65.77	38.70	83.69	65.58	37.25	85.67	65.44
High	53.25	10.90	29.73	61.11	15.78	32.21	53.22	13.04	29.22	54.70	12.56	30.16
WBC count												
Low	0.59	0.94	0.78	-	-	-	1.61	3.26	2.59	0.70	1.30	1.02**
Normal	80.47	88.15	84.73	70.37	91.66	84.56**	75.80	90.21	80.51	77.50	88.0	83.74
High	18.93	10.90	14.47	29.62	7.36	16.10	22.58	13.04	16.88	21.80	10.55	15.22
Platelet count												
Low	-	-	-	-	-	-	1.61	3.26	2.59	0.35	0.75**	0.58*
Normal	84.61	78.67	81.31	87.03	67.36	74**	90.32	90.21	90.25	86.31	78.64	81.84
High	15.38	21.32	18.68	12.96	32.63	26	8.06	6.52	7.14	13.33	20.60	17.56
Neutrophil count												
Low	11.83	13.27	12.63	-	-	-	14.51	10.86	12.33	10.17	9.54	9.80
Normal	88.16	86.25	87.10	83.33	77.89	79.86	5.48	89.13	87.66	86.66	84.92	85.65
High	0.00	0.47	0.26	16.66	22.10	19.46	-	-	-	3.16	5.52	4.53
Lymphocytes count												
Low	0.00	0.47	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00**	0.30*	0.15
Normal	84.61	84.36	82.51	64.81	68.42	67.11	82.25	81.52	82.25	80.40	79.70	80.08
High	15.38	15.16	14.91	35.18	31.57	32.88	17.74	18.47	17.74	19.60	19.84	19.76
Eosinophil count												
Low	21.30	18.95	20.00	11.11	11.57	11.40	9.67	5.43	9.67	16.80*	14.00*	15.20
Normal	52.07	56.87	54.73	59.25	65.26	63.08	48.38	69.56	48.38	52.60	61.70	57.90
High	26.62	24.17	25.26	29.62	23.15	25.50	41.93	25.0	41.93	30.50	24.30	26.79

Table 3: (continued)

Monocytes count												
Low	100.00	100.00	100.00	98.14	100	99.32	95.16	97.82	95.16	39.29*	46.48**	43.48*
Normal	0.00	0.00	0.00	1.85	0.00	0.67	4.83	2.17	4.83	60.70	53.51	56.51

*p<0.05; **p<0.01:While the asterisks under 'total' column of each habitat category and also under the pooled Yanadi indicate significance of gender difference, the asterisks under the male and female columns of the pooled Yanadi indicate significance of habitat heterogeneity in males and females .

Table 4: *Prevalence NCD risk factors among Yanadi population in the three habitats.*

Variable	Rural			Semi urban			Urban			Total		
	Males (n=169)	Females (n=211)	Total (n=380)	Males (n=54)	Females (n=95)	Total (n=149)	Males (n=62)	Females (n=92)	Total (n=154)	Male (n=285)	Female (n=398)	Total n=683)
Central obesity	73.96	84.83	80.00*	50.00	43.15	45.6	79.03	80.43	79.87	70.52**	73.86**	72.47
General obesity	12.40	22.27	17.89	25.90	25.20	25.5	12.90	31.52	24.02	15.00	24.87	20.80**
High WC	21.89	29.85	26.31	22.22	13.68	16.8	17.74	38.04	29.87**	21.05	27.88	25.03*
Hypertension	30.17	27.48	28.68	37.03	24.21	28.8	19.35	28.26	24.67	29.12	26.88	27.81
High LDL-C (>130mg/dl)	7.10	11.37	9.47	5.55	3.15	4.00	29.03	47.82	40.25*	11.57**	17.58**	15.08*
Metabolic syndrome	22.48	40.75	32.63**	37.03	31.57	33.33	38.70	72.82	59.09**	26.66	40.20	34.55**
Low HDL-C	33.13	64.92	50.78**	35.18	58.94	50.00**	14.51	16.30	15.58	34.73	65.32	52.56**
Isolated HCM	4.14	6.16	5.26	3.70	2.10	2.66	11.29	7.60	9.09	6.31**	7.53**	7.02
Isolated HTG	25.44	22.74	23.94	33.33	24.21	27.33	6.45	20.65	14.93**	23.85*	19.59**	21.37
Isolated low HDL-C	17.75	35.07	27.36**	20.37	30.52	26.84	41.93	44.56	43.50	15.78	30.65*	24.45**
High total-C	12.42	18.00	15.52	7.40	13.68	11.33	35.48	51.08	44.80	16.49**	24.62	21.22**
High triglycerides	34.91	36.49	35.78	42.59	71.57	60.66	66.12	84.78	77.27**	37.89	39.19	38.65
Dyslipidemia	57.39	78.19	68.94**	61.11	71.57	67.33	29.03	46.73	39.61*	60.00	77.88*	70.42**
High Total-C/HDL-C	19.52	21.32	20.52	3.70	5.26	4.66	41.93	57.60	51.29	25.26**	29.14**	27.52
High LDL-C/HDL-C	2.36	7.58	5.26	24.07	18.94	20.66	20.96	29.34	25.97	6.66	12.06	9.80
T2DM	8.28	12.32	10.52	5.55	10.52	8.66	12.90	7.60	9.74	9.82	10.80	9.95

Table 4: (continued)

Prediabetes	5.32	10.90	8.42*	11.11	3.15	6.04	3.22	8.69	6.49	5.96	8.54	7.46

WC: Waist circumference; C: Cholesterol; HCM: Hypercholesterolemia; HTG: Hypertriglyceridemia; T2DM: Type 2 diabetes; High density lipoprotein cholesterol; LDL-C: Low density lipoprotein cholesterol

*p<0.05; **p<0.01: While the asterisks under 'total' column of each habitat category and also under the pooled Yanadi indicate significance of gender difference, the asterisks under the male and female columns of the pooled Yanadi tribe indicate significance of habitat heterogeneity in males and females .

burden of NCD risk factors was similar in adult men and women except for much higher prevalence of high LDL-C (18 vs. 12%), metabolic syndrome (49 vs. 27%), low HDL-C (65 vs. 35%), high total-C (25 vs. 17%) and dyslipidemia (78 vs. 60%) shown by the Yanadi women.

Predictors of NCD risk factors in different habitat categories and in the pooled sample of Yanadi tribe

The results of multiple logistic regression analyses with forward stepwise selection suggesting significant predictors for dyslipidemia, metabolic syndrome, hypertension and T2DM are presented in Tables 5 and 6. We used the following independent predictor variables against each of the above four dependent NCD risk factors: 1. dyslipidemia (BMI, general obesity, type 2 diabetes, blood glucose level, and high WC), 2. metabolic syndrome (BMI, general obesity, total-C, high total-C, LDL-C and high LDL-C), 3. hypertension (BMI, general obesity, blood glucose level, type 2 diabetes, high WC, high total-C, high triglycerides, high LDL-C and, low HDL-C) and 4. T2DM (BMI, general obesity, high WC, high total-C, high triglycerides, high LDL-C and low HDL-C) in a stepwise multiple logistic regression with forward selection, adjusting for age and sex. The results suggest that in all the three habitats-rural, semiurban and urban-BMI was a common predictor of dyslipidemia ($p<0.01$), while high WC ($p<0.05$) together with BMI were predictors for semiurban dwellers. On the other hand, BMI ($p<0.01$) in urban, BMI($p<0.01$) with and LDL-C ($p<0.05$) in semiuraban and BMI with total-C ($p<0.01$) were found to be the predictors of metabolic syndrome. No predictor of hypertension was observed in urban area of the present study. Glucose and high WC ($p<0.05$) in semiurban and BMI and high total-C($p<0.01$) in rural folk, were the predictors of hypertension. For T2DM, high triglycerides ($p<0.01$), high total-C ($p<0.01$) and high WC ($p<0.01$) were the predictors for rural, semiurban and urban participants respectively. In the pooled sample of Yanadi, the following variables were found to be the predictors for different NCDs: BMI for dyslipidemia; general obesity and total-C for metabolic syndrome; BMI, glucose and high triglycerides for hypertension and low HDL-C, high triglycerides and high waist circumference for type 2 diabetes.

DISCUSSION

High death rates due to NCDs and poor indicators of health were observed in marginalized populations such as tribes (Misra *et al.*,, 2014). Some recent studies suggest high prevalence of NCD risk factors among the Indian tribes from different regions of the country (Sarkar *et al.,* 2005 and 2006; Sachdev, 2011; Bhardwaj *et al.,* 2013; Das and Bose, 2015; Geddam *et al.,* 2015; Kandpal *et al.,* 2016; Kshatriya and Acharya, 2016; Sajeev and Soman, 2017; Sen *et al.,* 2017). In order to reduce NCD burden among the tribes it is necessary to undertake future studies covering the entire ethnic and geographic heterogeneity of the country and generate comprehensive data from the overall perspective of the public health and particularly concerning the potential risk

Table 5: *Predictors of dyslipidemia, metabolic syndrome, hypertension and type 2 diabetes in the three habitats of the Yanadi tribe.*

Variable	B	S.E.	Wald	OR	95%CI	P Value	Variable adjusted	NagelkerkeR^2
				Urban				
				Dyslipidemia				
BMI	0.235	0.064	13.27	1.264	1.115-1.435	0.000	Age, gender	0.223
				Metabolic syndrome				
BMI	0.301	0.056	28.83	1.351	1.210-1.508	0.000	Age, gender	0.359
				Type 2 diabetes				
High waist circumference	1.729	0.608	8.087	5.635	1.711-18.552	0.004	Age, gender	0.130
				Semiurban				
				Dyslipidemia				
BMI	0.284	0.106	7.208	1.328	1.080-1.634	0.007	Age, gender	0.143
High waist circumference	-1.639	0.821	3.987	0.194	0.039-0.970	0.046		
				Metabolic syndrome				
BMI	0.290	0.062	21.93	1.336	1.184-1.509	0.00	Age, gender	0.337
LDL cholesterol	0.021	0.009	6.213	1.022	1.005-1.039	0.013		
				Hypertension				
Glucose	0.44	0.021	4.541	1.045	1.004-1.088	0.033		
High waist circumference	1.422	0.679	4.389	4.146	1.096-15.686	0.036	Age, gender	0.505
High LDL cholesterol	1.031	1.331	0.600	2.803	0.207-38.049	0.439		
				Type 2 diabetes				
High total cholesterol	1.36	0.700	3.787	3.907	0.990 - 15.413	0.005	Age, gender	0.070
				Rural				
				Dyslipidemia				
BMI	0.174	0.037	22.24	1.190	1.107-1.279	0.00	Age, gender	0.175
Glucose	0.007	0.005	2.521	1.007	0.998-1.016	0.112		
				Metabolic syndrome				
BMI	0.372	0.046	66.72	1.451	1.327-1.587	0.00	Age, gender	0.432
Total cholesterol	0.016	0.004	14.030	1.016	1.008-1.024	0.00		

				Hypertension				
BMI	0.116	0.033	12.468	1.123	1.053-1.198	0.00	Age, gender	0.143
High total cholesterol	0.786	0.308	6.514	2.194	1.200-4.011	0.01		
				Type 2 diabetes				
High triglycerides	1.228	0.349	12.361	3.415	1.722-6.773	0.000	Age, gender	0.099

BMI: Body mass index; **NagelkerkeR²*: indicates the amount of variation in the dependent variable explained by the independent predictors

Table 6: *Predictors of dyslipidemia, metabolic syndrome, hypertension and type 2 diabetes in the pooled sample of Yanadi tribe*

Variable	B	S.E.	Wald	OR	95%CI	P Value	Variable adjusted	NagelkerkeR^2
				Dyslipidemia				
BMI	0.116	0.024	23.51	1.123	1.072-1.177	0.000	Age, gender	0.103
				Metabolic syndrome				
General obesity	2.014	0.218	90.01	7.880	5.144-12.07	0.000	Age, gender	0.267
High total cholesterol	0.880	0.214	16.87	2.411	1.584-3.668	0.000		
				Hypertension				
BMI	0.086	0.025	11.818	1.090	1.038-1.145	0.001	Age,gender	0.146
Glucose	0.004	0.002	3.688	1.004	1.000-1.009	0.055		
High triglycerides	0.462	0.200	5.351	1.588	1.073-2.349	0.021		
				Type 2 diabetes				
Low HDL cholesterol	0.654	0.327	4.013	1.924	1.014-3.650	0.045	Age, gender	0.084
High triglycerides	0.756	0.298	6.437	2.129	1.188-3.817	0.011		
High waist circumference	0.635	0.290	4.789	1. 924	1.014-3.650	0.029		

BMI:Body mass index; Total-C: Total cholesterol; HDL-C: HDL cholesterol

**NagelkerkeR^2* indicates the amount of variation in the dependent variable explained by the independent predictors

factors for NCDs among the tribal populations. Our review of hitherto published results suggests that most studies on Indian tribes dealt with only a select few aspects of public health, particularly while dealing with NCD risk factors (Appendix- I) and the variable criteria used in categorizing the risk factors in those studies make the data somewhat ill-suited for strict comparative purposes. Nevertheless, still, the high prevalence of anaemia, under nutrition and a number of other NCD risk factors among tribes from different parts of India unmistakably suggest that these people, against the traditional notion of being isolated and/or marginalized, are in race with the caste populations in embracing the urban lifestyles in equal measure and consequently bear the high burden of risk factors for complex genetic disorders/NCDs, particularly T2DM and cardiovascular diseases, which are likely to manifest in alarming proportions in the near future unless some urgent preventive measures are initiated. The high prevalence of metabolic syndrome (6%-60.77%), dyslipidemia (0.5%-86.23%), hypertension (1.69%-68.1%) and different obesity measures (general obesity: 1.6%-56.6%; central obesity: 0.8%-74.37%), typifying Asian Indian phenotype, are the known precursors of the complex genetic disorders and therefore put the Yanadi populations at high risk for those diseases. That the prevalence rates of most of these risk factors among the adults of Yanadi tribe of the present study are closer to the upper limit of the range for Indian tribes only reinforce the view on the emerging disease burden of the Indian tribes. The additional dimension to the tribal health in India could be the double burden of both under nutrition and obesity as has been observed among Yanadi and a number of other Indian tribes (Laxmaiah *et al.,* 2015; Kshatriya and Acharya, 2016; Sajeev and Soman, 2017; Jemima *et al.,* 2018).

The lack of clear-cut trend of increase in the prevalence of NCD risk factors among the Yanadi from rural–semiurban - urban habitats can be explained by the dramatic improvement in the communication facilities including the electronic media, which has diffused into even the remotest of the rural areas of the country in the recent decades, giving access to and/or information about the westernized/urbanized lifestyles. This must have resulted in somewhat reducing the stark differences expected in the lifestyle patterns between rural and urban residents of this tribe. Further, these transitional groups of the Yanadi tribe maintain a regular contact and interaction with each other through marriage and other social obligations and improved transport facilities made these interactions more intense in the recent decades. The two major health issues that plagued the Indian tribes in general can be stated as anaemia and under nutrition, and Yanadi tribe is no exception to this; while under nutrition is a risk factor for low productivity, poor general and reproductive health and mortality (Letamo and Navaneetham, 2014), anemia was found to affect maternal and child mortality and physical performance of an individual (Lopez *et al.,* 2016). Thus, both these health conditions seem to be confounding in the nature of their effects. While nearly

a quarter of the adult Yanadi men and slightly lower proportion of their women were under nourished, ~ 45% of the Yanadi women and ~ 19% their men were found to be anaemic. The other studies on Indian tribes followed different criteria from that of the present study for the diagnosis of anaemia and the estimates of the prevalence of anaemia ranged from 30 -76.4% (Appendix-I).The data on haematological indices of Yanadi provide insights into the nature of susceptibility to infections; considerably high prevalence of high WBC and elevated platelet counts, high eosinophil and low monocyte counts may indicate the magnitude of the load of infections (George and Panos, 2006; Wu *et al.,* 2015). While high WBC count can be additionally implicated in inflammation and stress (George and Panos, 2006), high eosinophil and/or low monocyte counts can cause allergy as well (Wu *et al.,* 2015). Although we have not collected systematic data, yet our field experience among the Yanadi suggests that the possible reasons for under nutrition, anaemia and other haematological problems among them are due to relatively low socioeconomic status, lack of education, unhygienic living conditions, malnutrition, smoking habit and alcoholism. These have been chronic issues associated with these people and are still persisting to a considerable degree. In broad concurrence to this, some earlier investigators have identified poor socio-economic condition, multiple pregnancies, malaria and hook worm infections, mal-absorption, low iron and folic acid intake, high intake of phytate and fibre rich diets which are deficient in iron, presence of hemoglobinopathies, alcohol intake and tobacco consumption as risk factors for anaemia(Kamath *et al.*, 2013; Shrinivasa *et al.*, 2014; Debral and Kothiyal, 2016; Ismail *et al.,* 2016; Kshatriya and Acharya, 2016; Prabhakar *et al.,* 2016; Thorat *et al.,* 2017).

The high prevalence rates of NCD risk factors such as central obesity (72.47%), dyslipidemia (70.42%), metabolic syndrome (34.55%) and hypertension (27.81%) can surely be attributed to the process of urbanization and associated lifestyle changes among the Yanadi people. There has been a rapid transition from physically highly active to more sedentary lifestyles of these people during the past couple of decades, facilitated by the dramatic improvement in communication facilities, mechanized transport and agricultural operations, opportunities for remunerative occupations, developmental programs and policies of the successive governments providing freebies, extensive flow of liquor and junk food items even to the remotest rural areas during the recent past. Added to this, the simultaneous spread of milk cooperatives gave impetus to regular flow of money into the families across all socioeconomic strata. These developments have very important health implications to the rural populations of India, including the tribes. For example, the stark difference observed in the prevalence of dyslipidemia between the rural and urban Yanadi participants was mainly due to high prevalence of high total-C and high LDL-C among the latter, suggesting relatively greater impact of atherogenic diet and reduced physical activity on the urban people. Unfortunately, we could not as yet generate the quantitative

data on the environmental factors associated with the lifestyle changes due to urbanization which would have given us much better insights into the precise nature of urbanization effects in this important tribal population. Nevertheless, our study shows that even traditional societies like Yanadi are not immune to changes necessitated by urbanization.

Large scale studies among a few representative tribes from different regions of the country are warranted in the near future in order to generate systematic data on the prevalence of NCD risk factors and the chronic problems of under nutrition and anemia along with the quantitative data pertaining to the environmental factors associated with the lifestyle changes due to urbanization, which will enable policy makers to devise preventive measures in order to offset the manifestation of NCDs and its risk factors.

END NOTES

1 *This project was carried out when BMR was Professor and RP an SRF and Ph.D. student of the Indian Statistical Institute, Hyderabad;*

2 *SAAL is currently Honorary Visiting Scientist with us at the Department of Genetics.*

ACKNOWLEDGEMENTS

This manuscript is written during corresponding author's tenure as ICMR Medical Scientist. The data used for this study was generated as part of a plan project of the Indian Statistical Institute (ISI) during the year 2012-2013 and the corresponding author is thankful to the then Director of ISI, Kolkata, for financial support; Jayaraj, Ashokraj and Uma Jyothi for their help in the data collection and data entry.

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Address for correspondence: Professor B. M. Reddy, ICMR Emeritus Medical Scientist, Department of Genetics, Osmania University, Hyderabad - 500 007, INDIA. E-mail: bmrisi@gmail.com; Mobile: 9866289771

Appendix - I: Prevalence of anaemia, metabolic syndrome, hypertension, type 2 diabetes, obesity and Dyslipidemia in adult population of Indian tribes so far studied

S.No.	Tribe(S)	Geographic location	Criteria	Male (n & %)	Female (n & %)	Total (n & %)
			ANEMIA			
1	Mishing(Chatterjee et al.,2011)	Assam	Hb<11g/dl	28 (28.57)	16 (43.75)	44 (34.09)
2	Sonowal(Chatterjee et al.,2011)	Assam	"	67 (28.35)	33 (33.30)	100 (30.00)
3	Deoris(Chatterjee et al.,2011)	Assam	"	17 (41.17)	28 (71.42)	45 (60.00)
4	Santhals(Chatterjee et al.,2011)	West Bengal	"	19 (10.52)	70 (94.28)	89 (76.40)
5	Mundas (Chatterjee et al.,2011)	West Bengal	"	10 (80.00)	108 (51.85)	118 (54.23)
6	Irular (Sreelakshmi et al., 2012)	Palakkad district, Kerala	Hb<12g/dl	-	214 (73.83)	214 (73.83)
7	Mudugar (Sreelakshmi *et al.*, 2012)	Palakkad district, Kerala	"	-	16 (87.50)	16 (87.50)
8	Malassar (Sreelakshmi et al., 2012)	Palakkad district, Kerala	"	-	83 (85.54)	83 (85.54)
9	Pooled Koraga &Marati Nayak (Kamath et al.,2013)	Udupi taluk, Karntaka	"	-	170 (55.90)	170 (55.90)
10	Tribes (Shrinivasa et al., 2014)	Wayanad district, Kerala	"	-	347 (43.30)	347 (43.30)
11	Pooled Kuruchiyas and Paniyas (Ismail et al., 2016)	Kannur, Kerala	"	87 (33.33)	113 (64.60)	200 (51.00)
12	Buska tribe(Debral and Kothiyal, 2016)	Hardwar district, Uttarakhand	Hb<11g/dl	-	112 (64.28)	112 (64.28)
13	Tribes (Thorat et al., 2017)	Bhuj, Gujarat	Hb<12g/dl	-	500 (54.20)	500 (54.20)
14	Yanadi (Present study)	Nellore, A.P	Criteria as given in Table 1	285 (18.59)	398 (44.22)	683 (33.52)
			METABOLIC SYNDROME			
1Toto	(Sarkar et al., 2005	Jalpaiguri,	WC(M>102; F>88 cm);	133	150	283

	and 2006)	W.B	FG>110 mg/dl; Remaining criteria as given in Table 1	(8.70)	(3.80)	(6.01)
2	Bhutia (Sarkar et al., 2005 and 2006)	Sikkim	WC(M>102; F>88 cm); FG>110mg/dl; Remaining criteria as given in Table 1	131 (32.8)	174 (49.4)	305 (42.30)
3	Kodavas (Lokanath et al., 2014)	Kodagu district, Karnataka	Criteria as given in Table 1	194 (29.19)	224 (31.58)	418 (60.77)
4	Ranga Bhotias (Kandpal et al.,2016)	Pithogarh district, Uttarakhand	FG>110mg/dl; Remaining criteria as given in Table 1	104 (37.50)	184 (40.20)	288 (39.20)
5	Pooled Tribes(Ismail et al., 2016)	Kannur, Kerala	FG>110mg/dl; Remaining criteria as given in Table 1	44 (21.0)	76 (32.5)	120 (28.3)
6	Pooled Tribes (Bandela) et al., 2017	Nandyal, A.P	FG>110mg/dl; Remaining criteria as given in Table 1	172 (20.93)	172 (22.67)	344 (21.80)
7	Yanadi (Present study)	Nellore, A.P.	Criteria as given in Table 1	285 (26.66)	398 (40.20)	683 (34.55)
			HYPERTENSION			
1	Lepchas (Mukopadhyay,1996)	Gangtok, Sikkim	SBP/DBP:>160/95mm Hg	128 (6.25)	112 (6.25)	240 (6.25)
2	Kurichias (Reddy et al., 1999)	Wayanad district, Kerala	Kaplan criteria	175 (4.00)	135 (2.96)	310 (3.54)
3	Khond (Kusuma et al., 2004)	Visakhapatnam, A.P.	JNC-VI	115 (7.82)	113 (11.50)	228 (9.21)
4	Valmiki (Kusuma et al., 2004)	Visakhapatnam, A.P.	JNC-VI	111 (13.51)	111 (32.43)	222 (22.97)
5	Naika, Rathwa and Damor (Tiwari, 2008)	Chhotaudepur, Gujarat	SBP/DBP:>140/ 90mmHg	-	-	154 (16.90)
6	Banjara (Sachdev, 2011)	Rajasthan	“	-	-	435 (27.10)
7	Natt (Sachdev, 2011)	Rajasthan	“	-	-	418 (16.30)

8	Sapara(Sachdev, 2011)	Rajasthan	“	-	-	150 (22.70)
9	Bawaria(Sachdev, 2011)	Rajasthan	“	-	-	55 (27.30)
10	Sansui(Sachdev, 2011)	Rajasthan	“	-	-	72 (19.40)
11	Bhopa(Sachdev, 2011)	Rajasthan	“	-	-	110 (30.90)
12	Gujjar(Sachdev, 2011)	Rajasthan	“	-	-	46 (21.70)
13	Irula (Ramalingam et al., 2012)	Nilagiri, T. N	“	-	-	55 (14.50)
14	Banjara (Bandana, 2011)	Rajasthan	“	-	-	435 (27.10)
15	Natt (Bandana, 2011)	Rajasthan	“	-	-	418 (16.30)
16	Sapara(Bandana, 2011)	Rajasthan	“	-	-	150 (22.70)
17	Bawaria (Bandana, 2011)	Rajasthan	“	-	-	55 (27.3)
18	Sansui (Bandana, 2011)	Rajasthan	“	-	-	72 (19.40)
19	Bhopa(Bandana, 2011)	Rajasthan	“	-	-	110 (30.90)
20	Gujjar (Bandana, 2011)	Rajasthan	“	-	-	46 (21.70)
21	Tribes (Madani et al., 2011)	Surat district, t Gujara	“	91 (16.50)	63 (17.50)	154 (16.88)
22	Nicobarese (Manimunda et al., 2011)	Car Nicobar	“	215 (50.70)	277 (50.30)	492 (50.50)
23	Car Nicobarese (Kapoor et al., 2012)	Nicobar	“	-	-	165 (25.50)
24	Bhotia (Kapoor et al., 2012)	Uttarakhand	“	-	-	182 (44.50)
25	Pooled Tadvi, Mina, Saharia (Kapoor et al., 2012)	Gujarat, Rajasthan, M.P.	“	-	-	419 (35.40)

26	Desia khond (Kapoor et al., 2012)	Orissa	"	-	-	144 (68.10)
27	Tribes(Mesharam et al., 2014)	ITDA, Maharashtra	"	2089 (27.70)	2259 (19.30)	4348 (23.00)
28	Jenu Kuruba (Hathu et al., 2013)	Hansur taluk, Karnataka	"	571 (28.20)	719 (16.50)	1290 (21.60)
29	Mishing (Misra et al., 2014)	Tinsukia district, Assam	"	179 (27.90)	153 (22.90)	332 (25.60)
30	Gaddi (Kapoor et al., 2014)	Chamba and Dharma sala districts, H.P.	JNC-VII	3858 (38.40)	4142 (40.40)	8000 (39.20)
31	Tribes(Geddam et al.,2015)	Hyderabad district, Telangana	SBP/DBP:>140/ 90mmHg	46 (18.40)	83 (16.80)	129 (17.30)
32	Tribes (Radhakrish-nan & Ekambaram, 2015)	Yercaud, T.N	JNC-7	219 (36.52)	306 (27.12)	525 (12.76)
33	Gond, Kol, Kanwar, Oraons, Dhanuhar, Bhumias, Manjhis (Jain et al., 2015)	Chattisgarh and M.P.	SBP≥ 180/110 mmHg	-	-	396 (2.26)
34	Baigas (Jain et al., 2015)	Chattisgarh and M.P.	SBP≥ 180/110 mmHg	-	-	23 (1.69)
35	Santal (Kshatriya & Acharya, 2016)	W.B.	SBP/DBP:>140/ 90mmHg	-	-	245 (11.80)
36	Kora (Kshatriya & Acharya, 2016)	W.B.	"	-	-	235 (10.60)
37	Oraon (Kshatriya & Acharya, 2016)	W.B.	"	-	-	236 (16.5)
38	Santal(Kshatriya & Acharya, 2016)	Odisha	"	-	-	240 (9.60)
39	Bhumij (Kshatriya & Acharya, 2016)	Odisha	"	-	-	238 (14.70)
40	Bathudi (Kshatriya & Acharya, 2016)	Odisha	"	-	-	240 (12.10)
41	Dhodia (Kshatriya & Acharya, 2016)	Odisha	"	-	-	240 (12.90)
42	Kukna (Kshatriya & Acharya, 2016)	Odisha	"	-	-	240 (11.30)
43	Chaudhari (Kshatriya & Acharya,	Odisha	"			241

	2016)					(6.20)
44	Pooled tribes (Kshatriya & Acharya, 2016)	Undivided A.P., Gujarat, Karnataka, Kerala, Maharashtra, M.P.Odisha,T.N.,W.B	SBP/DBP:>140/90 mmHg +Known hypertensives	21141 (25.20)	26260 (26.40)	47401 (25.90)
45	Pooled Khonds, Gada, Pujaris Naidu et al., 2016)	Visakhapatnam, . A.P	JNC-7	-	-	214 (17.20)
46	Ranga Bhotias (Kandpal et al., 2016)	Pithogarh district, Uttarakhand	SBP/DBP:>140/ 90mmHg	104 (57.70)	184 (35.30)	288 (43.40)
47	Pooled Pangwals, Lahaula, and Bhot (Raina et al., 2016)	Pangi valley, H.P.	SBP/DBP:>140/ 90mmHg +Known hypertensives	270 (12.90)	131 (6.10)	401 (14.90)
48	Tribes (Negi et al., 2016)	Kinnaur, H.P.	SBP/DBP:>140/90 mmHg	365 (22.40)	341 (17.50)	706 (19.70)
49	Katkari (Deo and Pawar, 2017)	Raigad district, Maharashtra	“	191 (17.80)	219 (16.00)	410 (16.82)
50	Kani (Sajeev and Soman, 2017)	Thurvananthapuram, Kerala	“	-	-	298 (48.30)
51	Tribes (Gupta et al., 2018)	Mandla district, . M.P	JNC-7	382 (27.70)	380 (26.60)	762 (25.50)
52	Yanadi (Present study)	Nellore, A. P.	SBP/DBP:>140/ 90mmHg	285 (29.12)	398 (26.88)	683 (27.81)
		TYPE 2 DIABETES				
1	Sahariya (Kapoor et al., 2010)	Shivpuri and Gwalior districts, M.P.	RBS ≥ 140mg/dl	153 (8.90)	182 (7.10)	366 (7.20)
2	Irula (Ramalingam et al., 2012)	Nilagiri, T.N.	NA	-	-	55 (38.20)
3	Kaanis (or) Kanikkars (Murugan and Beula, 2012	Kanyakumari district, T.N.	NA	499 (0.80)	489 (1.60)	988 (1.20)
4	Gaddi (Kapoor et al., 2014)	Chamba and Dharm asala districts, H.P.	FBG >126mg/dl	3858 (10.30)	4142 (13.00)	8000 (11.70)
5	Tribes (Radhakrishnan & Ekambaram,2015)	Yercaud, T.N.	RBG ≥ 200mg/dl	219 (5.00)	306 (5.55)	525 (5.33)
6	Pooled Gonds,Kol, Kanwar, Oraons, Dhanuhar, Bhumias, Manjhis (Jain et al., 2015)	Chattisgarh and M.P.	NA	-	-	17560 (1.28)

7	Baiga (Jain et al., 2015)	Chattisgarh and M. P.	NA	-	-	1364 (0.88)
8	Tribes (Nikkin and Stanley, 2016)	Vellore, T. N.	FBG >126mg/dl	23 (4.34)	64 (4.68)	87 (4.59)
9	Tribes (Negi et al., 2016)	Kinnaur, H.P.	History + FBG >126 mg/dl	98 (6.00)	149 (7.60)	247 (6.90)
10	Tribes (Nirmala et al., 2016)	Visakhapatnam, A. P.	OGTT, WHO criteria, 1988	-	-	1000 (7.80)
11	Rabha, Bodo-kachari, and Garo (Paul and Ojah, 2016)	Kamrup district, Assam	FBG >126mg/dl	-	-	330 (4.24)
12	Ranga Bhotias (Kandpal et al., 2016)	Pithogarh district, Uttarakhand	"	104 (8.60)	184 (6.00)	288 (6.90)
13	Yanadi (Present study)	Nellore district, A.P.	"	285 (9.82)	398 (10.8)	683 (9.95)
			GENERAL OBESITY			
1	Kurichias (Reddy et al.,1999)	Wayanad district, Kerala	BMI>25kg/m^2	175 (2.29)	135 (4.44)	310 (6.73)
2	Irula (Ramalingam et al., 2012)	Nilagiri, T.N.	"	-	-	55 (32.70)
3	Banjara (32.70)(Sachdev, 2011)	Rajasthan	"	-	-	435 (35.80)
4	Natt (Sachdev, 2011)	Rajasthan	"	-	-	418 (29.40)
5	Sapara (Sachdev, 2011)	Rajasthan	"	-	-	150 (7.80)
6	Bawaria (Sachdev, 2011)	Rajasthan	"	-	-	55 (4.40)
7	Sansui (Sachdev, 2011)	Rajasthan	"	-	-	72 (2.00)
8	Bhopa (Sachdev, 2011)	Rajasthan	"	-	-	110 (15.20)
9	Tribes (Bhardwaj et al., 2013)	Kinnaur and Shahpur, H.P. H. P	BMI>27.5kg/m^2	184 (7.40)	266 (18.00)	450 (13.60)
10	Gaddi (Kapoor et al., 2014)	Chamba and Dharmasala district,	"	3858 (2.40)	4142 (4.00)	8000 (3.20)
11	Tribes (Geddam et al., 2015)	Hyderabad	"	46	83	129

	Manjhis (Jain et al., 2015)			(14.30)	(24.30)	(20.90)
	Manjhis (Jain et al., 2015)					
12	Pooled Gonds,Kol, Kanwar, Oraons, Dhanuhar, Bhumias,	Chattisgarh and M.P	BMI>25kg/m^2	7 (1.30)	12 (1.80)	19 (1.60)
13	Ranga Bhotias (Kandpal et al., 2016)	Pithogarh district, Uttarakhand	“	104 (54.80)	184 (57.60)	288 (56.60)
14	Santal (Kshatriya & Acharya, 2016)	W.B.	“	-	-	245 (6.10)
15	Oraon (Kshatriya & Acharya,2016)	W. B.	“	-	-	236 (2.50)
16	Santal (Kshatriya & Acharya,2016)	Odisha	“	-	-	240 (7.10)
17	Bhumij (Kshatriya & Acharya,2016)	Odisha	“	-	-	238 (8.00)
18	Bathudi(Kshatriya & Acharya,2016)	Odisha	“	-	-	240 (3.30)
19	Dhodia (Kshatriya & Acharya,2016)	Odisha	“	-	-	240 (11.30)
20	Kukna(Kshatriya & Acharya,2016)	Odisha	“	-	-	240 (6.30)
21	Chaudhari (Kshatriya & Acharya, 2016)	Odisha	“	-	-	241 (6.20)
22	Tribes (Negi et al.,2016)	Kinnaur, H. P.	BMI>30kg/m^2	106 (6.50)	210 (10.80)	316 (8.80)
23	Katkari (Deo and Pawar, 2017)	Raigad, Maharashtra	BMI>25kg/m^2	191 (9.40)	219 (9.40)	410 (9.50)
24	Kani (Sajeev and Soman, 2017)	Thurvananthapuram, Kerala	“	-	-	298 (10.80)
25	Yanadi (Present study)	Nellore district, A.P.	“	285 (15.00)	398 (14.50)	683 (20.80)
	CENTRAL OBESITY BASED ON WAIST/HIP RATIO1					
1	Kurichias (Reddy et al.,1999)	Wayanad district, Kerala	WHR (M&F>0.85)	175 (5.14)	135 (4.44)	310 (4.79)
2	Tribes (Geddam et al., 2015)	Hyderabad	WHR(M>0.9; F>0.8)	46 (72.20)	83 (75.60)	129 (74.37)
3	Yanadi (Present study)	Nellore district, A.P.	“	285 (70.52)	398 (73.86)	683 (72.47)

		CENTRAL OBESITY BASED ON WAIST CIRCUMFERENCE				
1	Toto (Sarkar et al., 2005 & 2006)	Jalpaiguri, W. B.	Waist circumference (M>102; F >88cm)	133 (0.00)	150 (1.53)	283 (0.81)
2	Bhutia (Sarkar et al., 2005 & 2006)	Sikkim	"	131 (3.05)	174 (39.70)	305 (23.90)
3	Mishing (Misra et al.,2014)	Tinsukia district, Assam	Waist circumference (M>90; F>80 cm)	179 (10.60)	153 (12.40)	332 (11.40)
4	Tribes (Geddam et al., 2015)	Hyderabad	Waist circumference (M>102; F>80cm)	46 (35.10)	83 (47.10)	129 (42.82)
5	Ranga Bhotias (Kandpal et al., 2016)	Pithogarh district, Uttarakhand	Waist circumference (M>90; F>80 cm)	104 (28.80)	184 (36.40)	288 (33.70)
6	Kani (Sajeev and Soman, 2017)	Thurvanantha puram, Kerala	Waist circum ference(M>102; F>80cm)	-	-	298 (22.10)
7	Tribe Sen et al.,2017)	Tripura	Waist circumference (M>90 & F >80cm)	-	356 (34.83)	356 (34.83)
8	Yanadi (Present study)	Nellore district,. A.P	"	285 (21.05)	398 (27.88)	683 (25.03)
		DYSLIPIDEMIA				
1	Kurichias (Reddy et al.,1999)	Wayanad district, Kerala	Total-C >244mg/dl	175 (1.14)	135 (0.74)	310 (3.86)
	Kurichias (Reddy et al.,1999)	Wayanad district, Kerala	Triglycerides>128 mg/dl	175 (2.29)	135 (4.43)	310 (2.92)
	Kurichias (Reddy et al.,1999)	Wayanad district, Kerala	HDL-C<35mg/dl	175 (0.57)	135 (2.96)	310 (4.50)
2	Toto (Sarkar et al., 2005 & 2006)	Jalpaiguri, W. B.	Triglycerides >150mg/dl	133 (47.24)	150 (36.64)	283 (41.62)
	Toto (Sarkar et al., 2005 & 2006)	Jalpaiguri, W. B.	HDL-C mg/dl (M<40; F <50 mg/dl)	133 (53.54)	150 (66.41)	283 (44.58)
3	Bhutia (Sarkar et al., 2005 & 2006)	Sikkim	Triglycerides>150 mg/dl	131 (5.60)	174 (33.90)	305 (43.60)
	Bhutia (Sarkar et al., 2005 & 2006)	Sikkim	HDL-C mg/dl (M<40; F <50 mg/dl)	131 (68.70)	174 (99.43)	305 (86.23)
4	Tribes (Bandana, 2012)	Jhunjhunu, Sikar and Churu, Rajasthan	Total-C >200mg/dl	633 (10.70)	807 (8.40)	1440 (9.40)

5	Tribes (Bhardwaj et al., 2013)	Kinnaur and . Shahpur,H.P	Total-C >200mg/dl	184 (0.50)	266 (0.80)	450 (0.70)
	Tribes (Bhardwaj et al., 2013)	Kinnaur and . Shahpur, H.P	Triglycerides>150 mg/dl	184 (55.80)	266 (54.80)	450 (55.20)
	Tribes (Bhardwaj et al., 2013)	Kinnaur and Shahpur, H.P.	LDL>130mg/dl	184 (1.10)	266 (0.00)	450 (0.50)
	Tribes (Bhardwaj et al., 2013)	Kinnaur and Shahpur, H.P.	HDL-C<40mg/dl	184 (47.50)	266 (48.70)	450 (48.20)
6	Tribes (Geddam et al., 2015)	Hyderabad	Total-C >220mg/dl	46 (32.60)	83 (27.70)	129 (29.44)
	Tribes (Geddam et al., 2015)	Hyderabad	LDL>175mg/dl	46 (23.90)	83 (14.50)	129 (29.38)
	Tribes (Geddam et al., 2015)	Hyderabad	Triglycerides>165 mg/dl)	46 (23.90)	83 (22.90)	129 (23.25)
7	Tribes (Nikkin and Stanly, 2016)	Vellore, T. N.	Total-C >200mg/dl	25 (16.00)	73 (2.73)	98 (6.12)
8	Tribe (Sen et al.,2017)	Tripura	Triglycerides>150 mg/dl	-	356 29.21)	356 (29.21)
	Tribe (Sen et al.,2017)	Tripura	HDL-C<50mg/dl	-	356 (28.37)	356 (28.37)
9	Yanadi (Present study)	Nellore district, A.P.	Total-C >200mg/dl	285 (16.49)	398 (24.62)	683 (21.22)
	Yanadi (Present study)	Nellore district, A.P.	Triglycerides >150mg/dl	285 (37.89)	398 (39.19)	683 (38.65)
	Yanadi (present study)	Nellore district, A.P.	HDL-C (M<40; F <50 mg/dl)	285 (34.73)	398 (65.32)	683 (52.56)
	Yanadi (present study)	Nellore district, A.P.	LDL-C >130mg/dl	285 (11.57)	398 (17.58)	683 (15.08)

A.P: Andhra Pradesh; H.P: Himachal Pradesh; M.P: Madhya Pradesh; T.N: Tamil Nadu; W.B: West Bengal

J. Indian Anthrop. Soc. 54:170-178(2019)

Changing Contours of Adivasi Society and its Culture: Crises and Negotiations *

RAJAT KANTI DAS

Former Professor and U.G.C. Emeritus Fellow, Department of Anthropology, Vidyasagar University, Midnapore, West Bengal

Abstract: 'Coloniality' and 'post-coloniality', when seen as two seemingly opposite mental orientations developed as a result of prolonged exposure, may have a direct impact on the *adivasi* society and its culture. There are indications in the contemporary situation that as states of mind the two sometimes coexist giving rise to conflicting tendencies which get reflected in the fields of tradition and culture, subsistence activities and technological innovations, social structure and greater inter-community interaction. To understand the inner travails and contradictions prevailing in the *adivasi* society, it is necessary to have a reflexive, open and sensitive mind. For getting a comprehensive idea about the process of transformation of *adivasi* society and its culture, anthropologists need to be methodologically well equipped to be able to interpret ethnohistorical changes or historically determined changes over a time frame. The focus should particularly be on the problems of development faced by the adivasis and the tensions experienced by them as a result of the introduction of such development programmes over which they have little control. Their entanglement with politically guided activities and state-centric forces in operation is intricately linked with the type of development benefits they could derive. At the same time, there has been an increasing differentiation within the tribal or *adivasi* society striking at the core of their social existence. The knowledge of acculturation coming from outside puts them on the road to "self-acculturating modernity". It further confirms that the global impact on the local cultures represented by tribes or *adivasis* is an unavoidable development in today's world, which, in a way, signals the entry of post-coloniality into the post-modern phase of development. Coloniality as a state of mind has provided tribes or *adivasis* with the opportunity to be self-conscious, while post-coloniality has made the situation fluid and flexible enough prompting the *adivasis* to enter into the field of power relations on the basis of priority of settlement and a distinctive culture.

Key words : Coloniality, Postcoloniality, Changing contour, *Adivasi*

I

One of the objectives of the present exercise is to examine adivasi society and culture passing through two seemingly opposing phenomena marked by 'coloniality' and 'postcoloniality'. If coloniality and postcoloniality are taken as two different situational contexts, one following the other, it means adivasis have experienced differential exposures to two seemingly opposite political systems. The argument that may be developed is differential exposures have a direct bearing on the adivasi society and culture striking at the very core of

*The paper is based on the Key-note address given by the author in a Seminar organized by the Department of English and Santali of Vidyasagar University in 2016.

their social existence. This will lead to creating problems of choice exercised by the adivasis in the post-Independence period with the opening up of newer possibilities of political and cultural integration with the introduction of affirmative policies of the post-Independent state. Simultaneously, a number of issues may crop up which include increasing differentiation from within the society, discordance between culture and environment, threat from the mainstream into adivasi culture and language (when adivasi is given a peripheral status), a growing need for dialogues in the situation of contradiction between tradition and modernity, folk tradition and culture, folk literature and cultural identity, widening gap between agrarian practices and traditional knowledge system. It may not be possible to give equal emphasis on all of these points in one single paper, but the fact that the areas signifying transformation of tribal or adivasi society could be identified may be considered a good beginning indeed. This may pave the way for further intensive research after taking stock of the works done so far in respective fields.

II

Here the role of anthropologists in unfolding the changing contours of adivasi society and culture is not always above question. Anthropologist's understanding of society has its focus on a group of individuals (eg. Adivasis) neatly bound by mutually exclusive bodies of thoughts and customary behaviours, which are 'shared by all who subscribe to them, and in which their lives and works are encapsulated' (T. Ingold 1994b). It reflects privileging social over personal because of the abiding influence of culture on individuals. Field-based anthropologists have been passionately and actively involved in constructing a social milieu as is represented by the tribal or adivasi society in its ideal form. But if prolonged observation is the criterion to know about the inner contour of the society , literary figures like Dickens, Eliot, Forster, Lawrence, Greene and in the Indian context figures like Sarat Chandra Chattopadhyay, Tarashankar Bandopadhyay, Manik Bandopadhyay, Bibhuti Bhusan Bandopadhyay, Satinath Bhadhury, Munshi Premchand and many others who have earned the name of 'social novelists' could be equated with 'anthropological fieldworkers-cum-analysts' because they were equally adept in commenting on 'the means and mores of a social milieu' in which they were participants. What particularly distinguishes a social novelist is his or her ability to provide 'moral insight into people's perceptions, evaluations and sensations' (Hoggart 1966). In this respect the contributions of some adivasi novelists are no less significant in providing insights into the changing adivasi society marked by inner tension, dilemma and search for a new order. To understand the complexities and implications of the changing situation , an anthropologist today is required to function more like a reflexive anthropologist capable of elucidating 'the unspoken analytical givens, concepts and techniques, historical and proximate, socio-cultural and personal.' This has

become necessary to 'unite observer-observed together with a new intersubjective space : a space of universal human being lying between language and culture'(Rapport,Nigel & Joanna Overing 2004). The process of universalising tribal or adivasi culture on the basis of its indigenous character is already on. In another but almost similar context Nelson Goodman (1978) talks about 'world making' in which adivasis may find a place. Goodman identifies five ways in which 'a contriving of world versions' may occur. These are,

(i). Composition and Decomposition', where old worlds conceived of as wholes are taken apart , decomposed and new entities or forms are composed through newly created relations not particularly confined to a bounded system.

(ii).The second way of world-making, according to Goodman, is 'Weighting', which means giving prominence to certain of the features of the social world. Here emphasis is more on changing and negative features like social disorder, conflict and competition, dynamic equilibrium and disequilibrium. Relationships are weighed not only in terms of the positive contributions they make towards maintaining the social structure, but also in terms of their negative manifestations acting as deterrents or deviations. One reason could be that individuals today are not willing or habitual role-players. This trend is, however, on the increase during the postcolonial period.

(iii).Thirdly, by ordering the elements of a world view differently as the situation demands, the meaning of each element becomes different. Goodman calls it 'Reordering'. It may be questionable whether the current fast-changing adivasi situation can be explained purely in terms of an 'explanatory model'.

(iv).Fourthly, there is 'Deletion and Supplementation', meaning thereby that certain elements are excluded and some others are included to make out the new world or the world in the making. The whole process involves a time dimension. With regard to adivasi society and culture, only this much can be said that the process of exclusion and inclusion of elements has picked up greater momentum during the postcolonial period.

(v). Finally, new worlds may be made by 'Deformation' or deconstruction. The Foucauldian deconstruction of society pinpoints on the themes of power and ideology. What is of particular importance is the system of political control. Earlier, during the period which may be roughly correlated with colonial stage, 'uncontrollable moments' at the community level rarely manifested. Instead, we get an impression of a tribal/adivasi society neatly balanced with a nearly perfect internal order and functional logic in the form of an objective representation. Renato Rosaldo's(1989) observations may appear meaningful at this stage.

"... the truth of objectivism – absolute, universal, timeless - has lost its monopoly status. It now competes, on more equal terms, with the truths of case studies that are embedded in local contexts, shaped by local interests, and coloured by local perceptions."

But to extract the best and most out of case studies, one needs to be methodologically perfect and meticulous, which very few anthropologists can claim today. A reflexive mind is a pre-requisite to going deep into the travails of the society. Again, from the society's own perspective the tendency to compromise with one's self-perception and self-belief for the sake of material gains does not always augur well for a healthy living.

With increasing conflict and contest between the positivist social scientific tradition and ethnographic representation at the local level, the predicament of adivasis is given a new twist. The contradiction within the adivasi society manifests at different levels, in different situations and in different time periods. Actually, they are caught between various cross-currents of ideas and actions initiated from different sources with greater pulling effects.

III

While speaking of transformation of society and its culture, the first step is to identify the problems of development affecting the basic premises of traditional adivasi life. Does development give adivasis the freedom to set their own agendas? Or, are they in a position to set their agendas in their own terms? The impact of development on them has to be seen in the context of their entanglement with political realities where state holds the centre stage. What is also significant is the eagerness shown by a section of the tribal elite to join hands with the state to expedite tribal development. The same group may be seen as the product of state-initiated development. Apparently, there is nothing wrong about it. Probably the problem lies with us, with those taking a keen interest in tribal affairs and who are more used seeing them outside the purview of the modern state. The counter argument that development should rise above political consideration very often remains a wishful thinking. Michael Cernea's (1995) frequently quoted and perceived effect of development with" larger gains and fewer pains" sums up the whole story. Adivasis who have been drawn into the development scenario, sometimes against their wishes, have to face the realities built around larger issues of control and management from outside. The natural resource management in the form of forest may be an example. In the Indian context referring to tribes, the value of forests in the lives of local communities like adivasis has been widely discussed, particularly in the academic circle, yet forest use remains a domain of contestation, even after the introduction of 'Scheduled Tribes (Recognition of Forest Rights) Bill'. Arnab Sen and Esther Lalhrietpui, in an article that appeared in September 30, 2006 issue of 'Economic and Political Weekly' observe,

"The key issues are: the survival of a shared wealth of biological and cultural diversity; a necessary rethinking of the link between human beings and the rest of nature in terms of cultural values; and also, an issue of conceptualising the relations between the global and the local."

Too many issues have been jumbled together where tribal issues get only token recognition. Though the benefits of material development have reached the tribals, even if sparingly and selectively, what is rather intriguing is the tendency to hide those behind such impersonal labels as PAPs(project-affected persons),CAPs(canal-affected persons), landless or agricultural labourers. Obviously, the main issue centres around land and the uses land is put to use by the development agencies. From a long term perspective, some of the state-directed development programmes may not be above question. Development here is taken to be an instrument in the hands of the government to "cure" the ills people have been suffering from. When a group of people, who were in a state of self-sufficiency in terms of availability, accessibility and use of resources at their disposal, have been reduced to a state of dependency, the intention of state as a development strategist may raise a few questions. As Gustavo Lins Ribeiro (1994 : Quoted from Herzfeld1999) maintains, starting a development project in the tribal area opens up the " condition of transnationality". In Ribeiro's view, 'the interaction of local and supra local frameworks' leads to the formation of a trans-nation state. The range of transnationality displayed by the adivasis has not been properly assessed, but there are indications that it is already an issue of considerable importance. Time will tell whether introduction of technology as the main instrument of transnationality is the answer to all the ills suffered by them. From that point of view, adivasis are in a transitional stage. At the moment they are trying to come to terms with the intricacies of state-centric development.

To link 'coloniality' and 'postcolianility' directly with two powerful forces of control in the form of 'colonialism' and 'nationalism' may appear too simplistic. As a matter of fact, the two forces are very much interlinked. While tribal societies are imbued with a spirit of locally grounded nationalism during the colonial period, there have been attempts on the part of post-Independent government to reproduce colonialism internally and selectively, often with a strong hand, which is particularly directed against ethnically conscious tribals. The apprehension that the state after Independence has not always functioned in an unbiased way to all its citizens may not be totally unfounded. The state functions more like a double-edged sword, offering substantial benefits to its citizens on the one hand, and withdrawing benefits selectively to some of its citizens when the situation goes out of hand or when its own interests are affected. So far as adivasis are concerned, the way they demonstrate local-national connections comes under closer scrutiny from the state. Of late, the state has been trying to compensate the long history of neglect and apathy against tribals by becoming extra-sensitive to their causes or showing extra concerns to the local-level values and actions displayed by them. This is expected from a state taken to be a symbol of democratic values. Is it the only way transformation of adivasis could be accounted for? Doubts have, however, been expressed about how far state-directed initiatives could be full proof, authentic and transparent. Moreover, to what extent the real

purpose of tribal development could be served by simply turning them into dole-receivers or receivers of monetary benefits or giving them a taste of power within the framework of a power structure where they have only a token representation remains an open question.

IV

Georges Balandier (1985) has used the connotation "self-acculturating modernity" to account for the post-colonial changes in tribal life. He writes, "The knowledge of acculturations which comes from outside seems to be capable of contributing a better understanding of self-acculturating modernity." The focus is obviously on 'the process of globalization, migration and hybridity.' The global impact on local culture seems to be an unavoidable development. The transformation of adivasis is historically linked with transformation of a specific region. June Nash(1995) has unveiled a series of tensions which are crucial to understanding of Southern Mexico since pre-conquest times to the present. The tensions reveal themselves "between change and the preservation of cultural integrity; between resistance to development and the selective adoption of innovations to maintain a degree of culture and ecological balance; between shared cultural practices and significant heterogeneity and internal class and gender hierarchies; between local boundaries and the increasing need for regional and national alliance; and between the commercialization of traditional craft production and its impact on cultural reproduction." The adivasi situation in India may not be directly comparable with the picture presented by Nash, but there is no denying the fact that the adivasis here display in no uncertain terms the cross-currents of two opposing forces of change. Striking a balance between the two is not easy to maintain. The impression one gains is that the adivasis are confronted with a situation to compromise cultural autonomy with gaining access to fruits of development. It is only expected that developers, government agencies and elites would exercise a far greater influence on the culture-bearing adivasis. When attempts are made to reverse the trend of change and transformation experienced by them, the result is not always a happy one. Cultural reproduction as attempted by tribals unmistakably displays an eagerness and urgency on their part to seek entry into the commercial world with the patronage of the government. The underlying motive is to catch up with the mainstream development. In the process, their own knowledge system and their folk-based tradition suffer, revealing distortions and contradictions. These are indicative of destabilising effects on their society and culture. Renewal of interest in their own culture or reinvention of their old tradition, are attempts to stall those negativities. The contemporary world has seen an increase in the scale and importance of 'neo-tribes', which combine multiple acts of self-identification bearing the tags of ethnic and geo-cultural allegiance with self-recruitment to a great variety of other imagined and 'self-constructed' communities. The participants in tribal/adivasi identity construction are self-

appointed, but they all are deeply committed to the imputed importance of the communities created and recreated, and which they tend to represent. Just as self-construction is an incessant activity, there is nothing final about their representation, which keeps on changing. Right now, there has been an unmistakable rise in ego identity which becomes problematic once it gets anchored in a cultural identity. What is more, such a cultural identity itself has become a fluid entity. More than deliberate choice, the search for meaning in culture is definitely under way. But such self-oriented actions do not always follow a unitary direction because they are very often combined with making compromises to derive material benefits. While passing through a Santal village, which falls within the Eco-diversity Park of Purulia, I could get a feel of the change in the attitude of the people. The desire to make easy money at the cost of cultural items has almost come into the open. When requested to stand before her beautifully decorated house with walls bedecked with motifs and various designs for a photograph, an old woman straightway demanded five hundred rupees before agreeing to our request. The conclusion which may be tentatively drawn from the above incident is that adivasis are trying to be a part of the contemporary reality even at the cost of their traditional values. More and more aged tribals, apparently without jobs or without having any earning capacity, and dependent children throng the upcoming tourist spots of Jangal Mahal to beg for money not showing the slightest of guilt feeling. At one such spot when a girl with her hand stretched out approached me for money with ice cold looks, I was instantaneously reminded of a Kashmiri girl of similar age whom I met a few years back on the bank of Lidder river at Pahelgaon . She also wore the same look which seemed to say," This is my land. Pay for your visit." The same look I could see in the eyes of the roadside Jarawa children. They all seem to converge at one point.

Still, attempts to revive traditional culture and old language have been more and more intense day by day. These have certain positive implications. Mention may particularly be made of the realisation that by doing so a framework could be provided for channelling or challenging dominant views from development perspective. The question of governance is involved with it. In the 'Document' on 'Governance' under the proposals for the French Rio+20 Collective and for the Thematic Social Forum in Porto Alegre,2012, the need for a revolution has been recognised. The text 'Governance: the need for a revolution' reads : " Governance can be defined as the set of concepts, mental and cultural representations, institutions, social bodies, rules, and various procedures that together contribute to the management of a community, from the local to the world community. It has been at the core of every society forever…governance must satisfy two contradictory requirements: it is a benchmark for societies, which requires stability; it is a means for society to respond to new challenges, which requires innovation and adaptation capacities…" The essentialist position is gradually giving way to the tendency

to go for a constructionist line of approach. These issues are related to other seemingly insidious operations of power, now a part of neoliberal globalisation, which in the words of James Ferguson(1999) "...creates new inequalities even as it brings into being new commonalities and lines of communication... creates new, up-to-date methods not only of connecting places but of bypassing and ignoring them." All in all, the transitional phase of adivasi society is marked by the operation of two opposing forces in the form of creating inequalities and craving for commonalities. The encounter between the two is reflected in the adivasi domain of culture and society. Is adivasi culture in the form of local culture no longer tenable? The present phase brings into focus the combination of local cultures on negotiable terms or breaking of a local culture into cultural pluralities taking interacting forms. In either case, there is scope for negotiation on common programmes. But the problem is negotiation rarely takes place purely in terms of the programmes of the participating communities. It is almost always initiated, at times dictated and stage-managed by power-laden external forces in operation in adivasi areas. Some agencies working behind those forces have their own vested interests; some work with a missionary zeal, but very rarely in a spirit of selfless service in today's world which is characterised by material interests and populism. The fact is changes in adivasi society and culture are hardly shaped by them or are their own making. To say that they are willing partners to initiate such changes may also be an overstatement. To their dismay, they observe and realise that changes in material life have far outpaced changes in traditionally-grounded social structural configuration, over which they have little control. From that point of view, it can be said that the adivasi society and its culture have been passing through a transitional phase. In one sense, this may be a period of critical self-assessment or self-appraisal in the face of fluid but rapidly growing structural alignments and realignments as well as dislocations caused by power domination. The fading image of a free land, which was once their own, holds little practical meaning for them today. It obfuscates more than it inspires them. Does it create any anger in them? As reflections of a collective mind, it may not be immediately known or it may never be known.

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Address for correspondence: Rajat Kanti Das, Former Professor and U.G.C. Emeritus Fellow, Department of Anthropology, Vidyasagar University, Midnapore, West Bengal.
Email Id: rajat_p_das@yahoo.com. Mobile: 9433432383.

J. Indian Anthrop. Soc. 54:179-193(2019)

The Indian Systems of Medicine: Revival Efforts and Current Status

BV Sharma and Snigdha Vishnoi

Department of Anthropology, University of Hyderabad, Hyderabad-500046

Abstract: The Indian Systems of Medicine (ISM) has always provided interesting contours to explore in the field of academia. The most interesting subjects in this regard are the historical developments, its contribution to medical pluralism and policy for its role in the health care of Indian masses. The article aims to mainstream and document various facets of ISM popular in social science and academic practices. It presents a brief history and the challenges faced by system and its practitioners over time. It is also noted that various factors have led to the downfall and popularity of the ISM at different periods of time. Its recent popularity in urban areas of India is traced to globalization, consumerism, current day approaches to health care by health care institutions and experimental marketing strategies adopted by ISM practitioners and others. The article also explores the factors leading to consistency, roadblocks, opportunities and strategies adopted by masses and government to encourage the usage of AYUSH (*Ayurvedic*, Yoga and Naturopathy, Unani, *Siddha* and Homeopathy) across regions. It is seen that the extent of utilization varies across regions, classes and other socio-cultural variables. Hegemony of bio-medicine and marginalization of AYUSH sector are also explored in the background of changing natures of governmental policies. It is further argued that various health policies encourage assimilation over integration causing differential development and selective adaptation by the range of medical systems.

Key words : ISM, AYUSH, medical pluralism, utilization, globalization

INTRODUCTION

India being a highly heterogeneous structure with diverse ethnic groups and cultures, it is not possible to identify or name any one system of medicine as the traditional system of medicine of India as a whole. Many of the tribal communities in India that number over 450 have still preserved their own medical systems (Sharma 2016; Rajpramukh 2009, Bhasin 2005; Joshi 1990). Following Robert Redfield (1960), it may be said that the medical practices of these communities represent the little traditions of the Indian society as their knowledge is not systematized and codified and as it is orally transmitted. On the other hand, there are also medical practices that represent the great tradition of Indian society. These systems of medicine are practiced by members who are formally trained on the basis of codified treasure of ancient knowledge (Yogini and Williams 2017)[i]. Since these systems of medicine embody the traditional knowledge on health that is textual and codified, they need to be treated as different from 'Local Health Traditions' (LHT). The latter represent the knowledge and its application by the lay members and folk specialists who acquire such knowledge through some institutionalized

means and based on oral traditions (Srikant *et al.* 2015; Mutatkar, 2017). The codified traditional systems of Indian medicine which have been receiving varying degrees of state patronage are reportedly inspired by LHT. The little and great traditions interact, and the commonalities derived from some such knowledge systems are sometimes glorified by the little traditions. There are also systematic attempts to enrich the great traditions by incorporation of 'indigenous knowledge' of tribal communities[ii]. In any case, this overlap of epistemology and use of meteria medica along with ethnomedical practices of the tribal and some non-tribal communities, which have been receiving some funding and are guided by government regulations, causes confusion in the research strategies and reporting to be followed, particularly with regard to use of Indian Systems of Medicine (ISM)[iii] that are being referred to as 'AYUSH systems of Health Care' very recently.[iv]

The social sciences research on the Indian Systems of Medicine (ISM) cover different areas and various issues are involved with it. Some prominent issues covered so far include: (a) understanding the place of existential systems of medicine included under ISM vis-a-vis the context of medical pluralism; (b) the factors influencing the success of ISM to occupy a prominent place in the health care of Indian masses; (c) the current scenario of organization of medical care in India and the nature of cooperation, competition and conflicts of different systems of medicine; (d) the globalization of ISM and its impact in India; and, (e) the political philosophies and the agenda of cultural revivalism through the revitalization of ISM. In this paper, we have made an attempt to review some of these research areas so as to help assessing the current status of ISM and the factors associated with those.

The paper at the first place tries to explain why the ISM experienced setbacks during the pre-independence time and also after independence. The government policies relating to the issues did not help revival after initial setbacks during the British rule for several reasons. However, it also needs to be pointed out that there is some improvement in demand of these systems in recent years in view of globalization of ISM and growing popularity of Complementary and Alternative Medicine (CAM) together with the changes in the medical practices under the private health care system in India. These issues are discussed after giving a brief historical context of the ISM in India and are presented below.

British Rule in India and the Status of ISM

Health and medical care in India were dominated by the untrained practitioners of ISM till 1820. There were physicians called *Vaidyas* and the *Hakims* of diverse background, who practiced *Ayurveda* and Unani, respectively. They also received patronage from local rulers, nobility, and the elite classes. There was a sort of mutual respect and give and take relationship between the European trained medical personnel and the local medical

practitioners. Some state support was given for the education in the ISM. In 1789, the *Journal of Asiatic Researches* founded by Sir William Jones, an Orientalist, produced papers supporting research into Indian medical systems and medicinal plants. The Madarsa at Calcutta was established in the year 1781 by Warren Hastings, for imparting education in the Unani system in Arabic (Saini, 2016). During that time, the Western medicine was in practice, but it was not available for the masses or even to the elite section of the country. Western medicine was meant specifically for the military personnel. Continued interactions helped Europeans to study traditional Indian treatises for their own interest, and dependency on Indian practitioners for the knowledge of Indian pharmacopoeia gradually declined.

The period after 1820 saw rapid advances in Western medical science in India. The advances made in medical science in the West created quite an impression and the policy of the British rulers was in tune with these advances resulting in sudden fall in demand of the Indian system of medicine. During the reign of William Bentinck (Governor General of India, 1828–1835) the adverse effects were most visible. The Company started training its personnel in Western medicine only, and stopped all support towards Indian medical systems. The National Medical Institute established earlier by the British was abolished in 1835. Medical education at Sanskrit College was also stopped.

The promotion of Western medicine was simultaneously resorted to during this period. This was done by adopting measures like, (1) Establishment of medical colleges in Calcutta (1835), Bombay and Madras; (2) Extending the course length to 5 years and including anatomy and human dissection in the course; (3) Provision of medical services to the civilian population which was so long limited to army personnel only; (4) Setting up of medical schools between 1860 and 1880 to train paramedical staff who were later known as "licentiates."; (5) Imparting training in Western medicine in local Indian languages.

The efforts of British led to creation of a new band of Native doctors. However, the training of these doctors greatly differed from Western medical education in English or vernacular to on-the-job training in the Company hospitals. The dominance of the Western medicine was achieved after the medical education came within reach of Indians. West- educated Indians considered Western medicine a superior form of knowledge, the promotion of which was thought to be necessary for rooting out ignorance and spreading rationality. This also suited the British as they tried to prove their supremacy in every field including medicine to justify their rule in India. As the Western medicine gained wider acceptance and higher status, a gradual decline in the prestige of traditional Indian medical systems and their physicians began. The response to this situation was either completely turning away from Indian systems and accepting Western system or completely opposing modern

medicine and advocating their practice in purest forms. Of course, some *Hakims* also attempted an integration of both the systems of medicine.

The period from 1757 to 1900 saw the arrival of doctors trained in Western medicine in India. Further, as Saini (2016) noted, the progress in Western medicine, and the British policy guided by utilitarianism, widened the distance between practitioners of different systems. With the discontinuation of state patronage, *Hakims* and *Vaidyas* felt helpless, neglected their age old practice causing decline in their social status. This situation forced some to start questioning their own system and to be accommodative to staying relevant, while some others chose to resist and defend for promotion of their systems.

Post-Independent Revival of Lost Dignity for ISM

In the beginning years of the 20th century, interest in *Ayurveda* grew which synchronised with freedom movement. Demand for proper measures for developing *Ayurveda* on scientific line was made. Leaders like Gandhi and Malviya inaugurated *Ayurvedic* and *Unani* Institutions in Delhi and Banaras respectively. Subsequently, several state governments too started teaching and training activities and appointed committees to suggest myriad ways of strengthening ISM.

During Post-independence, the systems received official approval to provide health care to Indian masses with due inclusion in the National health care network. Establishment of hospitals and Research Institutes for Research and Development quickly followed. To give the push to the ISM, independent Directorates were established in almost all the states. Educational institutions for Bachelor's Degree were started (*Ayurveda*: more than 200 colleges; *Siddha:* 2; Unani: 34; Homeopathy (H): 130). Nearly 9,000 graduated from these institutions per year. Around 30 Institutes offer Post-Graduate degrees for Ayurveda with a wide choice of specializations. Recently Pharmacy colleges in ISM have also been opened.

To promote research and development activities in ISM, Councils for Research are established for multiple range of activities, including 'clinical and drug research' and 'cultivation of medicinal plants'. These centres offer opportunities of vigorous research and advancement of concerned medicine systems.

Thus, during post-independence period, one could clearly witness a paradigm shift in government's policies. The focus now is to produce uniform types of licentiates, standardizing of curriculum, patenting and bulk production of drugs. The institutionalizing of ISM is thus thought to be the game changer.The institutionalization of *Ayurveda* in India, as pointed out by Islam (2012), is also an attempt to arose a spirit of nationalism and a move to 'challenge the power of and seek equivalence with' allopathic medicine through the 'emulation of its professional models'.

To What Extent Have These Revival Efforts Succeeded?

It is true that the government policies and programmes have resulted in increased qualified manpower of the ISM. But this has not really increased the status of these personnel in the society, vis-à-vis, the biomedical practitioners. This is evident from the fact that competition for admission to different courses is far low in case of ISM. The unemployment and underemployment of the ISM professionals is also very evident. The science teaching in schools and colleges, the higher educational attainments of the masses over the years and the process of westernization of the communities favoured the biomedical dominance. The political philosophy of the parties in power and the politics played around the medical systems still favour the biomedicine and work against the true revival of the ISM. On the other hand, qualified practitioners of ISM too, by and large, seem to have accepted their position and felt that any effort of revival of ISM in a true sense is unnecessary, if not futile.

A study in Mysore in Karnataka State revealed that biomedicine was a natural choice of treatment for the majority of informants and that *Ayurvedic* care was resorted to when biomedical treatment failed. The study also noted that the exhibition and use of biomedical equipment by *Ayurvedic* practitioners was common since that helped meeting the expectations of proven effectiveness of therapy (Nisula, 2006).

Subsequent studies also reveal that a large majority of ISM practitioners have been exclusively practicing allopathic in towns and semi-urban areas. In such cases, the professional degrees are in a sense misused for allopathic practice. Islam (2012) argued in his paper that the *Ayurvedic* graduates actually found an avenue for covert practice of allopath system and that *Ayurvedic* experts tended to orient their training from an allopathic perspective.

Mainstreaming of AYUSH

Practitioners of modern medicine in India number around 700,000 and when this number is translated into a doctor-population ratio, it works out to 60:100,000. This ratio is much less than the desired ratio when compared with many countries. The huge urban-rural divide in regard to availability of qualified doctors is another problem. 70% of the population living in rural areas is served only by about 30% of the medical practitioners. The net result of these two factors is that a large number of medical officers' posts remain vacant in the rural health institutions. This in turn greatly affects the health care of the rural masses.

Paradoxically, the qualified doctors available in the ISM were not found suitable for public health functions in the rural health institutions and hence were not employed. This resulted in limited options for professional careers for the practitioners of ISM. The issue has been debated and brought to the notice of the several committees that have been constituted from time to time for recommending measures to advance health of rural masses. The ISM

supporters have lobbied with the government for effective use of trained manpower in public health institutions, as it is also a means to revive the status of ISM in addition to helping the village communities.

As the idea of mainstreaming of AYUSH again gained momentum decades after the independence, the Government of India finally initiated concrete action in 2005, launching the National Rural Health Mission (NRHM). In its mission document, the NRHM assertively declares the goals and strategy of NRHM as "Revitalize local health traditions and mainstream AYUSH" (Government of India, 2005:3). It also recommends integrating ISM into the public healthcare system. This is in terms of collocation of AYUSH doctors in various health facilities such as Primary Health Centre (PHC), Community Health Centre (CHC), sub-district hospital, and District Hospital (DH). By March 2012, about 76.3% DHs, 51.6% CHCs and 35.7% PHCs have been co-located with AYUSH facilities. 10439 AYUSH doctors and 4146 paramedical staffs are serving in India in rural health care institutions. As per the Terms of Reference (TOR), an AYUSH doctor should support in the implementation of national health programs after requisite training.

The AYUSH activities under NRHM are not uniform in all the states as health is a state subject. Different state governments have initiated different activities that suited to the socio-political environments and according to the perceived acceptance of these programmes. Some of these activities in different states are:

(a) Sensitizing the community regarding the benefits of ISM.

(b) Inclusion of Ayurvedic product known as *Punarnavadi Mandura* in the *Accredited Social Health Activists* (ASHA) kits for the management of anaemia at the community level.

(c) Popularizing of *Ksharasutra* therapy for anorectal disorders, *Rasayana Chikitsa* for senile degenerative disorder and *Panchakarma* therapy.

(d) Undertaking School *Yoga* program , setting up of *Yoga* camps and sensitization of school teachers on Yoga (in Tripura) under AYUSH .

(e) "*Suposhanam*", community nutrition programs as adopted in Rajasthan.

(f) Starting *Ayurveda* mobile units (Rajasthan, Jharkhand, Himachal Pradesh, Jammu-Kashmir and Orissa).

(g) Establishing AYUSH call centres (Madhya Pradesh and Tripura).

(h) Establishment of AYUSH epidemic cells, e.g. use of Homeopathy for *Chikungunya* and at the outbreak of some other diseases (Tamil Nadu and Kerala) .

(i) Supply of AYUSH drug kit (home remedies) (Chhattisgarh).

(j) Training unemployed youth on local health traditions (Haryana).

In a State like Meghalaya, where the receptivity to AYUSH is very low, the North Eastern Institute of *Ayurveda* & Homeopathy was established by the

Government India in Shillong, in 2010 with the consideration that it would generate awareness about the Ayurveda and Homeopathy and also help in mainstreaming of AYUSH in the region.

Impact of NHRM on Mainstreaming of AYUSH

Though much was anticipated from the impact of NRHM on mainstreaming of AYUSH, the field observations during the last 7-8 years were not very encouraging. A complete review of these studies is not attempted here due to paucity of space. The following citations may be sufficient to make the point.

Lakshmi (2012), based on her study in Andhra Pradesh, India observed a widespread negative impact of AYUSH due to non-recruitment of staff, unfair emoluments, poor infrastructure, unethical interpersonal engagements, and restricted support from non-AYUSH personnel resulting in demotivating both practitioners and patients.

Shrivastava *et al.* (2015) too observed that though manifold interventions have been executed to guarantee a proper merger, the expected results have not been achieved in regard to mainstreaming of AYUSH. He inferred from this that there were multiple challenges and obstacles ranging from variability in the philosophy of practice to ethical issues. They too agreed that these challenges weaken the value of AYUSH.

The Urban Demand for ISM

While the effort of reviving of AYUSH in rural areas through NRHM has met with only a limited success, the many developments initiated during the last 10-15 years surely worked for the demand of ISM, especially in the urban areas. This period saw a rapid revival of ISM in terms of increased demand for Professional courses of ISM, increased number of *Ayurvedic* institutions in the private sector in cities, increased utilization of treatment of ISM, share of herbal medicines in the Indian pharmaceutical industry in the last 10 years, etc. The important factors identified are: (1) the globalization of ISM; (2) Consumerism in health care; (3) the epidemiological transition; (4) the changing nature of medical practice in India; (5) aggressive marketing strategy of ISM products by the manufacturers. These factors are briefly discussed below.

On the globalization of *Ayurveda*, Hardiman (2009: 264) writes, "Ayurveda has experienced a metamorphosis, becoming a remarkably successful product in an emerging global medical market. It is now projected as a system of healing that is based on radically different premises to biomedicine. It has become a commodity that is packaged according to a formula, with the claim of an oriental antiquity being essential to the whole package….. (sic) Ayurveda, in particular, managed to rebrand itself as an alternative form of medicine with a global appeal".

Similarly, Kasezawa (2004) a Japanese scholar holds the view that *Ayurveda* is now becoming a global medical practice, having disseminated to

diverse areas of the world and acquiring new meanings in theory and practice. Scholars of Argentina reported the findings of their study of use of services of Ayurveda practitioners in their country (Freidin and Ballesteros, 2015). In the studies on the Indian Diasporas it was revealed that health experts educated outside the country and some spiritual organizations played a key role in the cross national diffusion of *Ayurveda*. Quoting Smith and Wujastyk (2008) , Freiden and Matias noted that the, "most recent trend of 'global' Ayurveda, is of an acculturated and reinterpreted healing modality associated with the New Age movement, in which various elements are borrowed from Eastern spirituality and the commoditization of health and wellbeing are paradoxically combined" (2016:670) . The demand for CAM is due to limitations of biomedicine for dealing with chronic illnesses and also for being a 'smart consumer' in a context of increased therapeutic pluralism. (Faldon, 2005; Quah 2008; Freiden and Salvador, 2015)

However, it has also been argued by some that increased CAM utilization is due to changing perceptions of people and a criticism of biomedicine for its failure to accept the principles of non-aggressiveness, a holistic concept of health, personal accountability, and the exploration for symmetric therapeutic relationships. "The use of CAM is related to rise of therapeutic sub-cultures and cultural innovation among the middle and upper social classes" (Freiden and Salvador, 2015:2).

The impact of globalization of ISMs on the demand for these systems of medicine back in India is evident. The Hindu edition of April 1, 2016 published the Minister of the Union Government's claim that 35 to 40% of beds in major *Ayurvedic* hospitals and spas in Kerala are filled with foreigners. *Ayurveda* is quickly emerging as a successful industry. Some scholars also noted that Ayurveda in India is in the process of reconstruction through contact with the outside world (Kasezawa, 2004).

The popularization of Yoga all over the world is cited with regard to globalization of ISM. It is reported that in the US alone, there are now more than 20 million practitioners, fueling a $27 billion industry (Gregoire, 2013). Attention to and recognition globally of ISM are also evident from the AYUSH exports from India ($358.60 million in 2015-16). A research report, 'Ayurvedic-Global Market Outlook (2016-2022),' also adds to the fact through their estimations that the global *Ayurvedic* market is expected to touch $9,791.0 million by 2022 which will be slightly less than three times to that in 2015.

Globalization of Ayurveda is seen as an important strategy for rejuvenating the AYUSH systems in a new way. The Ministry of AYUSH in India too pays attention to this and various initiatives are taken in this connection. One such initiative is sanctioning scholarships to study *Ayurveda*, *Siddha* and *Unani* degree courses in various reputed institutes in India as part of MoUs with other governments (Chandola, 2010)

The case of the tribal population is different though, as the rates of non-communicable diseases are rapidly increasing in India. Life-style diseases rather than the infectious diseases now cause more deaths in India. Deaths due to Non-Communicable Diseases (NCDs) account for more than 53 percent and for both sexes under the age of 60 years, cardiovascular heart disease is significant in number. A number of reasons could be responsible for the same. We could easily infer that altered life styles and increase in size of middle-class in India have resulted in an intense public health crisis.

ISMs and particularly *Ayurveda* advocate an 'integrated approach' for maintenance of health and prevention of disease. They lay stress on proper life style for keeping good health. The potential of ISMs in coping with the NCDs is widely publicized. The relative lack of control of biomedicine on the NCDs has paved way for falling back on the ISMs by the middle and upper classes of the society in recent years. The demand for Naturopathy, popular as nature cure in India, in the current scenario of public health crisis is well noted.

The medical practice in urban India is witnessing a sea change. The corporate hospitals and nursing homes are booming. There is more emphasis on 'integrated approach' to health in this set up than before. This integrated approach has paved way for cross referrals between the experts of different medical systems. The approach is one of cooperation than conflict as far as practitioners of different medical systems are concerned. The prescriptions of 'medicines' of Indian medical systems by allopathic practitioners is common. Verma (2007), based on a survey of outpatient drug prescriptions of an allopathic hospital of tertiary level, reported that prescriptions primarily had 12% *ayurvedic* drugs. A study in the KEM hospital Mumbai however showed that 67% of doctors prescribed *Ayurvedic* medicines in spite of the fact that 99 percent of them had no knowledge of basics of Ayurveda. The ISM drugs are often prescribed as supplements to the key Allopathy drugs. Non-drug therapeutic approaches like *'Panchakarma', 'Ksarasutra'* are part of other health systems.

This trend contributed to a greater acceptance of ISM by the lay members than before. The availability of medicines of *Ayurveda* and other ISM in modern drug presentation formats suggests that it in a way satisfies the lay members using such medicines and they develop the notion that those have been approved by the biomedical practitioners.

Utilization of AYUSH

There are substantial numbers of studies on utilization of different health care systems in India, though many are published in not so reputed journals. Further, many studies are limited to some geographical area and are based on small samples. The paper compiled by Srikanth *et al.* in 2015 gives a summary of findings of many such studies. Only few such studies are reviewed here.

Singh *et al.* (2005) reported on the basis of a sample of about 45,000 sick persons that 33% preferred Indian System of Medicine and Homeopathy (ISM&H) for common ailment. Although 18% favoured the ISM in case of serious ailments, yet those actually availing ISM treatment constituted only 14% of the total number of persons taking treatment for some or other serious illness. Slow progress made in case of ISM treatment was found to be the main reason for not preferring the same. .

The National Health Systems Resource study of 18 States pointed out that outpatient numbers demonstrated the relative increase in AYUSH utilization from 3.9 in 2009–10 to 6.5 in 2012–13. However, some other studies revealed a greater acceptance of ISM. Goyal *et al.* (2011) estimated that utilization of ISM&H among adults was 29.4%. Safety (82.9%), compliance (67.5%) and affordability (53.1%) contributed to utilization of ISM&H. Imran *et al.* (2017) in their more recent study (2017) similarly reported extensive utilization of Ayurveda (62%), Unani (74%) and other traditional therapies (76%) for different illnesses. Mutatkar (2017) in his recent work on 'AYUSH in Public Health' presented a national scenario of AYUSH. Taking into consideration the resort to home remedies, the utilization of services of traditional healers, it is projected that the utilization of AYUSH is very high.

A report of the Family Planning Commission in the year 2011 has observed with regard to utilization of AYUSH that about 99% of members who suffered from chronic illness have sought allopathic treatment, both from public or private sector health institutions. In a survey by the National Institute of Medical Statistics, data were collected from 12,581 patients. About 60 per cent of the households reported to have used services of traditional healers. Only about 3% of sick persons were found to be availing ISM& H.

It is also important to note that some scholars have disagreed with the range of acceptance of ISM to an extent pointed by the above scholars. One recent study based on National Sample Survey (NSS) (Rudra *et al.* 2017) has listed the following key findings:

(a) Allopathic system is popular in rural and urban areas, and more than 90% of patients on treatment belonging to various socioeconomic groups reported allopathic care.

(b) Irrespective of living in rural or urban areas, about 93 percent of those suffering from an illness used allopathy-based care 15 days prior to survey, as against 6-7 per cent AYUSH users.

(c)While use of ISM is comparatively more among elderly patients (about 4.5%), homeopathy care is preferred for children, especially in urban areas (4.8%).

(d) A gender divide for use of AYUSH is noted in rural India but not in urban areas.

(e) AYUSH was used for chronic illness both in urban and rural India (about 8 percent). AYUSH was preferred by 6.9% of patients for the country as a whole although there were profound variations found amongst different states and union territories.

(f) Highest AYUSH utilization (15% to 11%) was noticed in Chhattisgarh, Kerala and West Bengal. While *Ayurveda* and *Siddha* of ISM was a popular component of AYUSH in Chhattisgarh and Kerala, Homeopathy is more popular in West Bengal where it was introduced first in India.

(g) Pocket expenditure on AYUSH treatment was Rs 270 and Rs. 378 in rural and urban areas respectively, which was less compared to expenditure on allopathic medicine.

(h) Both in rural and urban areas, educated used AYUSH more.

(i) Scheduled tribe population utilized AYUSH care services more as compared to other social groups.

(j) Use of AYUSH in outpatient care was related to the nature of ailment; higher use of AYUSH for dermatological problems, musculo-skeletal ailments and cancer was however noted.

Similarly, Chowdhury and Kundu (2018: 178)) were very critical about government's endeavor to revive the alternative systems of medicine in India. They wrote, "although AYUSH had a fairly consistent presence in policy pronouncements, its utilization is low, with substantial variations across states in terms of usage, availability and perceived efficacy of AYUSH. Inadequate awareness about the system and inefficacy of treatment emerge as the two biggest reasons for not using these services".

From the above reviewed studies, it is apparent that the extent of utilization of ISM is not easy to judge. This may also be attributed to defective methodologies and also to the operational definitions adopted by the scholars in their studies. In fact, the use of multiple resources for health care is the reality in India as well as outside India. As Abraham and Sujata (2009) pointed out, pluralism in therapeutic options has become a way of (post) modern life since a growing range of health conditions elude any particular system of medicine. The increased use of ISM as complementary systems of medicine or alternative systems of medicine is acceptable. One would expect this demand will necessarily have an impact on the number of manufacturing units of these systems of medicine. Annual report 2015 reveals that 9282 manufacturing units were engaged in manufacturing of AYUSH drugs in the country as on April, 2015. Of them, the units manufacturing *Ayurveda*, *Unani*, *Siddha* and homeopathic drugs were 7995, 505, 379 and 403 respectively. Though the report indicates that the drug manufacturing units of *Siddha* and Homeopathy have declined by 0.2% and 3.2% annually during 1993-2015, it is difficult to associate this trend to the demand for ISM.

CONCLUSION

As Islam (2012) pointed out, it is impossible to understand contemporary indigenous medical practices in India without recognizing the fundamental impact of colonial intervention and its emphasis on allopathic medicine. The health system inherited from the colonial state has remained dominant even in post-colonial India.

It is also true that over a century the ISMs have retained their position by following the standards and styles demanded by modern medicine. It includes a variety of enterprises and more particularly use of instruments used by biomedical practitioners for diagnosis and to understand the trajectory of the diseases, establishment of educational and research institutions in the style of western medical institutions and boosting commercial marketing of *Ayurveda* drugs and pharmaceuticals (Chandola 2012).

The Government of India's support to revive AYUSH is recognizable. But the hegemony of biomedicine is more than apparent. That is the reason the statements by Shankar and Patwardhan are very apt. They write, "the current design, structure and functioning of medical services are antithetical to a pluralistic paradigm. Allopathic services have a separate Ministry, much larger budget and administrative machinery. AYUSH health services have an independent Ministry, a miniscule budget and much smaller administrative machinery; yet their numbers of trained medical personnel are comparable" (2017:138)

The National Institution for Transforming India in a document released recently has shared an impression that the AYUSH sector is marginalized and this has particular reference to the co-location of AYUSH services in public health system. A bridge course has also been proposed for training nurses/ AYUSH practitioners for prescribing essential medicines, if required. However, the AYUSH practitioners feel that these recommendations may affect the identity of individual systems, and that it will amount to supporting a 'culture of preferred allopathic practice'. The omission of AYUSH bridge courses in NITI India Action Agenda to enable allopathic practitioners to deal with NCDs too has been highlighted.

The threat to AYUSH with respect to its revitalization comes from a range of factors-the government policy regarding Medical systems in India that does not support integration but encourages assimilation; elite prejudices that prefer allopathic cures; and the training of ISM professionals that lean heavily towards allopathy. The policy is lopsided. Why is it and how is it that allopathic practitioners can freely prescribe *Ayurvedic* patent drugs without any professional training, but the ISM professionals cannot prescribe allopathic drugs? The revival of *Ayurveda* in contemporary times has become an issue where professionalism is pitted against group interest and orientation.

ENDNOTES

i There are instances of persons practising these systems of medicine without a state recognized formal education. Their practice is held to be illegal by Supreme Court of India in the year 2010.

ii Project: conservation of folk medicine / tribal medicine of Kerala (1987-1990) (http://envfor.nic.in/divisions/re/ta5p12.html, accessed on 18-7-2018).

iii Indian systems of medicine (ISM) refer to the "system of medicines which are considered to be Indian in origin or the systems of medicine, which have come to India from outside and got, assimilated in to Indian culture" (Prasad, 2002). Ayurveda, Siddha, Yoga, and Naturopathy are of Indian origin. Unani and Homeopathy are of foreign origin and assimilated into Indian society. For lay members of the Indian society, Ayurveda, Siddha and Unani are just 'herbal medicine'. Homeopathy was introduced in India around 1835 when a Romanian Dr John Martin Honigberger visited India. It was initiated in Bengal in the beginnings, spreading over to the rest of India later on. Government of India recognized Homeopathy as one of the national systems of medicine in 1973 and subsequently "Sowa-Rigpa" (known as Amchi) too in 2010.

iv For the purpose of this paper the term 'Indian Systems of Medicine' is preferred as this is more popular and because the term 'AYUSH systems of health care' has not been adopted by all State Government departments dealing with health care in their official websites. In fact the Union government which has introduced the 'AYUSH systems of health care' has in 2018 termed a recent bill as "Setting up of Commission for Indian System of Medicine". This paper is only with specific reference to Indian Systems of Medicine – the great traditions.

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Address for Correspondence: B. V Sharma, Professor, Department of Anthropology, University of Hyderabad, Hyderabad-500046. Email : sharmabhallamudi@gmail.com.
Mobile number: 9391010651.

J. Indian Anthrop. Soc. 54:194-203(2019)

Haematological Responses in High- and Lower-Altitude Monpas of Arunachal Pradesh in Northeast India

BHABOKLANG SOHKHLET

Department of Anthropology, Saint Claret College, Ziro

Abstract: Several studies have reported that haemoglobin (Hb) concentration and haematocrit (HCT) values increase with increasing altitude. However, this trend is not universal. Tibetans appear to have a reduced haematological response to hypoxia compared to Andeans and seem to have Hb and HCT values that lie within the range of healthy residents at sea level. This study aims to understand the haematological responses of the high- and lower-altitude Monpas vis-a-vis other high altitude populations. Haematological data of Monpa adults (20–49 years) were collected from high altitude villages of Tawang circle and from lower altitude villages of Kalaktang, and Dirang circles. The prevalence of mild and moderate anaemia was found to be higher not only among adults of lower altitude; the prevalence is also higher among the males than females. ANOVA results on haematological traits in respect of age and household income indicate that altitude differences in Monpa populations were not clearly perceptible. However, results of ANCOVA suggest an association between altitude and haematological traits after adjusting for age and household income.

Key words : Monpas, haematological traits, altitude, socio-economic factors, anaemia

INTRODUCTION

Several studies have reported that haemoglobin concentration (Hb) and haematocrit (HCT) values increase with altitude (Arnaud *et al.*, 1981; Garruto and Dutt, 1983; Winslow and Monge, 1987; Tarazona-Santos *et al.*, 2000). Other studies attributed haematological responses to age (e.g., Garruto and Dutt, 1983; Weitz and Garutto, 2004), genetics (e.g., Beall, 2006), sex (e.g., Beall *et al.,* 1998), ecology (e.g., Morpurgo *et al.,* 1976), and socio-economic (e.g., Frisancho, 1988; Garruto *et al.*, 2003) factors. Studies have also shown that Himalayan highlanders may not exhibit an increase in Hb as found in the Andes dwellers, and that they have only a slight increase in Hb with respect to their lowland counterparts (Frisancho, 1988; Beall *et al.,* 1998). Tibetans are reported to have a reduced haematological response to hypoxia compared to Andeans (Beall and Reichsman, 1984; Winslow *et al.*, 1989; Beall *et al.*, 1998); also Tibetan adults seemed to have Hb and HCT values that lie within the range of healthy residents at sea level (Beall and Reichsman, 1984; Beall *et al.*, 1998).

One of the ways to test the hypothesis on population differences in haematological response to high-altitude hypoxia (Beall *et al.*, 1998; Beall, 2001) is to compare the haematological responses to hypoxia of population(s)

who are from the same ethnic background (e.g., Monpas of Arunachal Pradesh) but living in low and high altitudes, after giving appropriate allowances for the effects of socio-economic factors.

Objective

This study aims to understand the haematological responses of the high- and lower-altitude Monpas vis-a-vis other high altitude populations.

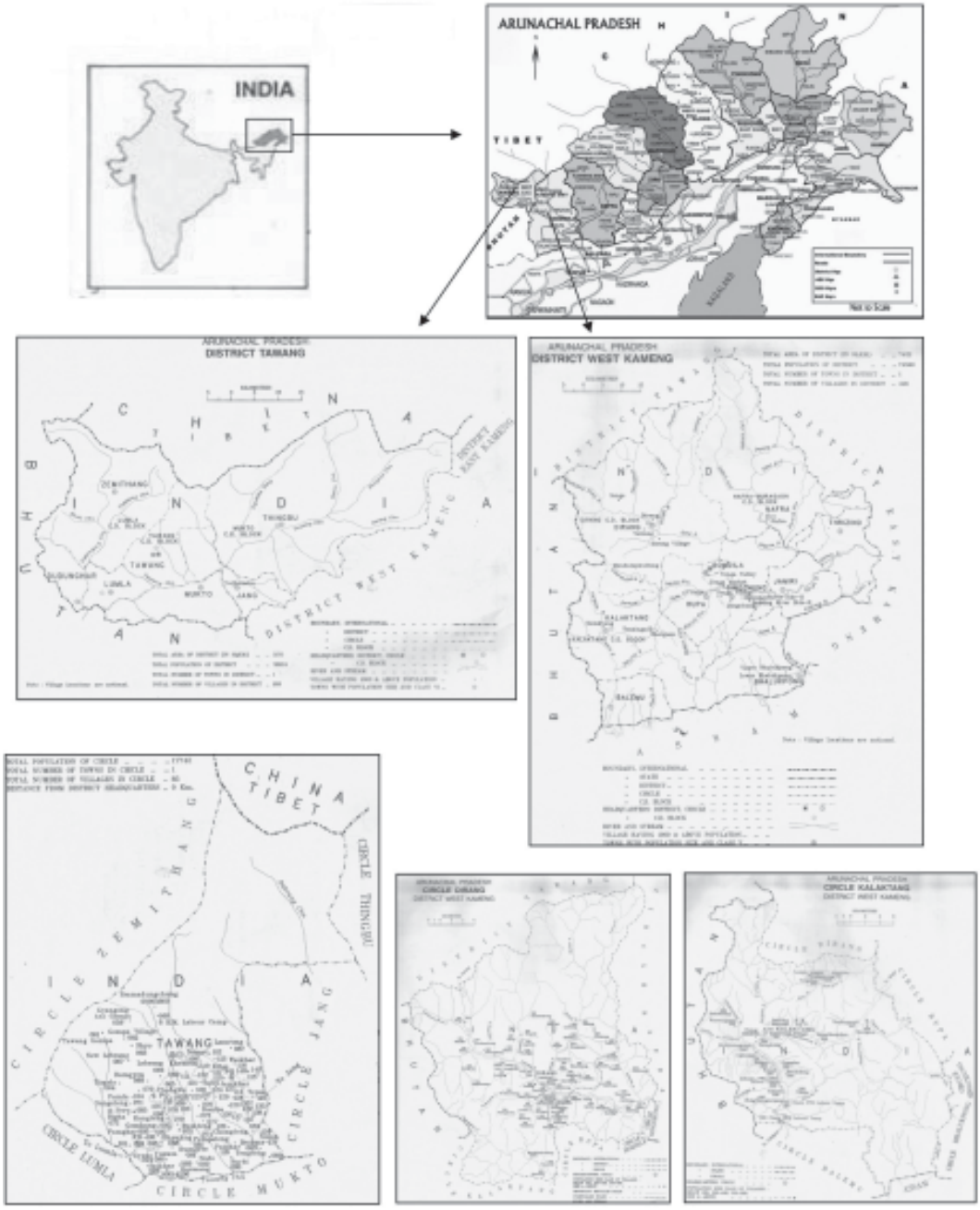
MATERIALS AND METHODS

Study Area and Sample

The present study on haematological responses to hypoxia was carried out among adult (20-49 years) Monpas (males and females) of lower and high altitudes in Arunachal Pradesh, Northeast India. Monpas are one of the major tribes of Arunachal Pradesh that are mainly distributed in Tawang and West Kameng districts. There are legends that the Monpas migrated to India (Tawang district: which is known as the homeland of Monpas in India) from Bhutan and Tibet at different times in history and that they are the earliest inhabitants at high altitude (Tawang) in Northeast India. They migrated from Tawang district to lower altitude and other parts of the state of Arunachal Pradesh. In West Kameng district, they inhabit mostly in Dirang and Kalaktang circles. They belong to the Tibeto-Mongoloid stock (Duarah, 1990) and are Mahayana Buddhist by religion and share close cultural and religious affinities to Bhutanese and Tibetans. They follow patrilineal and patrilocal system of society.

Haematological data on Monpa adult participants (20-49 years) were collected at different intervals of time from the villages of Kalaktang, Dirang, and Tawang circles during the period from September 2012 to August 2015. Tawang circle, which consists of 63 villages was selected as a representative of high altitude area (2947 m above sea level); . Kalaktang (1113 m above sea level) circle, consisting of 23 villages and Dirang circle (1580 m above sea level), consisting of 88 villages as representative of lower altitude. We adopted the protocol of sample design of Snedecor and Cochran (1967)¾and selected 10% of the total villages for both high and lower altitudes. The selected villages from Tawang circle include Lemberdung, Thongleng, Katchanga, Urgeling, Khirmu, Damgin, Kongteng, Seru, and Kitpi villages and that from. Kalaktang circle include Chingi, Rongthangjurpa, Ankalin, Boha, Khungpazong, and Lungdur villages and from Dirang circle, five villages, viz., Rama Camp, Sapper Camp, Rungkhung, Kalapahar, and Pangma were selected. A cross-sectional sample of 190 males and 219 females from lower altitude villages of Kalaktang and Dirang circles; and 105 males and 108 females from high altitude villages of Tawang circle were collected following a systematic random sampling at the village level, but not at the household and individual levels (Table 3). An informed consent was obtained from each participant prior to collection of blood specimen.

Fig-1: Location of the study areas. (A) CircleTawang (B) Circle Dirang (C) Circle Kalaktang
Source: Census of India, 2001.



Haemoglobin level and Haematocrit percentage

A Digital Haemoglobin Meter (Mission Hb) manufactured by Acon Laboratories, U.S.A was used for estimating haemoglobin (Hb) level (g/dl) and haematocrit (HCT) percentage (%). 10µL of blood specimen was collected from each participant by finger-pricking method using standard lancing device/blood lancets (WHO, 1980). The classification of anaemia was done following the WHO (2011) cut-off vlaues (Table 1) with appropriate altitude adjustments (Table 2).

Table 1: *Haemoglobin levels to diagnose anaemia at sea level following WHO (2011)*

Population	Non-Anaemia*	Anaemia*		
		Mild	Moderate	Severe
Non-pregnant women (15 years of age and above)	12 or higher	11–11.9	8–10.9	lower than 8
Men (15 years of age and above)	13 or higher	11–12.9	8–10.9	lower than 8

*Haemoglobin in grams per decilitre

Table 2: *Altitude adjustments to measured haemoglobin concentrations following WHO (2011)*

Altitude (metres above sea level)	*Measured haemoglobin adjustment (g/dl)*
<1000	0
1000–1500	-0.2
1500–2000	-0.5
2000–2500	-0.8
2500–3000	-1.3
3000–3500	-1.9
3500–4000	-2.7
4000–4500	-3.5
>4500	-4.5

Socio-economic categories

In the present study, age and household income were considered important socio-economic variables that are likely to influence haematological characteristics as reported in earlier studies. Data on age of individual was collected directly from the participants. Data on monthly income were collected from the heads of the households using appropriate schedule. Income groups were classified into three categories, viz., Low, Middle, and High based on the per capita monthly income as follows:

Above 75th percentile (>Rs. 4166) = High income group (HIG)

50th to 75th percentile (Rs. 3333–Rs. 4166) = Middle income group (MIG)

Below 50th percentile (<Rs. 3333) = Low income group (LIG)

Table 3: *Percentage distribution of males and females by age and income groups*

	Males LA = 190, HA = 105				Females LA = 219, HA = 108			
	Lower altitude		High altitude		Lower altitude		High altitude	
Characteristics	N	%	N	%	N	%	N	%
Age Group (years)								
20–29	82	43.16	61	58.10	109	49.78	54	50.00
30–39	55	28.95	21	20.00	62	28.31	33	30.56
40–49	53	27.89	23	21.90	48	21.92	21	19.44
Income group								
LIG	127	66.84	42	40.00	146	66.67	46	42.59
MIG	38	20.00	17	16.19	45	20.55	21	19.44
HIG	25	13.16	46	43.81	28	12.79	41	37.96

Notes: LA – Lower altitude; HA – High altitude

Statistical analyses

Data were processed and analyzed using SPSS (Version 22.0) in which the level of significance was set at 5%. The analysis was first carried out to present the basic descriptive statistics (frequency, mean, and standard deviation) regarding haematological variables (dependent variables) in relation to independent variables such as altitude, sex, and socio-economic variables (age and income). The frequency distribution of male and female participants at high and lower altitudes across three age groups and three income categories was computed. The scores for Hb level and HCT percent (dependent variables) were compared across three age and income groups (independent variables) independently for both high and lower altitude samples using one-way analysis of variance (ANOVA). The results of ANOVA shows significant differences of Hb level across age groups among females of lower ($F=6.17$, $p<0.05$) and high ($F=4.59$, $p<0.05$) altitudes; and that of HCT % across age groups among females of lower altitude ($F=7.71$, $p<0.001$) only. Therefore, to determine the mean differences in haematological traits (Hb and HCT) between altitudinal groups, analysis of covariance (ANCOVA) was used after controlling the effect of socio-economic variables (covariates) i.e., adjusted for differences in age and income. Chi-square (÷2) test was used to test the differences in the prevalence of mild and moderate anaemia between altitudes and between sexes (after pooling data on lower and high altitudes together for males and females).

RESULTS

Socio-Economic background

The age distribution of males and females was greater in lower age groups in both the sexes (Table 3). Most of the participants were below 40 years of age. More than half of male and female participants at lower altitude belonged to

the low income group, i.e., 66.84% males and 66.67% females. The proportion of participants in the high income was higher at high altitude for both males (44%) and females (38%).

Haematological traits by age and income groups

Table 4 shows the mean and standard deviation values of haematological traits by age groups for adult males and females of both lower and high altitudes. The ANOVA result shows that the differences among males across age groups in respect of Hb level and HCT percent were not significant at both lower and higher altitudes. As for females, the differences at lower altitude were highly significant with respect to Hb ($F=6.17$, $p<0.05$) and HCT ($F=7.71$, $p<0.001$). On the other hand, the difference was significant with respect to Hb ($F=4.59$, $p<0.05$) but not for HCT among high altitude females.

The mean and standard deviation values of haematological traits by income groups for adult males and females at lower and high altitudes (Table 5) show that there was no significant difference between differential income groups with respect to haematological traits at both lower and high altitudes. Unlike age, household income did not seem to have much significant impact on the haematological characteristics of adult males and females at both lower and high altitudes.

Haematology and altitude

The main objective of the present study was to test whether there are significant differences between Monpas of lower and high altitudes with respect to haematological traits. The trend in the result suggests that the difference in the haematological traits among the Monpas of both lower and high altitudes with respect to age and household income were not clearly perceptible except, the association of Hb with age among females of both altitudes; and that of HCT with age among females of lower altitude (Tables 4 and 5). Therefore, in order to test whether altitude and/or socio-economic factors are related to haematological traits among the Monpa populations at both altitudes, and to estimate their differences with respect to haematological characteristics, ANCOVA was applied, after adjusting for age and household income.

The differences between altitudes with respect to haematological characteristics (Hb and HCT) were significantly higher among adults of high altitude for both sexes. These differences were highly significant even after adjusting for age and household income (Table 6). The ANCOVA result for males indicates the strong association between altitude and Hb level ($F=54.28$, $p<0.001$) as well as HCT % ($F=10.50$, $p<0.001$). Similarly, among females the differences in altitudinal groups with regard to Hb level ($F=298.78$, $p<0.001$) as well as HCT % ($F=47.65$, $p<0.001$) were found to be highly significant. Therefore, these findings indicate that haematological characteristics among Monpas are greatly influenced by altitude differences.

Table 4: *Hematological characteristics of adult males and females by age group*

	Lower Altitude (LA)								High Altitude (HA)							
	Hb (g/dl)				HCT (%)				Hb (g/dl)				HCT (%)			
	Male		Female		Male		Female		Male		Female		Male		Female	
Age Group	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
20-29	13.38	1.07	11.80	1.07	41.07	8.23	34.76	3.14	14.38	0.58	13.84	0.61	42.28	2,58	39.98	2.88
30-39	13.42	1.50	12.10	1.02	40.13	5.81	35.02	3.34	14.46	0.51	14.22	0.39	42.71	2.57	40.15	5.11
40-49	13.09	0.98	12.38	0.68	38.28	3.21	38.77	10.23	14.43	0.41	13.60	0.69	42.96	2.51	40.67	2.85
F-ratio	1.27		6.17*		3.00		7.71**		0.22		4.59*		0.66		0.26	

*SD: Standard deviation, *p< 0.05, **p<0.001*

Table 5: *Hematological characteristics of adult males and females by income group*

	Lower Altitude (LA)								High Altitude (HA)							
	Hb (g/dl)				HCT (%)				Hb (g/dl)				HCT (%)			
	Male		Female		Male		Female		Male		Female		Male		Female	
IncomeGroup	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
LIG	13.28	1.15	12.09	0.95	40.13	7.28	36.12	4.96	14.37	0.48	14.06	0.55	42.43	2.66	40.72	2.99
MIG	13.35	1.07	11.82	1.17	39.50	3.80	36.42	8.03	14.47	0.53	13.91	0.60	42.59	2.15	40.14	1.82
HIG	13.44	1.55	11.90	1.00	40.24	6.04	35.32	3.12	14.41	0.57	13.89	0.62	42.57	2.65	39.56	4.87
F-ratio	0.21		1.39		0.15		0.35		0.22		1.07		0.04		1.08	

SD: Standard deviation

Table 6: *Hematological characteristics of adult males and females at lower and high altitudes*

Characteristics	Lower altitude (M = 190) (F = 219) Mean	SD	High altitude (M = 105) (F = 108) Mean	SD	Differences due to altitude (F-statistics) Unadjusted	Adjusted[a]
Males						
Hb (g/dl)	13.31	1.19	14.40	0.53	78.78**	54.28**
HCT (%)	40.02	6.55	42.51	2.56	14.03*	10.50**
Females						
Hb (g/dl)	12.01	1.00	13.97	0.59	351.57**	298.78**
HCT (%)	35.71	5.76	40.17	3.67	53.74**	47.65**

[a]*Adjusted for differences in age and household income*
*SD: Standard deviation, *p<0.05, **p<0.001*

Anaemic status

Table 7 shows the prevalence of anaemia for males and females of lower and high altitudes. The prevalence of mild anaemia was found higher in males and females of lower altitude compared to their counterparts at high altitude. The Chi-square test for the differences between altitudes in the prevalence of mild and moderate anaemia were found to be highly significant for both males ($p < 0.001$) and females ($p < 0.001$). When data on lower and high altitudes were pooled for males and females, the overall prevalence of mild and moderate anaemia was significantly higher in males (45.76%) than in females (37.31%) ($\div^2 = 4.42$, df = 1, $p < 0.04$). Therefore, the prevalence of mild and moderate anaemia was found to be higher not only among the adults of lower altitude, but also among males than females.

Table 7: *Anaemic status adjusted for altitude according to WHO (2011)*

	Lower altitude (Male = 190 Female = 219)		High altitude (Male = 105 Female = 108)		Total (Male = 295 Female = 327)	
Anaemic Status	N	%	N	%	N	%
Males						
Normal (≥ 13 g/dl)	88	46.32	72	68.57	160	54.24
Mild (11–12.9 g/dl)	99	52.11	33	31.43	132	44.75 $\div^2$=14.26,df=1,p<0.001
Moderate (8–10.9 g/dl)	3	1.58	0	0.00	3	1.02
Total	190	100.00	105	100.00	295	100.00
Females (non-pregnant)						
Normal (≥ 12 g/dl)	104	47.49	101	93.52	205	62.69
Mild (11–11.9 g/dl)	74	33.79	4	3.70	78	23.85 $\div^2$=65.58, df=1,p<0.001
Moderate (8–10.9 g/dl)	41	18.72	3	2.77	44	13.46
	219	100.00	108	100.00	327	100.00
Chi-square ($\div^2$)					4.42, df = 1, p < 0.04	

DISCUSSION AND CONCLUSION

Earlier studies have reported that haemoglobin concentration (Hb) and haematocrit (HCT) percentage increases with altitude i.e., among Andean populations (Arnaud *et al.*, 1981; Winslow and Monge, 1987; Tarazona-Santos *et al.*, 2000). The present findings on the haematology of Monpas seem to be by and large in consistent with this contention especially among females. Whether haematological response of Tibetans is also unique relative to other Asian populations is not clearly understood. Some studies -without specifying age at migration- indicated that adult Han residents at high altitude have higher Hb than the indigenous Tibetans. Garruto *et al.* (2003) observed that Tibetans and Hans growing up at high altitude have modest differences in haematological responses to hypoxia, relative to age and altitude. Similarly, Garruto and Dutt (1983) showed that the values for Hb and HCT increased with age among children and adults though there was no significant association between age and these parameters.

As indicated in the methodology section, the present study primarily addresses the issue of altitudinal effect on haematology after controlling the effect of socio-economic factors (such as income and age). The study however, has few limitations with regard to size and distribution of samples, especially at high altitude and also in addressing other factors such as climate and nutrition. These factors are likely to influence the haematoloical score of populations at different altitudes. Therefore, further researches may be delved into this area taking into consideration the distribution and size of samples as well as the effects of other factors such as climate and nutrition on the haematological responses of the Monpas at lower and high altitude of Arunachal Pradesh.

Overall, the present study shows that both Hb level and percentage haematocrit (HCT) were greater at high altitude than at lower altitude as generally observed in Andean populations. Therefore, the present study does not seem to support the contention that the Monpas (like the Tibetans) of Arunachal Pradesh have a reduced haematological response to hypoxia compared to Andeans.

ACKNOWLEDGEMENTS

I am indebted to my mentor Prof. R. Khongsdier. I thank my field assistants, interpreters, and all the Monpa subjects from Kalaktang, Dirang, and Tawang circles of Arunachal Pradesh. I acknowledge the University Grants Commission (UGC), Delhi, for the Rajiv Gandhi National Fellowship (RGNF) awarded for the course of this research.

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Address for correspondence: Bhaboklang Sohkhlet, Department of Anthropology, Saint Claret College, Ziro. Email Id:bhaboklangs@gmail.com. Mobile: 8014885106

J. Indian Anthrop. Soc. 54:204-216(2019)

Health of Tea Garden Labourers: A Brief Review

ANKITA BHATTACHARYA[1], SHANKARASHIS MUKHERJEE[2], SUBRATA K. ROY[1]

[1]*Biological Anthropology Unit, Indian Statistical Institute*
[2]*Department of Physiology, University of Calcutta*

Abstract: Tea is one of the most popular beverages around the world, and tea industry holds a strong potential in Indian economy. Tea industry is labour intensive, and a large number of unskilled labourers are engaged in this job. Health and nutrition of the labourers are major components for the productivity of the labourers in tea industry and therefore it is necessary to look into the health status of the tea garden labourers. The paper tried to review the present health condition, nutritional status and disease burden of the tea garden labourers, in light of the literatures published from different tea regions of India, which may help the garden authorities as well as the government officials to identify the problem and planning for a better health and nutrition of the tea garden labourers.

Key words : Review, Tea garden labourer, nutritional status, diseases burden.

INTRODUCTION

History: Tea is one of the cheapest and oldest beverages in the world discovered around 2700BC (Heiss *et al.*, 2011). It is supposed to be helpful to release mental stress, normal headache, fatigue and cold (Karak *et al.*, 2010; Wierzejska, 2014). The plant is native to East Asia, and believed to have originated around the borderline of north Burma and southwest China (Heiss *et al.*, 2011; Saberi, 2010). The drinking of tea as a beverage may have begun in the Yunnan region during the Shang Dynasty in China, exclusively for medicinal purposes (Heiss *et al.*, 2011). It became widely popular during the Tang Dynasty, when it was spread to Korea, Japan, and Vietnam. In India, the practice of drinking tea started long before the colonial era for health benefit. However, tea became a beverage item during the colonial period.

The agro-climatic condition of tropical and sub-tropical regions of the world is conducive for the growth of the tea plant and thus majority of the world tea production is geographically restricted to a fewer countries like China, India, Kenya, Sri Lanka, Vietnam, Turkey, Iran, Indonesia and Japan.

The history of Indian tea industry is more than 160 years old. It was first initiated in Assam (1835) by the East India Company (Bhuyan, 1949; Bhattacharjee, 1977; Choudhury, 1978; Choudhury, 1989) and later in Darjeeling (1839), Terai (1862), and western Dooars (1865) and subsequently in the Nilgiri hills of south India. At present India does have four major tea belts: (1) Brahmaputra and Barrak valleys regions, Assam; (2) Darjeeling- high hill region, Tarai and Dooars - foot hill region of Himalaya, West Bengal; (3) Tamilnadu, Karnataka and Kerala- foothills regions of Nilgiri hills; and (4) Himachal Pradesh and Uttarakhand – foothills regions of Himalaya (Griffiths,

1967). Besides, Tripura, Arunachal Pradesh, Manipur, Sikkim, Nagaland, Meghalaya, Mizoram, Bihar and Orissa are the other states where tea is also grown but at a smaller scale.

India produces about 27 percent of the world's tea (Baroowah, 2006), primarily two types - CTC (cut, tear and curl, produced in Dooars and Assam) and Orthodox (produced in Darjeeling). The highest production of tea comes from the Assam region. But the best and high priced quality (flavored) tea is produced and supplied from Darjeeling hills of West Bengal.

Labourer: The tea industry is labour intensive. It provides employment to more than a million unskilled, immigrant and local workers for tilling land (preparation of the land for transplanting new tea plant), maintenance of the plant (weeding and protecting from insects), plucking leaves to processing tea leaves and lastly packaging. Migrant labourers in the tea gardens primarily come from less developed region adjacent to tea garden areas and mostly tribal people are engaged in the job. For example, in the tea gardens of West Bengal, the prevalence of many Chhotanagpur tribes like Santhal, Oraon, Munda, Lohar, savara, Kharia are found. Majority of these migrated labourers are working in the industry for generations and presently have little or no contacts with their place of origin (Kar, 1984; Hazarika, 2012).

The garden authorities provide free accommodation to the labourers inside the tea estate, generally isolated and far from towns, which is commonly known as 'labour line' (Sarma, 2013). Tea garden also provide a small plot of land for kitchen garden, a specified quantity of food grains and fuel at subsidized price on weekly basis, piped water, free medical facilities and free schooling for children (up to primary level). Therefore, the workers are living permanently in the same quarters in the same tea garden even after retirement and their descendants get employment in the same tea estates (Banerjee *et al.*, 2003).

The production of the tea is dependent on the amount of green leaves plucked and processed. Therefore, plucking of green leaves (two leaves and a bud called flush) is the most important job done by the labourer. A plucker is to pluck a stipulated amount of 25 kgs. green leaves per day (within 8 hours' duty schedule), for which they earn a daily wage of around Rs. 120/-, plucking over and above the stipulated amount has an incentive (extra remuneration) to motivate the pluckers for more plucking. Besides that, they have extra source of income through livestock and brewing local alcohol (handia).

Unfortunately, the situations of the tea labourers in India are not as ideal as it should be. They are among the most under privileged and exploited groups in India (Mitra, 1991; Saikia *et al.*, 2013; Sarma, 2013). Tea labourers lack often times basic amenities of life like education which leads them to poverty, addiction to country made rice beer, poor standard of living. A recent study by Srinivasan (2016) reported the miserable living conditions and the poor wages of the tea plantation workers of Tamilnadu. Besides, over-crowding and unhygienic living conditions in the residential colonies make tea garden

population vulnerable to various communicable diseases and malnutrition (Roy *et al.*, 1992).

Poor nutritional and health status of labourer is often liable to reduce the productivity. Quality of childhood nutrition significantly affects the rate of work output during adulthood. On the other, poor physical health due to morbidity (Sengupta, 2017) and poor mental health (Halfner *et al.*, 2015) also adversely affects output of the worker. Study by Tiwasing (2016) reported that poor dietary practices due to low accessibility of nutritious foods might be the reason of low productivity of labourers. Mitchell (2011) also estimated the cost of productivity loss related to poor health conditions. Though one study on the tea garden labourers (International Labour Conference, 2008) indicated that the production does not depend on the strength of the individual but the skill of the labourer, but the minimum physical fitness is required to carry out the job.

Therefore, the health status of the labour force is generally presumed to be an important factor controlling the production. Present write-up tried to summarize the health related problems of the tea garden labourers, with reference to Indian tea gardens, which may help in policy making for the betterment of the population and therefore have important public health implications.

The present review tries to summarize the health scenario of the Indian tea garden labourers against their scocio-economic backdrop. PUBMED was searched for original articles and review articles published in English from the years 2000 upto present times. Additional publications (before the year 2000) were identified from the reference list of the articles retrieved. Combinations of the following groups of keywords were used for the search: health status of tea garden labourer, malnutrition, protein-energy malnutrition, anaemia, socio-economic status. Review articles and original research reports were selected that assessed nutritional status of the labourer community.

HEALTH STATUS OF TEA GARDEN LABOURERS

Tea garden labourers are susceptible to a number of physical, biological, mechanical, chemical (toxic pesticides, insecticides and fertilizer) and psychosocial health hazards (A.D., 1984; Dowerah, 2013). As a result, they are more prone to suffer from several chronic diseases, such as respiratory diseases (International Labour Organization, 2006), nutritional deficiency symptoms, anaemia, water borne diseases, back pain and physical injuries (Asia Monitor Resource Centre, 2011).

During the colonial period, the health condition of Indian tea garden labourers was miserable than that of today (Arnold, 1989). Studies reported that the garden authorities supplied lesser amount of food in quantity and there might have been a prevalence of acute and chronic hunger among the

labourers leaving them host of several communicable diseases like malaria, cholera, dysentery, diarrhoea, hookworm and tuberculosis. The supplied food was also deficient in fat, vitamins and proteins. As a result, the prevalence of anaemia was quite high (Choudhury, 1978; Arnold, 1989). Furthermore, miscarriages due to syphilis and anaemia were also very common among tea garden population (Das, 1931). Major Llyod Jones reported that, between the two major tea belts of India- North Bengal and Assam, the condition of labourers was better in former one because they had separate independent holdings and not the 'labour lines' like Assam. Therefore, they could cultivate their own plot and the intake of protein was more in Bengal labourers than the Assamese labourers (Arnold, 1989).

In the post-independence of India, recruitment of labourers from different provinces through different means continued till 1953. But the tea garden authorities were reluctant about the minimum requirement (like providing ration, shelter and medical facilities) of the labourers. As a result, they were susceptible to numerous occupational health problems starting from small injuries, sprains to infections, malaria and life threating diseases (Phukan, 1984).

The diseases of these groups can be summarized under two major categories; (1) communicable and (2) non-communicable diseases.The prevalence of communicable diseases among the tea garden labourers was very high owing to poor hygienic and sanitation system. But with the passage of time, the prevalence of non-communicable diseases like hypertension, fatty liver and so on increased.

(1)Communicable Diseases

The personal and household hygiene and sanitation system of the tea garden labourers are very poor all over the country. This may result in the dispersal of different types of infections and communicable diseases.

Study by Medhi *et al.* (2006) reported that unhygienic living conditions in the residential colonies make tea garden population vulnerable to diseases like respiratory infection, skin infection, leprosy, filariasis, diarrhoea and other gastro-intestinal problems. Study (Gogoi, 2014) among the labourers of two tea gardens of Assam reported that a substantial part of the labourers still have a habit of open field defecation (17.4% in one and 55% in the other), do not practice any sanitation related hygiene (30.4% and 55%), have a practice of disposing garbage just outside the living premises (73.9% and 50%), have a poor provision of drainage facilities (91.3% and 73%) and majority have a practice of household cleaning once in a week (43.3% and 25%). Furthermore, water supply by the garden authorities was not adequate and therefore the labourers have to drink water from self-made low depth tube-well (56.5% and 45%) and also have to stack for future use. All these practices give rise to various sanitation related and water-borne diseases like dysentery (36.4% and 11.1%), malaria (9.1% and 0.0%) and dengue (9.1% and 11.1%). Similar

findings were also reported by other studies (Biswas *et al.*, 2002; Banerjee *et al.*, 2003). Another study reported an alarming rate of hook-worm infestations (65.4%) among the tea garden labourers due to the open field defecation (Biswas *et al.*, 2002). A study among the tea garden population of Assam (Biswas *et al.*, 2002) showed that 11.6% suffered from tuberculosis, and 6.7% from other pulmonary infections.

(2)Non-communicable Diseases

Unlike the communicable diseases, different types of non-communicable diseases were reported throughout Indian tea garden labourers.

Respiratory Diseases: Literature on the prevalence of respiratory disease among the Indian tea garden labourers was scanty. One study reported the increased resistance in the peripheral airways leading to a high prevalence of work-related respiratory impairments (67.5%) among the labourers who were constantly exposed to tea fluffs which is a potential asthmagen and induce broncho-provocation (Moitra *et al.*, 2016). The report again mentioned that almost 78% of the tea workers had hypersensitivity to the allergens commonly present either in the plantation areas or in the indoor air which causes an increased level of IgE leading to allergen associated respiratory diseases. Assam tea garden labourers reported pulmonary tuberculosis (11.7%) and other respiratory diseases (6.7%) at an alarming rate (Medhi *et al.*, 2006). High prevalence of respiratory diseases among male (33.33%) and female (14.81%) labourers were also reported (Borogohain, 2013). There was significant decrease in ventilatory function parameters (FVC, FEV_1, FEV25-75%, PEFR) among the factory workers having chronic exposure to tea dust (Das *et al.*, 2015). Similar findings were also reported for the tea garden labourers of West Bengal (Sarkar *et al.*, 2010; Manna *et al.*, 2012; Roy *et al.*, 2013); but these studies revealed women to be the worse sufferers from asthma, tuberculosis and others types of respiratory tract infections compared to men. Another study by Sengupta (2014) reported that the labourers had significantly higher VO_{2max} than the control group among the male tea garden labourers of Cooch Behar district.

Anaemia: Several studies from different tea belts of India revealed that anaemia is a major nutritional problem of the tea garden labourers. In one such study (Biswas *et al.*, 2002) it was revealed that 72% of the tea garden labourers of Assam suffer of nutritional deficiency anaemia. Similar reporting has also been made by Das (2012) from another study in Assam. Kundu and colleagues (2013) reported that 90% of the labourers were anaemic (Hb. concentration <12gm/dl) in the Dooars area, West Bengal. Similar prevalence of anaemia has been reported among the tea garden labourers of Darjeeling and Jalpaiguri districts (Manna *et al.*, 2012). Study by Roy (2013) reported that prevalence of anaemia among the tea garden labourers of Jalpaiguri district of West Bengal was 32% in males and 81% in females. Study on the tea garden labourers of South India demonstrated that the hemoglobin levels of female plantation workers (mostly of childbearing age) were very low (6.1 g/

dl). Daily iron supplementation with ferrous sulfate tablets containing 65 mg of elemental iron significantly increased the hemoglobin levels and their average plucking performance also enhanced (Rahamathullah, 1983). Similar findings were reported by Gopaldas (2002) on the tea garden labourers of Chickmagalur district of Karnataka.

Malnourishment: Several studies revealed a gloomy picture of nutritional and morbidity profile of the tea garden labourers in India. A study by Biswas *et al.* (2002) revealed severe degree of under nutrition (male- 9.98% and female- 24.06% among tea garden workers of Assam where females were the worst sufferer. Hard working labour force was found to be chronically deficient with energy (57.34% male and 74.95% females) which resulted in a huge loss in work capacity. Nutritional problems like underweight children was 59.9%, adult thinness was 69.8% among tea garden labour population. Elderly persons of tea garden with lower socioeconomic status appear to be at higher risk related to poor dietary intake (Medhi *et al.*, 2006). Stunting and thinness among the adolescent boys and girls also indicate the legacy of nutritional deprivation during early childhood of Assam tea garden labourers (Medhi *et al.*, 2006). The scenario of West Bengal tea gardens does not differ largely. Study by Biswas *et al.* (2005) reported alarming rate (41.2%) of low BMI value and labeled the surveyed gardens as "starving communities". They also reported a high percentage of death rates starting from new born to old age. The most vulnerable group was the pregnant women, new born baby and pre-reproductive children. In another study on the tea garden labourers of Dooars, reported that the children had a much lower BMI, 54% were severely undernourished, 34% were moderately undernourished and only 3.3% were in the mild to normal category (Mittal *et al.*, 2006). A study on the physical fitness of the tea garden labourers of Dooars reported that they had lower fitness than the control group (Sengupta *et al.*, 2012). It also reported the majority of labourers had ectomorphic body build and had higher VO_2max than the control group. A significant difference in both anthropometric and physiological parameters was found in tea garden workers. Another study by Sengupta (2014) on the tea garden labourers of Cochbihar district reported low body weight, BMI, body fat percentage, resting heart rate, protein-calorie malnutrition, less body growth. The health status of the south Indian tea labourers do not differ largely from Assam and West Bengal labourers. There was also reported case of undernutrition and micronutrient deficiency (mostly vitamin A) (Gopaldas, 2002).

Goitre: A very few researches have been done on the prevalence of goiter, an iodine deficiency disorder among the tea garden labourers. Since tea gardens are usually situated on the hills or in the foothill belts in India, iodine content in the soil is very low. As a result, the fruits and vegetables grown in that region are deficient of iodine. In most of the cases the labourers are unaware of the use of iodized salt and goitre was frequent. ICMR task force

study (1989) reported 65.8% prevalence of goiter among tea garden population of Dibrugarh district of Assam. Later, study by Dutta and Baruah (2014) on the same population reported that the prevalence of iodine deficiency has decreased significantly among the people who had high prevalence of deficiency few decades back. This may be because of universal use of iodized salt. But still the requirement of maternal iodine intake didn't reach the body requirement. As a result, the study found that there was a high prevalence (10.3%) of congenital malformations among children of the labourers. Similar finding was also reported from the tea labourers of south India (Gopaldas, 2002).

Hypertension: Prevalence of cardio vascular diseases and hypertension prevalence was rare among the tea garden labourers in the past years. But presently, the uses of tobacco and alcohol increase the risk of the cardiovascular diseases. Hazarika (2002) reported that the disease burden of hypertension among the labourers of tea gardens of Assam was quite large and the prevalence (60.8%) was compared to other communities in Assam and found independent determinants of hypertension were age, gender, consumption of locally brewed alcohol and *khaini* as well as intake of extra salt. The significant burden of hypertension (45.9%) among the tea garden labourers was also reported by other studies in tea gardens of Assam and west Bengal (Biswas *et al.*, 2005; Mahanta et. al, 2008; Manna *et al.*, 2012; Roy *et al.*, 2013)

Other Diseases: Apart from severe health problems, the tea garden labourers suffer from different types of occupational health hazards, but studies in Indian gardens in this aspect are scanty. Few studies reported that chronic diseases like gut diseases, gastritis, ulcers, joint pain, diabetes, senile cataract, epilepsy were quite common among the labourers and these were not aptly taken care by the health centers of the tea gardens (Biswas, 2002). Malaria, Filaria are serious problems in all tea garden belts of India especially in the monsoon period every year (Banerjee *et al.*, 2003). The disease burdens in the sick and closed gardens are intuitively more severe.

MISERABLE CONDITION: REASONS AND CONSEQUENCES

Tea industry is one of the most productive industries which earn fair amount of foreign exchange for the country, but the problems of the tea labourers are not yet solved. The measures taken by the government are not yet adequate in this regard. Although there is Tea Board that controls the quality of the tea, but seemingly they are less concerned about the labourers. However, looking at the reasons behind the trail of diseases, it was found that poor nutrition, poor personal and household hygiene, unsatisfactory sanitation coupled with ignorance due to lack of awareness, may cause several diseases (Biswas *et al.*, 2002; Borgohain, 2013).

Gilgen and colleagues (2001) mentioned that the plausible reasons behind anaemia were intake of low iron rich diet and prevalence of helminthic

infestation. Helminthes like hook worm, affect red blood cells, which ultimately affect the oxygen carrying capacity of muscles and thereby decreasing the working capacity. The lower the haemoglobin levels, the lower the immunity, which are associated with incidence of infectious diseases like diarrhoea, influenza and bronchitis and suffering from diseases might have caused lower productivity than the normal group and the plucker to remain away from work (Gilgen *et al.*, 2001; Kundu *et al.*, 2013). It was reported that absenteeism is more among anaemic labourers than non-anaemic ones.

Furthermore, undernutrition compounded with non-literacy could probably be responsible for higher prevalence of disability among tea garden elderly individuals compared to urban elderly. The diet, which is deficient in major nutritive values, is also a major reason behind the impaired health condition of the labourers (ICMR, 2004). The intake of protective food such as milk, green leafy vegetables and fruit was insufficient among tea garden labourers which further lead to deficiency of several micronutrients such as calcium, iron, riboflavin, vit-A, vit-C etc. (Saikia, 2012). Women of the tea gardens are more prone to different diseases because of the food distribution system (Basu *et al.*, 1987). Reported reasons of deaths in the tea gardens include tuberculosis, negligence during pregnancy and still birth, urinary tract infection, diarrhea and some death with unknown reasons (A.D., 1984; Medhi *et al.*, 2006). Undernourishment, on the other, decreases immunity levels, leaving the body vulnerable to all kinds of diseases such as measles or malaria, mostly prevalent among the children. Moreover, delivery at home was the most common practice in all tea gardens and majority of the deliveries, attended by traditional birth attendants that may lead to infections of the new born as well as the mother. Further, mothers did not continue exclusive breastfeeding for six months due to heavy workload in the plantation and supplimentary food given to the children was often nutritionally inadequate. The women and children could not take required amount of food and protein intake of the community was meagre. On the other the health centers of the garden did not provide services for childhood immunization, pregnancy and delivery care, sanitation, health and nutrition education etc., which were essential.

The level of cognition regarding health and disease is very poor and threshold of feelings of physical uneasiness is high among the tribal tea garden population (Roy *et al.*, 2013), which often leads to carelessness towards health seeking behaviour. Therefore, they often failed to recognize their health problems early due to lack of education and lack of knowledge on the severity, vulnerability and consequences of their illness. Their socio-cultural habits and practices like drinking handia (rice bear) and other intoxicants are also responsible for the poor nutrition and thereby causing diseases. Traditional ethno-spiritual faith healing is very much relied upon than modern allopathic treatment in the tea garden populations (Roy *et al.*, 2013), and as a

consequence the treatment of diseases in modern medicine is ignored many a times (Medhi *et al.*, 2006).

Moreover, geo-climatic change in tea garden areas due to river shifting, deforestation and soil erosion forced the tea garden labourers to cope the conditions of floods, landslides etc. All environmental hazards directly or indirectly affect (Roy et. a., 1992; Banerjee *et al.*, 2003) the health conditions of the tea garden labourers.

Mandated worker benefits (especially for pregnant and breastfeeding women) and government relief programs (ICDS and MDMS) remain irregular, inconsistent, and in some cases, inadequate or entirely absent in the tea gardens. Though, some efforts have been made to improve the condition. The micronutrient intervention program initiated by a research group observed specific improvements in the health of the labourer of Karnataka tea gardens (Gopaldas, 2002).

It appears that the root of all these problems of the tea garden population is mainly due to poverty (Singh *et al.*, 2006; Ministry of Labour & Employment, 2009; Sarma, 2013) and illiteracy (Karna, 1998; Singh *et al.*, 2006; Ministry of labour & Employment, 2009; Sarma, 2013) which leads to lack of knowledge, awareness and practice towards better health and nutrition. Moreover, they live in isolation, away from the urban milieu (Singh *et al.*, 2006; Ministry of labour &Employment, 2009; Sarma, 2013) that deprives them to get knowledge on advanced social facilities available for them. So, all these factors adversely affect the health of the labourers leading to low work output and productivity (Roy, 1995; Hazarika *et al.*, 2002).

The tea garden labourers when compared with other several other occupational groups, seems to be more vulnerable to nutrition and health problems because of their poor diet which is supposed to be deficient in micronutrients, non-availability of modern health services, non-literacy, poor economic condition and cultural norms which may have caused a burden of diseases. The health of women and children were more serious where malnutrition and disease burden were at their highest level. This scenario of the tea garden labourers are not similar across the country, because of the wage pattern, literacy rate, dietary practices, knowledge regarding diseases and hygienic practice, which varies from one tea belt to another. However, the exploitation of the labourer is severe all over the country.

Health of the tea garden labourers can be improved through better hygienic practices, by creating suitable environment of health awareness and nutritional intervention and also by the improvement of overall socio-economic conditions of the population. Under the Plantation Labour Act, 1951, labourers were supposed to get ration with subsidy, fuel, housing, maternity benefits and free medical treatment. Tea garden authority should enforce primary education compulsory for all and must have provision of crèches where there are more than 50 women employees. Although some of the above benefits are

available to the labourers, some of them are not applicable in the case of temporary labourers who constitute a considerable proportion in the tea estates. The tea garden authorities have to be more sensitive to the socioeconomic needs of the workers so that there is an overall improvement in occupational health, thereby mitigating the health hazards to the greatest possible extent.

CONCLUSION

In India, the study of health and nutritional status of the tea labourers are not consistent, there are specific difference in regional tea gardens (south, north, east and north-east) and health problems of tea garden labourers of northern and southern region are not well reported; future researches should be done on the specific problems of labourers of these regions. Furthermore, as majority of the labourers were migrant population, therefore comparative study on the health status of the labourers with the original population should be done to find out the effect of migration and also the coping strategy of the migrant group. There is a need of future studies on the health, nutritional condition and deficiency disease of the tea labourers in a uniform framework (models and methodology) so as to obtain a comprehensive understanding of health and nutritional status of the tea garden labourers throughout India.

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Address for correspondence: Ankita Bhattacharya, Senior Research Fellow, Biological Anthropology Unit, Indian Statistical Institute. Email Id: ankita.physio09@gmail.com. Mobile: 8961257360

J. Indian Anthrop. Soc. 54:217-236(2019)

Economic Life of a Vulnerable Tribal Group: Livelihood, Institutions and Changes among Chuktia Bhunjia Tribe of Odisha

BHUBANESWAR SABAR

Department of Anthropology, Model Degree College, Odisha

Abstract: The paper concentrates on the economic life and livelihood of Chuktia Bhunjia tribe of Odisha. Data collected through prolonged observation at different stages show that livelihood of this small group revolves around local ecology and is shaped by traditional ecological knowledge-based practices. But the exploitation and consumption of resources are governed by institutions and existing customary normative practices, often intertwined with specific rituals, festivals, taboos and use of technologies which make their economy 'sacred'. The structure formed on the basis of economic activities reveals that kinship as a network of relationships not only controls the production relations but also distribution of goods and services and the way they are exchanged. Although the gender based division of labour tends to follow a principle of equality in work participation;, yet the seclusion of women from economic participation during pollution period and restricting women from land entitlement clearly uphold the 'male-line'. Such rules, supported by customary behaviours are believed to ensure ecological sustainability and early flow of resource. With the emergence of peasant economy, state intervention and introduction of market economy in this region, their economic structure has undergone change whereby 'class' has emerged in this society. Nevertheless, the persistence of traditional characteristics of economy- cooperation, interrelationship and subsistence- and its interconnectedness make their economy function like a 'distinct economy'.

Key words : Ecology, livelihood, economic transition, class formation, gender, kinship, Chuktia Bhunjia, Odisha

INTRODUCTION

It is almost customary for anthropologists, conducting ethnographic study of tribal communities, to have a Chapter on 'economic organisation' that involves description of economic life and economic system as an interconnected whole through which they try to understand the process of how people produce, circulate and consume food. In short, how they secure their livelihood. Yet, it is now a neglected field of study which is largely attributed to the shift in the anthropological focus. The classical anthropological literature depicted various dimensions of economic activities of tribes in relation to culture, kinship, religion, ecology, politics and social institutions (Malinowski 1922; Evans-Pritchard 1940; Ramaiah 1981). The focus was on tribal economy as a 'subsistence type', which Srivastava (2010, p 21) suggests, 'is indicative of tribal economy having no surplus but which subscribes to the idea of nature with plenty in her womb to be used by them only a bit of it what they need for survival'. Thus, local forest-based resources were considered as a livelihood

support for tribal people other than their entanglement with specific societal structure and social system that shape their economic behaviour. But today, the tribal people have to grapple with forces like globalization, market intervention, influence of non-tribal people and accelerated government programmes. As a result they are not only shifting their occupations and becoming a part of 'popular economics' but their traditional economic bases and structures have also been jeopardized. The livelihood data among tribal people reveal that the number of communities practicing hunting and gathering has declined by 24.08 percent, as forests have disappeared and wildlife has diminished (Singh 1997) because of increasing industrialization, urbanization, and other developmental activities. It is estimated that ecological degradation has severely curtailed the practice of related traditional occupations. For instance, trapping of birds and animals has declined by 36.84 percent, pastoral activities by 12.5 percent, and shifting cultivation by 18.14 percent as opposed to the rise in business by 77.46 percent, trade by 42.14 percent and industry by 100 percent along with more numbers of tribal workers (Xaxa 2014).

Development of tribal groups is certainly a paramount need. But the history of development in tribal regions shows that tribal people are always forced to leave their habitat because of construction of dams for irrigation, establishment of industries, declaration of tribal habitat into wildlife sanctuary and tiger projects, etc. It is estimated that approximately 4.3 million hectors (MH) forest land had been diverted to non-forestry use during the period from 1952 to1976 and 7.76 MH of forest land during 1976 to 2008 (GoI, 2009) resulting in the curtailment of resource base livelihood for forest dependent communities, particularly marginalized tribals which is justified by the lower annual income i.e. Rs. 32, 345 as compared to general population (Rs. 72,717) (Desai, Reeve and NCAER. 2005), lower monthly per capita expenditure (Rs. 120 to 235 as against Rs. 210 among general population) and highest poverty rate (43.0 percent compared to non-tribal (12.5 percent) (Panagariya and More 2013). Government also aims at catering to livelihood needs through various proactive flagship programme, but the data on the participation of tribals in NREGA shows a declining trend despite more job cards issued and more employment provided to households over the years (Down to Earth 2015; Xaxa, 2014). The declaration of national parks and wildlife sanctuaries in certain regions has also restricted tribal people to access the natural resources. As a result tribal people face various forms of vulnerabilities such as impoverishment and migration which again lead to dismantling of tribal culture, value and economic system as well. Nevertheless, few tribal communities, particularly those inhabiting far flung inaccessible areas still retain their original economic structure and social system due to the existing customary norms that are always linked to ecology, culture, beliefs, kinship. Thus, the salient features of tribal economy- self-sufficiency, subsistence, cooperation are clearly marked in those groups albeit certain changes noticeable because of the interplay of

internal and external factors. So, there is a need to understand why they have retained the traditional economic behaviour and what are the forces responsible for continuation of traditional economy among them. Tribal economy here refers to organization of system of production, distribution and consumption of goods and service or how people secure their substance.

With the above background, this paper deals with the economic life and livelihood of Chuktia Bhunjia, one of the particularly vulnerable tribal groups (PVTGs) of Odisha who exclusively inhabit in Sunabeda wildlife sanctuary located in Nuapada district. It documents their daily livelihood activities and attempts at understanding how economic life is shaped by existing culture, technology, belief system, ecology, institutions and network of relationships. While understanding the nature of economic structure and behaviours among them, it seeks to comprehend the dynamics of economic livelihood and factors responsible for changing economic behaviour and transitions. Lastly, it attempts to ascertain how, despite the existing state policies and other external exigencies which aims at changing the economic conditions oftribal people, the Chuktia Bhunjia still retain their traditional economic structure, if not livelihood as such.

MATERIALS AND METHODS

This present paper is the result of a long interaction with Chuktia Bhunjias of Sunabeda wildlife sanctuary located in Nuapada district. The basic objective being to understand their 'economic life', attempts have been made to document material and non-material components defining their economy. Material aspects include the assets, property land, resources, technology, whereas non-material aspect includes social structure, kinship, religion, beliefs, institutions and social relationship that influence their overt economic behaviour.

People and the Setting

Bhunjia are one of the tribal groups distributed in central India. They are divided into two broad social groups: Chinda Bhunjia and Chuktia Bhunjia (Dubey 1961, Pattnaik, Mohanty and Sahoo 1984). In Odisha this group inhabit only in Nuapada district (ex-Khariar estate) that was earlier forming a part of Central Province. Chinda Bhunjia are also known as Oriya Bhunjia because they follow the culture closed to general Oriya culture and thus forms the acculturated section of the tribe. Chuktia Bhunjia, on the other hand, exclusively inhabit in Sunabeda Wildlife Sanctuary of Nuapada district are identified as one of Particularly Vulnerable Tribal Groups (PVTGs). According to a survey by Scheduled Castes and Scheduled Tribes Research and Training Institute (SCSTRTI) (2010) they are distributed in 16 villages spreading over two Gram Panchayats. The total population of Chuktia Bhunjia is 2269 (1124 males and 1145 females) distributed in 519 households; sex ratio is estimated at 1019. The literacy level among them shows that only 18.77 per cent are

literates (28.55 percent males and 9.17 percent females). They belong to the Dravidian language speaking group (Russel and Hiralal 1916), who speak Bhunjia dialect (mixture of Oriya and Chhattisgarhi) among them and local Oriya for inter-group communication. Although they were reported to practice hunting-gathering form of economy, inclusion of their habitat into the protected area forced them to become settled agriculturists still, collection of minor forest produces (MFPs) constitute important source of livelihood.

Data types and data collection techniques

As it was hard to capture every phenomenon in a short visit, data for the study were collected in different phases. During the first phase (December to June 2011), data collected were mostly on overall livelihood domain i.e., land preparation, collection and consumption of ecological resources, agricultural practices, associated beliefs and practices, exchange patterns, market access that were verified with collection of more additional data in subsequent visits in 2012 and 2013. Last phase of data collection (July-November 2014) was devoted to ascertain economic structure, inheritance of properties, agricultural festivals and other beliefs and rituals related to the economic behaviour apart from cross-verification of all collected data. Data were collected through anthropological technique of 'quasi-participant observation'; non-material aspects of their economy were collected through formal interviews with people of all ages and gender. Economic data collected include ritual performance, circulation of goods and services, technology use, division of labour, inheritance of properties, gender role; these were collected through informal interviews. Attempts were also made to ascertain economic transformation among them and factors responsible for it largely through 'recollection technique' where local people were asked to recollect the changes in their society, culture and economy over time. The officials of Chuktia Bhunjia Development Agency (CBDA), a micro-project of Government of Odisha, were also interviewed to know their intervention pertaining to the changing economy among Chuktia Bhunjia. Through all such data an attempt was made to infer whether 'class' or class-like formations have already made their appearance in this society.

RESULTS

Livelihood Domains: Ecology, Knowledge and Survival

Livelihood denotes the means adopted to satisfy human needs or wants or to secure necessities of life. Looking at such means among Chuktia Bhunjia it was found that their livelihood was influenced by many interacting phenomena that include settlement pattern, ecology, beliefs, societal norms and material culture. It was noticed that Chuktia Bhunjia prefer to settle nearby water bodies in order to avoid traveling distance to fetch water and washing their livestock. Being forest dwellers, local ecology has profound influence on their livelihood. However, the deeper meaning of ecological rule followed by them may appear a little strange to us, as it moulds their culture and economy. The kitchen

room, locally called *Lalbangla*, is an important cultural trait that has numerous economic functions in term of molding ecological behaviour, and production and consumption of ecological resources. Its relevance has been described with each economic aspect. Briefly, the household structure shows that two or more households build their houses taking a wide-open space. Each household has two houses: main house and kitchen room. The main house (*Jhinjri*), usually made of mud and wood, contains two rooms that are used for both for sleeping and storing grains. The second hut built adjacent to it is the cattle-shed (*Ge-kuria*). It is also a religious place because they worship the Goddess *Mirchuk* inside it. The smallest hut built a little way and in front of the living room is *Lalbangla* (*Lal* means red and *Bangala* means room). It is red in colour, made of mud and thatched with wild grasses. It consists of two rooms; one is for cooking and another is for keeping utensils. The floor is plastered with mud and cow-dung. The doors of *Lalbangla* are made of either bamboo or wild grasses. The characteristic associated with *Lalbalgla* is that no 'outsider' (people other than Chuktia Bhunjia) can touch it; otherwise they immediately set the *Lalbangla* on fire. They also throw the cooked food at the *Lalbangla*, the reason being Chuktia Bhunjias consider outsiders as pollutants and their entrance may defile their deities worshipped inside it. In course of time, they construct a new *Lalbangla* and start cooking there after a purification ritual.

These do not form the complete economic domain of Chuktia Bhunjia but assets, technologies and knowledge they possess always support their livelihood and economic survival that go hand and hand with their value system. The household assets among them are very limited. The common belongings found are mats (*champ*), cooking vessels, earthen pot, mortar and pestle (*musel*), gourds (*tumba*) for storing water, few hunting tools, fishing traps, digging hoe, sickle (*hasia*), axe (*tangia*) and baskets made of leaves for storing food grains and MFPs.

A closer look at the economic life of Chuktia Bhunjia reveals that their livelihood revolves around the local ecology and is subsistence in nature. They are found to be engaged with various forest-based livelihood activities throughout the year (Fig. No. 1). As a part of food gathering activity, they collect a number of edible fruits, rhizomes, leaves, etc. in different seasons both for consumption and for marketing. These activities are always shaped by knowledge, technology and performance of specific rituals and festivals and governed by customary beliefs. The frequently collected edible minor forest produces (MFPs) include *mahul* (*Madhuca indica*), *aam* (*Mengifera indica*), *chahar* (*Buchnania lanzan*), *kendu* (*Diospyros melanoxylon*), *tetel* (*Tamiarindus indica*), *amla* (*Emblica officinalis*), *zamun* (*Syzygium cumini*), *dumer (Ficus racemosa), khursa (Mucuna utilisa), kasam* (*Schleichera oleosa*), *katikuel* (*Salanun nigrum*), *bhelwa* (*Cemacarpus anacardium*), *makarkendu* (*Diosyros Montana*), *banoela* (*Euphorbia thymifolia*), *ban-khajur* (*Phoenix sylvestris*). Few produces that have high market demand are collected to earn money (Table No 1). *Mahul,* usually

collected during February-March, is having high market value but its' collection follows a ritual called *Ushavana.* It generates quick income, second only to agriculture. They also collect mahul seeds (*tol*) during May-June both for selling and extracting oil. Its barks are used as fodder. Chuktia Bhunjias collect *aam* (*Mengifera indica*) during March- April, but after the ritual of *aam-jatra. Chahar* (*Buchania Lanzan*) is another edible forest produce collected by Chuktia Bhunjias during April-May. Since it has some cultural uses, they keep a small quantity of ripened *chahar* and the remains are sold to the traders at [1] 50-80/kg. The seeds (*chironji*) are consumed with jaggery and are believed to have high nutritious value.

Fig. 1: Calendar of Major Economic Activities of Chuktia Bhunjia

Numerous rhizomes are collected from the local forest during winter purely for self -consumption. The abundantly collected rhizomes are *keo-kanda* (*Costus spaciosus*), *baichandi* (*Dioscorea hispida*), *pitkanda* (*Dioscorea bulbifera*), *pisan kanda* (*Dioscorea villosa*) *batlakanda* (*Dioscorea foetida*), *tikhur* (C*urcuma angistofolia*), etc. Leafy vegetables like *kanjeer* (*Cholorophytum arundinaceum),* *muti* (*Rivea hypocrateriformis*), *chakoda* (*Cassia tora*), *keolar* (*Bauhinia purpurea*), *sunsunia* (*Marsilea minuta*), *kena* (*Commelina benghalensisi*) also support their livelihood, especially during monsoon. The availability of these vegetables in

the surrounding at the time of monsoon reduces purchase of vegetables from the local market. They also collect various edible mushrooms (*Chhati*) from the local forest during rainy season. The bamboo-shoot (*kardi*) also forms a part of their diet during monsoon but its collection is governed by customary beliefs, i.e., they are restricted to collect it during pollution time following death of person, puberty and menstruation of woman. They often dry the offshoot *(henua)* and consume in the form of curry. The Chuktia Bhunjia are also found to extract oil from mahul (*Madhuca indica*), *banjada* (*Jetropha curcae*), *lim* (*Azadirachta indica*), *karanj* (*Pongamia pinnate*) and *jada* (*Ricinus communis*). They also collect resin (*lesa)* during summer for marketing. Honey collection always supplements their household income because it has high market value.

Furthermore, although food gathering constitutes an important activity of Chuktia Bhunjia, of late , they have become settled agriculturalists largely due to the restriction of their movement and encroachment on their land by the forest department, especially after the declaration of their habitat as a wildlife sanctuary. They largely grow paddies, millets and pulses in up-land and wet-land. They also grow vegetables in their kitchen garden during rainy season for self-consumption. Yet, slash-burning cultivation is still considered an important form of agricultural practice among them. They also earn their livelihood by doing quarry works.

Ritual, Technology and Livelihood

While looking at the livelihood domain, it was found that ecology and ecological resources form important sources of livelihood for Chuktia Bhunjia but collection and consumption of resources are closely linked with certain beliefs, rituals and festivals and shaped by specific knowledge, tools and technologies signifying 'sacredness' of Bhunjia economy. For instance, until *holi* or *amjatra* festival is celebrated, no household is allowed either to prepare *dehi* (land for shifting cultivation) or to collect wild fruits like *aam* (*Mengifera indica*), *mahul* (*Madhuca indica*), *chahar* (*Buchnania lanzan*), *kendu* (*Diospyrus melanoxylon*), etc. On the day of *holi*, children in each village pull a chariot made of *palsa* (*Butea monosporma*) flowers in the village lane. The chariot is considered to be the seat of Goddess Sunadei. On the same evening, male members of each village assemble at *Sunadei* temple. They collect few pieces of dried wood to make a triangular hut named after *holi*. They fix a branch of *Semel* (*Combax ceiba*) tree in the middle of *holi*. The *Pujhari* worships the village deities inside it. During this time, one of them closes its entrance by covering it with branches of trees. The *Pujhari's* son sets the *holi* under fire immediately. Once *Pujhari* could come out of it by any means, the head of the village cuts the fixed *Semel* branch with an axe and a chicken is left in the fire place as an offering to the deities. This festival symbolises setting fire to dried up woods and bushes for *dehi* cultivation. As the *Palsa* flower is used in the *holi* festival, no one is allowed to touch it before *holi.* Otherwise the defaulter is asked to take bath before entering home. This festival symbolizes symbiotic behavior of

Table No. 1: *Marketable species collected by Chuktia Bhunjia*

Sl. No.	Botanical Name	Local Name	Parts	Season	Rate (₹ /Kg)
1.	*Acacia arabica Willd.*	Bamur	Seeds	April-May	9
2.	*Aristida setacea Retz.*	Kata badhun	Grass	October-January	15/bindle
3.	*Azadirachta indica A. Juss.*	Lim	Fruits	May	8
4.	*Boswellia serrata Roxb.*	Salei	Resin	October-December	25
5.	*Buchanania lanzan Roxb.*	Chahar	Fruits	May	16
6.	*Cassia tora L.*	Chakoda	Seeds	March-April	7.50p.
7.	*Cemacarpus anacardum L.*	Bhelwa	Fruits	April-May	18
8.	*Curcuma angistofolia Roxb.*	Tikhur	Rhizome	January-Feb.	200
9.	*Dioscorea alata L.*	Ratalu	Rhizome	October-November	15
10.	*Dioscorea bubifera L.*	Pit kanda	Rhizome	October-November	12
11.	*Dioscorea hispida Willd,*	Baichandi	Rhizome	October-November	12
12.	*Diospyros Melanoxylon Roxb.*	Kendu	Leaves	April-May	80/bindle
13.	*Honey*	Mahu-ras	Juice	Whole year	150-200
14.	*Jetropha curcus L.*	Jada	Fruits	May-June	13
15.	*Madhuca indica L.*	Mahul	Flower	Feb-April	17
16.	*Mengifera indica L.*	Aam	Fruit	April-June	11
17.	*Phylanthus officinalis L.*	Amla	Fruits	January-Feb.	21.50p.
18.	*Shorea robusta Gaertn.*	Sal	Resin	Whole year	115
19.	*Starculian urin Roxb.*	Genduli	Resin	Whole year	52
20.	*Tamarindus indica L.*	Tetel	Fruits	January-April	18
21.	*Terminalia bellarica Gaertn.*	Behra	Fruits	January-April	12
22.	*Terminalia chebulla Retz. & Willd.*	Harda	Fruits	January-April	13

Source: Fieldwork by author

Chuktia Bhunjias towards the ecological resources so that man- resource ratio remains balanced to sustain their livelihood.

The collection and consumption of certain edible species are also related with specific worldviews. For example, the Chuktia Bhunjias collect *tikhur* (*Curcuma angustifolia*) only after the celebration of *Chauldhua* festival in November till *Chaitra* festival. The implication is, this species remains untouched during April to October which they believe as the period of gestation. Similarly, they collect grasses such as *kushkhadar* (*Ischaemum angustifolum*) after *Chaitra* festival till Dasahara in the month of October that are used for thatching *Lalbangla*. They do not collect rhizomes like *keo-kanda* (*Costus spaciosus*), *baichandi* (*Dioscorea hispida*), *pitkanda* (*Dioscorea bulbifera*), *korkot kanda* (*Cucumis dipsaceus*) and *pisan kanda* (*Dioscorea villosa*) until the celebration of *Thirpuja* or *Asarkena* festival. Thus, availability of resources does not entail free collection but requires performance of certain rituals as a mark of compliance and commitment. There are instances of belief-based economic practices but the one deserve special mention is the collection of *mahul* as narrated below.

Mahul (*Madhuca indica*) has economic produce, which is collected during March-April followed by a festival called Ushavana (Goddess of mahua flower). Collection is a collective exercise. A month before collection, the village Council sits in the village to fix the date for collection. Each household contributes a fixed amount of money to buy a goat and other required materials. The goat is sacrificed to the Goddess. On the fixed date, *Pujhari* (religious priest) worships Ushavana before proceeding to the collection site followed by the sacrifice of a male goat. The Goddess is then kept in a new mud vessel which is covered with a red cloth. It is carried by the pujhari's wife to the collection site followed by drum beating and singing of folk songs. On reaching there, a place cleared off all undergrowth is kept reserved for the Goddess *Ushavana*. The place is smeared with cow dung. Each household then takes possession of few mahul trees to collect the flowers. The number of trees held depends on the number of members going for collection. They make their respective temporary huts in the site to stay till the end of collection. The temporary huts are called *Mahulguda*. The huts are located in and around the selected trees. From the next early morning they start collecting the flowers. They stay in the site for around two months till the mahua flowers become less plentiful. During their stay they assemble each night and dance together, males on one side and females on the other, followed by beating of drums and singing of songs. The collected flowers are dried before selling to the traders. They also keep a small quantity of flowers for domestic use and to exchange for grocery items. When flowers get reduced, they decide to stop collection and return to the village. The women, who remain at home, welcome them back. They directly go to *Pujhari* house to keep the goddess *Ushavana*. *Pujhari* worships her and *Kotria* sacrifices a male goat as an offering. Thereafter, women from each household, excluding widows, assemble at *Pujhari* house in each night and appease the Goddess by singing songs till they immerse her in *Asad*.

The Chuktia Bhunjias use a number of tools and technologies in pursuit of their livelihood. Majority of the tools are found to be made of locally available forest products. The tools and technologies used vary depending on the nature of economic pursuit. For instance, collection of edible produces like fruits, leaves, mushroom and hardly require any tools other than expert hands. It also requires knowledge about which fruits are to be collected, which will be more productive and so on. This knowledge they could gain because of their long association with the species. Children sometimes accompany them. Rhizome collection, however, requires specific tools and techniques. The important tools are axe, spade, sickle to cut the rhizome and basket to carry them. Yet collection and consumption of rhizomes are conditioned by cultural taboos. Fishing is also an important supplementary economy for them. The

important fishing tools used by them include *churia*, *jhakni*, *mer*. All these are made of bamboo. The agricultural tools used by them are plough, axe, sickle, and rope made of paddy straw (*biat*). It is noticed that preparation of land, especially *dehi*, follows performance of a specific ritual. For example, as noted earlier, it is only after *holi* festival people are allowed to prepare land; any other more is considered showing disrespect to their custom. Similarly, it is observed that before harvesting, the head of the family pours a little raw cow milk and liquor in the name of the deities in one corner of the agricultural field and cuts few crops before allowing others to do so. The harvested crops are bundled with *biat* that are brought to *Khala* with a stick made of bamboo or teak. *Khala* is the place where they thrash the paddy from straw with the help of animal power. At the end of harvesting of crops, some households offer goats and hens to the Goddess *Chorokhuten* for protecting the crop throughout the season.

The technologies used in their economic activities are generally free from cultural specificity. However, few strange cases have been reported regarding the ritual significance of technology. For example, during *Chaitra* festival celebrated in March-April *Pujhari* worships all deities on behalf of villagers by offering liquor, rice, coconut and sacrificing a hen and a male goat. At the end of the festival, *Pujhari* asks people to prepare a symbolic form of agricultural field, a plough and two bullocks which they make with small branches and leaves of *bardi* (*Ficus benghalensis*) tree. He tilts the land with the symbolic plough and bullocks as is done in real life and others fill water in the symbolic agricultural field. Some people pour water over *Pujhari* as if it is raining. He worships the village deities for good rain and harvest. He also acts like broadcasting paddy, transplanting seedlings and catching fish and shell as the farmers do in real life. In the same evening they again assemble at *Lingdeo* with a new white cloth with them. The meat of sacrificed animals is equally distributed among the households. *Pujhari* then gives a handful of paddy brought from his home to everybody which they broadcast in their own agricultural land on the day of *Akshitritiya.*

The other form of sacredness in Chuktia Bhunjia economy centers around the location and use of husking tools. Two types of husking tools are used by them: *dhenki* and *kuten*. The former, usually made of *Khair* (*Acacia Catechu*) plant, is built in courtyard or in a corner of the main house. The Kuten, made of Sal (*Shorea robusta*) plant, is built in kitchen room. It is usually a hallow furnished tree trunk fixed on the ground to husk paddy and cereals against *Musel* (a straight wood fixed with iron at the end to strike the grains). Being located in kitchen room it is sacred. Both are used to husk the grains before consumption but vary in interaction. For instance, *Dhenki* can be used by members of other families but *Kuten* being located in *Lalbangla* no one, including their own daughter after marriage, are allowed to touch it otherwise the *Lalbangla* is set fire and demolished because of its sacred nature as narrated

before. Being sacred, both the tools remain untouched usually during perceived pollution periods- puberty, monthly menstruation, death of person- and always support their livelihood.

Production, Institutions and Inheritance of Properties

Being settled agriculturists agricultural land constitutes as one of the important livelihood assets for them, which is possessed, distributed and inherited according to their social needs. The existing economic structure shows that landholding is governed by specific institutional norms. Landholding refers to the land over which the individual or a family possesses permanent hereditary rights in the capacity of owners and tenants. Son, after marriage, establishes his own family of procreation separating from his parents and builds a separate household near his father or in the same village. The land remains undivided as long as all the sons are married. All of them work in the agricultural field, and the crops are equally divided among them. Parents are taken care of by the eldest son, and often the unmarried son also stays with them. So among Chuktia Bhunjia the unit of landholding is neither a single person nor a nuclear family rather a group of nuclear families linked by patrilineal descent.

A closer look at the Chuktia Bhunjia economy reveals that although livelihood system is shaped by local ecology and local knowledge as described in previous section, their economic structure revolves around the way they have constructed the economic institutions and gender division of labour. The gender division of labour is understood in term of typical allocation of specific activities between male and female (Table No. 2). It is purely a household phenomenon but is historically shaped by the social structure. Girl children are also assigned with some household chores. It is observed that the Chuktia Bhunjia women are largely engaged in collection of MFPs, firewood, fetching water, taking care of children, cooking, weeding, transplantation, harvesting, etc. On the other hand, ploughing, collection of honey, carrying timbers from jungle for house construction are done by men. Works like transplantation and harvesting are done by both male and female. Since landholding is very limited, hiring of agricultural labour is almost absent rather exchanged between families or the labour force required for farming is many times met within the family or clan group. So, the membership in the unit of production gets extended to their families, lineages, kindred that bind them together to have a local producing organization. In case they hire, the labourer is paid in kind on the basis of local measurement as fixed by the village council, i.e., 03 mana paddy (1 mana=3.2 kgs) for eight hours of work. If wage is paid in money, a man gets ₹ 100 as against ₹ 90 to woman. However, they are paid according to the government rate in case they work in government programme.

Table No 2: *Division of Labour among Chuktia Bhunjia*

Activities	Male	Female
Domestic	House construction Chop fuel food and timber Milching	Cleaning the houses and courtyard Cooking Children caring Milching Fetch water for cooking
Livestock	Grazing Give fodder to livestock	Milching Collection of fodder
Collection of minor forest produces	Collecting honey Collecting sal resin Collection of firewood Collecting tubers	Collection of mahul Collecting and cleaning tubers Collection and selling kendu leaves
Agricultural	Preparing field Ploughing Seedling Transplantation	Plucking of seedling Transplantation

Source: Field observation

Chuktia Bhunjias have also introduced few systems on tenancy right over land. Sometimes, under financial crisis, they mortgage their property, usually land, for money or grains in two different ways: *Gahana*, and *Uden*, depending on repayment of original loan. Under *Gahana* system, people mortgage land against the loan, where land is kept as security until recovery of loan with interest. The creditor cultivates the land until the debtor repays his loan with interest. The creditor becomes the owner of the land so long as the loan is recovered. The debtor does not get the share from his land. So the debtor becomes a non-entity. Under *Uden* system land is mortgaged for a specific time period after which the debtor gets his land back without any payment. The production he gets is considered equivalent to the loan taken. Share-cropping (*Shihaji*) is also seen as another form of economic relation among Chuktia Bhunjias. It is mostly done with the non-tribal who provides the land owner required amount of seeds and fertilizers and the production is equally shared between them. There are few non-tribal villages, the inhabitants of which are said to have migrated to the sanctuary during 60's. Chuktia Bhunjias maintain cordial relationship with them in various matters including loan, labour services and other economic pursuits.

There are two types of assets among Chuktia Bhunjias: movable and immovable. The former includes jewellery, utensils, and ornaments and later, land and houses. Its inheritance is governed by the existing norms. They exercise right of ownership of immovable properties by birth which is transmitted through male line due to patrilineal nature of society whereas movables are transmitted to both genders. No female, even the widow, were reported to hold land *patta* with her name. Father's properties are equally distributed among brothers. Sometime the elder brother gets larger share than others. Daughters

do not get any share of parents' property, despite their contribution to the household. The clan deities are also shared among brothers. The moveable items like jewellery of the parents are also equally distributed among brothers. However, daughters get their share during marriage. The reason behind not giving any immovable parental property to girls is that girls after marriage are considered members of their husband's families and their village and therefore become 'outsiders' even though they marry in the same village. Thus, transfer of property to any outsider is seen as a mere excuse to pursue the 'male line'. If the daughter does not ask for immovable property, it is only to solemnize relationship with brothers. By refusing the share she further strengthens the bond with the natal family and ensures a regular flow of gift, financial and moral support at the time of crisis. Kinship always determines the possession of immovable property in this society following patrilineal line of descent.

Kinship, Exchange and Economic Relationship

The 'economy' in pre-literature societies being a 'system of economic relationship', without discussing the 'exchange relationship' the 'system' remains incomplete. The Chuktia Bhunjias have specific forms of exchange relationships. Exchange here refers to circulation of goods and services. A closer look at their exchange pattern shows that they are involved with two forms of exchanges: reciprocity (*balda*) and market exchange. The first one is important in the sense that it commensurate with the familial bond and kinship relationship. Two forms of reciprocity are usually observed: generalized and balanced. The former is usually reported in agricultural production process, i.e., exchange of seeds, labour force and plough which takes place largely during agricultural periods revolving around clan brothers and closed relatives. Balanced reciprocity is observed in terms of exchange of gifts during ceremonies and can be called 'ceremonial exchange'. It usually operates among clan groups where gift giver expects to get the items back on some other occasions. The nature of exchange in both types of reciprocity reveals that kin and kin groups become dominant mechanisms through which goods and services are usually exchanged.

On the other hand, their participation in market exchange is found to be of recent in origin. CBDA that was established in 1994 as a 'micro-project' has encouraged them to access monetized marketing system promoting market intervention in this region. The non-tribals who are said to have migrated to this sanctuary long before have influenced Chuktia Bhunjia to use money as a single medium of exchange in purchasing goods and services whereby traditional forms of exchange are affected.

Besides, exchange of gifts between ritual friends [mita (male)/ mitni (female)] is seen as another form of exchange relationship usually established between Chuktia Bhunjia and Gond, Kamar and Kultha but not with scheduled castes. It is observed that before Nuakhai festival, a ritual friend comes to the family of his/her ritual friend with traditionally cooked cakes and clothes for

few family members. The other family does the same after a few days to solemnize the relationship and to perpetuate it lifelong. It is locally known as *mitsara*. Some families do have multiple ritual friends and it is obligatory for both the friends to attend various functions at each other's family and exchange gifts. When Chuktia Bhunjia girls go to their ritual friends, they do not accept any cooked food there; otherwise she has to go for purification or may have to face the Village Council.

Thus, exchange of goods and services among Chuktia Bhunjias takes place: (a) within kin group (b) outside kin group. The first type is observed during agriculture and ceremonial occasions while the second type is observed in a ritual form as is noticed in *mitsara*. The nature of gifts exchanged in both types portrays that items given vary but do not count much on incorporeal return; rather they symbolize the inherent value more than reciprocity. For example, during marriage festival, some households give gifts like leaf-cups and plates, drums, goast for feast which can be viewed as helping the household. Further, gifts given during death ritual, though portray sharing of sorrow, the items generally given on the occasion carry a different meanings. The items include saree to the widow or *dhoti* to either widower or deceased son which are given according to the social status of the gift receiver who may reciprocate with item of same value or more in future. Gift giving among Chuktia Bhunjia is also reinforced by prestation. Closer the relation, greater is the value of gift. Still it is said that the expectation to receive gift enforces the family to give gift and people have also the obligation to return it because of status-linked prestige. Furthermore, although it is now difficult to maintain status differentiation, the social hierarchy reckoned in terms of positions like *Gountia* (head of village), makkadam (erstwhile revenue collectors), *jhakar* (priest), *gunia* (magio-religious specialists) compels them to give valuable gift not only to retain their status but also to maintain power relationship within the society.

Women's Role and Economic Survival

The Chuktia Bhunjia women are involved in different income generating activities. They always engage themselves in farm activities, MFPs collection, non-farm wage earnings that add to the household income. Their participation in such economic activities is often governed by customary rules observed during perceived pollution periods. Even small girls are found to be remain engaged in various household chores like taking care of children, cleaning utensils, splashing of houses, etc. that indirectly provide economic support to the concerned household because during that period mother engages herself in economic activities. It is also observed that the socialization process of girls among Chuktia Bhunjia differs from boys. Girls are always told to quietly adapt to feminine activities such as taking care of child, washing the plates, cleaning courtyard and cowshed and fetching water. However, parents do not discriminate between girls and boys in matters relating to food, dress and other provisions.

The Chuktia Bhunjia women play crucial roles in economic life. They contribute larger shares of their household income by doing both agricultural and non-agricultural activities. The division of labour is unclear as both males and females do works like transplantation, harvesting, fishing. *Dehi* cultivation is female dominated economic activity where the male folk provides necessary support. Again plain land cultivation is male- dominated and females act as helping hand. But inequality is reported in wages paid: women get ¹ 90 as against¹ 100 for males. If they are paid in kind, women get 6 *Ada* of paddy, whereas males get 8 *Ada* of paddy (1 Ada=1.5kgs) as fixed by the Village Council consisting of elderly male members. At present, particularly after the establishment of CBDA in 1994 and functioning of flagship programme like MGNREGA, Chuktia Bhunjia women are seen working in quarry activities, road and building construction, afforestation, etc. on daily basis and are paid according to the government rate.

Since Chuktia Bhunjia women interact with the local ecology more frequently in different economic spheres, they possess good ecological knowledge than the males. However, the existing customary practices always control their knowledge system. Their economic contribution is also reported to be determined by their positionality. For example, menstruating women and girls in their puberty are restricted to go for resource collection because of the sacred nature of the local ecology. Their entrance to sacred sites and groves during such periods is also prohibited which they believe may defile their deities and the region becomes resource scarce. Such norms ensure ecological consciousness, biodiversity conservation and sustainable development of the community.

Structural Change, Economic Transformation and Class Formation

Tribals are in transition and Chuktia Bhunjias are no exception. It is noticed that the structural changes in the economic institutions and subsequent transformation among Chuktia Bhunjia have two trends: hangover of colonial period and state intervention. While looking at the influence of colonial regime on economic change, it is worth mentioning that the Khariar zamindari region (present day Nuapada district) was part of Central Province till 1936 so as the region of Chuktia Bhunjia. During that time a family of every Chuktia Bhunjia village was given the charge of collecting revenue and reporting to the local Raja (emperor) from time to time. This was certainly an administration measure, but it led to emergence of powerful people, locally called *Goantia,* who could control over majority of village land resources and enjoy certain privileges. They were also free to occupy the land they wish to have. Certainly, it did not make them large farmers but they could afford to use others as bonded labour and wage workers in their agricultural field. It differentiated such people from other villagers, although it did not directly alter their basic economic institutions. Rather the non-tribals who were deliberately invited to this region, specially by the Raja and those loyal to him due to their experience in dealing

with monetized economy, influenced Chuktia Bhunjias agriculture and harnessing local resources. As a result, those who could adopt to the conditions became peasants, who, though marginal, tried to earn their livelihood through *Goantia* and invited non-tribals who always maintained patron-client relationship with the rest of the people.

Furthermore, the impact of state intervention cannot be overlooked in bringing economic transformation among Chuktia Bhunjia. The establishment of CBDA in 1994 was a positive step that had influenced their culture and economy. Education and agriculture development were two important focus of CBDA. Chuktia Bhunjia were assisted with agricultural implements and seeds free of cost along with training to promote settled cultivation. Subsequently, some households were given land for cultivation under Tribal Sub-Plan (TSP) and Forest Right Act (FRA) so that they could grow crops, usually cash crops, and make their livelihood. Those who have adopted to cash economy and settled form of agriculture fall in peasant class. But as access to development programme among them is more family-centric, the mean unit of mobility becomes an individual representing an emergent prosperous class leaving others to the categories of either shifting cultivators or wage labourers.

There were also attempts to bring Chuktia Bhunjia children, especially girls, to the schooling system although it was a challenging task because of the hindrances posed by their age-old custom. Nevertheless, very few households were against such a system. In the year 2005, three Chuktia Bhunjia girls appeared in 10th examination but could not pass. Later, they cleared matriculation. The families of those three girls were asked to face the Village Council because of their non-compliance with the customary rules. According to such rules, girls after pre-puberty marriage are compelled to wear small saree called *kapta* and obey the prevailing norms particularly in relation to *Lalbangla*. The movement initiated by these three girls has changed the mind-set of people regarding access to school, healthcare practices and dress pattern that was once completely out of question. Of those three girls, one is now working as a teacher in the educational complex run by micro-project at Salepada. Another girl is working as a staff nurse under state government. The families of both the girls are now not only financially sound but are gradually moving away from others and have found a place into the service class.

The introduction of market in the Sunabeda sanctuary region is also found to have influenced the economic transformation among Chuktia Bhunjia. The weekly market (*haat*) that is operating since the last decade and half has moulded their economic behaviour. However, though it is unable to influence their cultural behaviour particularly fertility and death ritual, its impact is visible in transaction process as they directly sell their produces. The market which attracted traders outside sanctuary region furthermore opened up

possibilities for Chuktia Bhunjia to migrate that was never known even some decade back. It is now seen as one of the livelihood strategies of the Chuktia Bhunjia. Some young were found to migrate to other states, largely Gujarat and Mumbai for employment. Often returning to village they not only bring urban goods but also a semblance of its culture as noticed from the use of TV and other electronic media that has changed their food habits, choice of items, which also indicate their purchasing capacity. Certainly, it cannot be claimed as an entry into the class system, but it certainly signals the arrival of a group of people who follow differential lifestyle and different life coping mechanisms than others. So, it may not be wrong to say that economic transformation of Chuktia Bhunjias is due to: (a) emergence of peasant (b) market intervention and (c) agrarian capitalism backed by tribal development programmes.

DISCUSSION AND CONCLUSION

The narration of Chuktia Bhunjia economy shows that their life is shaped by local ecology, traditional knowledge system and institutionally guided behaviour pattern. Collection and consumption of resources for livelihood are interlinked with certain beliefs, norms and taboos, breach of which leads to social and economic punishment to the guilty. The inherent beliefs and rituals associated with technology use indicate the 'sacredness' of their economy. A closer look at the nature and structure of Chuktia Bhunjia economy reveals that land being limited, family members always constitute the unit of production. Nevertheless, cooperation from closed-relatives, like brothers, maternal uncles, son-in-laws, are always expected who not only function helping hands but are bound by a network of exchange relationships. The organization of exchange relationships among Chuktia Bhunjias shows that although kinship forms a network in this regard, prestation and maintenance of social status direct them to give gifts as a step towards that. Gender based division of labour is seen as an important way of ensuring work participation. Low wage to women and restriction imposed on land being transfer to females indicate a patriarchal nature of Chuktia Bhunjia society. It is claimed to have historically maintained the 'male line' which they perceive crucial to sustain their group existence and identity. At institutional level, certain economic practices are seen to have been structurally linked to established norms that guide people to maintain their traditional economy. Besides, gender restriction in economic activities, specially from collecting MFPs during perceived pollution periods, though theoretically designated as patriarchal, contributes to maintain 'sacredness' of their economy and ensures a strong sense of conservation ethos and sustainability of resource for survival. The sacred nature of Chuktia Bhunjia economy is also revealed from the ritual practice and celebration of festivals connected with major economic pursuits. The indigenously built local tools and technologies occupy a crucial place their economic livelihood. The beliefs, rituals and symbols associated with technologies have a direct bearing on economy's sacred character and connote

different meanings to real-life situations as indicated by Chaitra festival and Tikhur collection.

Questions that have emerged here are why such forms of economic behaviour are still prevalent among the Chuktia Bhunjia? It takes us to the discourse on assimilation and integration approach to tribal development which aims at mainstreaming the tribal group as a step towards development. The history of development of the PVTGs in Odisha shows that all groups have different stories of economic vulnerability because of their socio-geographic variations. But ironically, a single strategic approach is applied to develop the PVTGs under the micro-project plan. A closer look at the case of Chuktia Bhunjia alone reveals that although their traditional economic practices have been tremendously changed due to the influence of non-tribals and the state-sponsored development programme in the form of establishment of a micro-project named Chuktia Bhunjia Development Agency (CBDA), the real economic development has not been achieved due to the fact that they are not yet mentally prepared to accept any development programme which underlines their culture or cultural practices. Putting it in other words, since the existing development schemes hardly take into consideration the Chuktia Bhunjia culture, most of the development schemes are reported to have failed and instead accelerated their vulnerable condition more than before. Thus, PVTGs' development models like Tribal Sub-Plan (TSP) and Culture-cum-Development (CCD) are being questioned. Since the birth of Sunabeda wildlife sanctuary in 1983, the inhabitants mostly Chuktia Bhunjia, Gond and Paharia, are kept away from collecting minor forest produces (MFPs) and non-timber forest produces (NTFPs). So, the local ecology which was earlier the resource base of this livelihood, intertwined with the traditional knowledge system, has now been controlled by the state whereby the habitants of the sanctuary are restricted to cultivate in the forest land and practice shifting cultivation that was once a major source of livelihood for them. In the year 2005 there was a conflict between villagers and forest department officials over collection of non-timber forest produces (NTFPs), which led to the court order against few Chuktia Bhunjias of Sunabeda village. It has also led to the non-implementation of Forest Right Act (FRA) in the Chuktia Bhunjia habitation area by the government officials who claim that this region does not come under the preview of this Act and as such forest rules are directly applicable here. Because of such conflicts Gram Sabha has been non functional in many of the Chuktia Bhunjia villages. As a result, Chuktia Bhunjia households in many villages are not given any land under FRA. Such issues raise many pertinent questions about the protection of tribal rights, land rights and traditional livelihood as envisaged in various tribal development policies in general and TSP in particular.

Now, central government has recognized Sunabeda wildlife sanctuary as one of 'tiger projects' as a result of which the people living in the core zone,

though yet to be evacuated, are designated as 'encroacher' or 'poacher'. It is assumed that this project will affect Paharia more than Bhunjia who exclusively depend on bamboo for preparing basketry, which is the only source of their livelihood. The inhabitants are also expected to face food insecurity because of the restriction imposed by forest officials to access edible ecological resources that was once their main source of food materials, particularly vegetables. However, taboos followed by the people regarding acceptance of public distribution system and mid-day meal schemes in many instances contribute to food insecurity faced by them. The emergence of left-wing extremist or Naxal activity in this region has affected their livelihood base as not only the people are afraid of going to the forest for resource collection but also many development schemes do not reach them. The district administration too neither monitors any development programme in the area, nor does it undertake any visit by its officials to the Bhunjia areas due to the fear of Naxal attack. It has led to increase in corruption and doubled their economic vulnerability. So with no expectation or assurance from the government towards their livelihood, they have continued with the traditional economic behaviour pattern and networks to sustain their life and livelihood.

Yet, the Chuktia Bhunjia economy is showing sign of change due to the working of a number of factors. Two important factors are found to be responsible for their economic transformation; which are, (a) the emergence of peasant economy due to intervention of non-tribals, (b) agrarian capitalism backed by state's development programmes. The role of the state in promoting exogenous forces has been paramount. The introduction of cash economy in their area has transformed their economic behaviour thereby gradually assimilating them to mainstream economy and giving them an entry to market economy. The initiatives of CBDA to enhance economic livelihood among them have helped few Chuktia Bhunjia households to adopt the conventional agriculture and to access modern education whereby they have been able to earn their livelihood better than others. Better living also signals their entry into the 'class' system, though in its incipient form. Migration among certain families also adds to their economic transformation as revealed by the changing nature of traditional festivals and use of market products. So, they are passing through a traditional phase of economic change.

Thus, contextualising tribal economy through ethnography of Chuktia Bhunjia shows that although traditional forms of economy, resource base, knowledge and values are still attached to tribals, especially to those living in accessible regions and those who follow traditional economic behaviour pattern pertaining to livelihood practices, many of them are in transition due to the impact of both indigenous and exogenous factors. The influence of money as a medium of exchange has replaced the barter form of exchange and reciprocity is seldom noticed. The post-independence approach to tribal development influenced by Nehruvian model and Elwin's focus on integration,

although said to have mainstreamed the tribal populations, the sense of cooperation, collectiveness and economic inter-relationships were replaced by competitiveness and individualism among tribes with the result that class like formations have appeared among them. Those have been further strengthened with the fall out effect of 'new modern economics' as few of them are engaged with craft works, NTFP works and even white-collar jobs separating them from others. Nevertheless, tribes living in forest fringes like Chuktia Bhunjia still uphold their traditional economic bases to an extent which makes their economy function like a 'distinct economy'.

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Address for correspondence: Bhubaneswar Sabar, Assistant Professor & Head, Department of Anthropology, Model Degree College, At: TirliAmbaguda, PO: Agnipur, Dist-Nabarangpur, Odisha-764059. Email ID: bhubansabar@gmail.com. Mobile: 7894802575

J. Indian Anthrop. Soc. 54:237-242(2019)

BRIEF COMMUNICATION

Knowledge and Attitude towards the Formation of Kidney Stone (KS) among the youths of Manipur

HENRY KONJENGBAM AND SANJENBAM YAIPHABA MEITEI

Department of Anthropology, Manipur University

Abstract: Kidney Stone formation is one of the important health problems affecting populations worldwide. Medical reports suggest that the incidence of kidney stone disease is very high in Manipur. Thus, the present study aims to determine the public awareness of kidney stone disease and its prevalence rate among the youths of Manipur. Information on knowledge and attitude on Kidney Stone Disease (KSD) were collected from a total sample of 119 of both sexes through questionnaire after taking prior consent. The result shows that the prevalence of kidney stone disease was 15.13%, which is very high compared to other states of India. 89.07% of the participants were aware that certain diets can prevent kidney stone disease. 76.47% and 72.26% of the participants, respectively were aware that increased intake of salty food and red meat may lead to KSD. 84.03% of the participants were aware that increased intake of water decreases the formation of kidney stone. The participants reported radiology (76.47%) as the most chosen technique for detection of kidney stone and urologist (57.14%) as the most chosen physician for the consultation of kidney stone disease. Overall, the study shows that the participants were somewhat acquainted about the prevention, mode of diagnosis and symptoms of kidney stone disease. Since the incidence of KSD is increasing, an in-depth study based on a large population is required as a public health measure.

Key words : Kidney stone disease, public health, public awareness, knowledge and attitude

INTRODUCTION

Kidney stone disease (KSD) is the most common urologic malady of the urinary tract. The prevalence and recurrence rate of this disease is more common and is higher among the males than the females (Seth et al., 2010). Kidney stone disease is a multifactorial disease accompanied by metabolic, environmental, lifestyle, dietary habits, physiological health, and genetic factors (Gault and Chafe, 2000; Sharma and Filler, 2010). Though the main causes of kidney stone disease is a metabolic factor, climatic and geographical factors including temperature, seasons, sunshine hours, atmospheric pressure and rainfall also influence the occurrence of kidney stone disease, in addition to lifestyle and dietary habits (Kale et al., 2014). The countries which are located in tropical and subtropical areas are reported to have higher prevalence rate of kidney stone disease. Hot and dry climate can quicken evaporation of water from the body and therefore, resulted in concentration of urine, which is considered a major risk factor for development of kidney stone (Liu et al.,

2018). Dietary factors are also one of the important factors for kidney stones (Pigna et al., 2014). Water intake volume of the person, right amount of calcium intake and sodium intake, and high levels of urinary citrate are certainly important for the primary and secondary prevention of kidney stone (Dogliotti et al., 2013). The risk of kidney stone disease can be reduced by modification of diet especially in the case of calcium oxalate stone formers (Singh and Sailo, 2013).

The prevalence rate of kidney stone disease all over the world has witnessed a steady rise. For example, the prevalence of urolithiasis in United States has risen from 7% to 13%, 5% to 9% in Europe, and 1% to 5% in Asia (Sorokin et al., 2017). It is also reported that 10% of individuals in western countries are affected by kidney stone disease (Rivers et al., 2000). In Asia, kidney stone disease is more common in the south due to high temperature and excessive exposure to sunshine (Zeng et al. 2017), thereby contributing higher prevalence rate in South and Southeast Asian countries. For example, the prevalence of this disease in West Asia, Southeast Asia, South Asia vary from 5% to 19.1% (Liu et al. 2018), since these regions belong to Afro Asian stone-forming belt of the world stretching from Sudan to South east Asian countries (Lopez and Hoppe, 2010). However, the prevalence rate of this disease in other Asian countries reported varying from 1% to 8% (Liu et al. 2018).

Manipur is a state of India wherein the high prevalence of kidney stone disease has been reported. A hospital-based study from Manipur reported that out of all general surgery cases, urolithiasis represents 11.6% of the cases (Singh et al., 1978), which is alarmingly high. Another cross-sectional study from wetland villages of Thanga, Manipur claims the prevalence rate to be 22.4% (Marak et al., 2013), which intensifies the problem. Early detection of kidney stone is important in order to prevent from further complications.

Under this backdrop, the present study was conducted to understand the people's perception towards the Kidney Stone formation, especially among the youths of Manipur.

MATERIALS AND METHODS

The study was conducted among a group of youths attending the Manipur University. The definition of youth seems to be a bit flexible as defined by each country, though in Indian context, youths are considered in the age group of 15-29 years (National Youth Policy, 2014). Data were collected from 119 participants (81 males and 38 females), who belong to the age group 20 to 30 years from the university campus of Manipur University during the period, August 2018 to September 2018, through self-administered questionnaire. We collected information on the attitude and knowledge pertaining to risk factors of kidney stones, symptoms of kidney stone disease, diet related to kidney stone disease, practices and consultancy. Descriptive statistical analyses were undertaken to present the data.

RESULTS

The data were collected from 119 participants of Manipur University; out of them 18 participants reported to have diagnosed with kidney stone (6 females and 12 males), thereby making the prevalence rate to 15.13% (Table 1). Around 84.03% of the participants agreed that an increase in the intake of fluid, such as water, may prevent the formation of kidney stone. 89.07% of the participants were of the opinion that proper diet can prevent or reduce the formation of kidney stone.

Table 1: *Age-sex distribution and frequencies of participants affected by Kidney Stone Disease.*

Age groups (years)	Male			Female		
	KSD	No KSD	Total	KSD	No KSD	Total
20-24	9(7.57)	45(37.82)	54(45.38)	5(4.21)	25(21.01)	30(25.21)
25-29	3(2.52)	22(18.49)	25(21.01)	1(0.84)	6(5.02)	7(5.88)
30+	0(0.0)	2(1.68)	2(1.68)	0(0.0)	1(0.84)	1(0.84)

* Figures inside the parenthesis denote percentage

Table 2 shows the knowledge and perception of the participants regarding the symptoms, mode of transmission, diagnosis, consultation of medical speciality, and types of kidney stones. Most of the participants (47.05%) have no idea about the colour of the urine of individuals suffering from KSD. Besides urine colour, information on the odour of urine among the participants with KSD was also enquired. Majority of the participants i.e., 51.26% have no idea about the odour of urine of the individuals affected with KSD. About the questions related to mode of transmission of kidney stone disease, most of the participants (66.39%) opined that kidney stone disease is not inherited, while only 10.92% did not have any clear idea whether the disease is hereditary. Around 76.47% opined radiology as the most suitable diagnostic test for KSD, while 18.49% of the participants were not sure about the mode of diagnosis of this disease. More than half of the participants (57.14%) opined that a urologist should be consulted if diagnosed with kidney stone disease; a section of the participants observed nephrologist as a suitable consultant for this disease. Most of participants (73.95%) have expressed calcium containing stone as the most common type of kidney stone.

Table no. 3 shows the response of the participants about the knowledge and effect of the diet on reducing the complications of the kidney stone disease. Most of the participants opined that increased intake of fruits, green leafy vegetables, and water could reduce the complications of kidney stone disease, but they are not sure about the effect of nuts, fish, dark chocolate, and egg on this disease. Furthermore, they answered that decreased intake of salty food, meat, fatty food, non-green vegetables, and sugary food could also reduce the complications of kidney stone disease. Table 4 shows 61.34% of the participants related kidney stone formation with urinary tract infection (UTI),

Table 2: *Knowledge and perception of the participants regarding the symptoms, mode of transmission, diagnosis, consultation of medical speciality, and types of kidney stones.*

	Traits	Male	Female	Total
Symptoms Related to Urine Colour	Brown	9(11.11)	9(23.68)	18(15.14)
	Pink orRed	22(27.17)	10(26.31)	32(26.89)
	No idea	40(49.38)	16(42.11)	56(47.05)
	Not Affected	10(12.34)	3(7.89)	13(10.92)
	Total	81(100.0)	38(100.0)	119(100.0)
Symptoms related to Urine Odour	Cloudy	18(22.22)	11(28.95)	29(24.37)
	Foul	12(14.81)	9(23.68)	21(17.65)
	No Smell	7(8.64)	1(2.63)	8(6.72)
	No idea	44(54.33)	17(44.74)	61(51.26)
	Total	81(100.0)	38(100.0)	119(100.0)
Transmission of Kidney Stone	Hereditary	3(3.71)	2(5.26)	5(4.20)
	Not Hereditary	53(65.43)	26(68.42)	79(66.39)
	Both	9(11.11)	4(10.53)	13(10.92)
	Not Sure	16(19.75)	6(15.79)	22(18.49)
	Total	81(100.0)	38(100.0)	119(100.0)
Diagnosis of Kidney Stone	Radiology	62(76.54)	29(76.32)	91(76.47)
	Urine Analysis	6(7.41)	0(0.00)	6(5.04)
	Faecal Analysis	0(0.00)	0(0.00)	0(0.00)
	Blood Analysis	0(0.00)	0(0.00)	0(0.00)
	Not Sure	13(16.05)	9(23.68)	22(18.49)
	Total	81(100.0)	38(100.0)	119(100.0)
Consultation of Medical Speciality of Kidney Stone	Folk Medical Practitioner	4(4.94)	0(0.00)	4(3.36)
	General Practitioner	0(0.00)	1(2.63)	1(0.84)
	Urologist	47(58.02)	21(55.27)	68(57.14)
	General Surgeon	0(0.00)	1(2.63)	1(0.84)
	Internist	4(4.94)	0(0.00)	4(3.36)
	Nephrologist	13(16.05)	12(31.58)	25(21.01)
	Folk Medical Practitioner & Surgeon	0(0.00)	1(2.63)	1(0.84)
	Folk Medical Practitioner, Surgeon, Urologist	2(2.47)	0(0.00)	2(1.68)
	Urologist &Nephrologist	1(1.23)	0(0.00)	1(0.84)
	Urologist & Surgeon	5(6.17)	0(0.00)	5(4.21)
	Not Sure	5(6.17)	2(5.26)	7(5.88)
	Total	81(100.0)	38(100.0)	119(100.0)
Types of Kidney Stones	Calcium Stone	61(75.31))	27(71.05)	88(73.95)
	Uric Acid Stone	0(0.00)	0(0.00)	0(0.00)
	Cystine Stone	0(0.00)	0(0.00)	0(0.00)
	Not Sure	20(24.69)	11(28.95)	31(26.05)
	Total	81(100.0)	38(100.0)	119(100.0)

* Figures inside the parenthesis denote percentage

Table 3: *Response of the participants about the knowledge and effect of food types on reducing the complications of Kidney Stone Disease (KSD).*

Food types	Less	More	Not Sure	Total
Meat	86(72.27)	9(7.56)	24(20.17)	119(100.0)
Dark Chocolate	48(40.34)	17(14.28)	54(45.38)	119(100.0)
Fruits	10(8.40)	82(68.91)	27(22.69)	119(100.0)
Green Leafy vegetables	15(12.61)	88(73.95)	16(13.44)	119(100.0)
Non-Green Leafy Vegetables	63(52.94)	10(8.40)	46(38.66)	119(100.0)
Water	4(3.36)	100(84.03)	15(12.61)	119(100.0)
Fatty Food	82(68.91)	4(3.36)	33(27.73)	119(100.0)
Fish	44(36.97)	23(19.33)	52(43.70)	119(100.0)
Sugary Foods	80(67.23)	7(5.88)	32(26.89)	119(100.0)
Salty Foods	91(76.47)	2(1.68)	26(21.85)	119(100.0)
Nuts	30(25.21)	43(36.13)	46(38.66)	119(100.0)
Eggs	37(31.09)	27(22.69)	55(46.22)	119(100.0)

* Figures inside the parenthesis denote percentage

while 57.14% opined this disease as an endocrine disorder. 44.54% of the participants have the view that kidney stone disease is related with high content of calcium and uric acid in the blood.

Table 4: *Response of the participants about the knowledge questions regarding the formation of Kidney stone disease (KSD).*

Risk factors associated with Kidney Stone (KS)	Yes	No	Not Sure	Total
Consumption of coffee & tea contributes to KS	3(2.52)	98(82.35)	18(15.13)	119(100.0)
Endocrine disease	68(57.14)	31(26.05)	20(16.81)	119(100.0)
UTI	73(61.34)	8(6.72)	38(31.94)	119(100.0)
Family History of stone	19(15.97)	78(65.55)	22(18.48)	119(100.0)
High calcium & uric acid in blood	53(44.54)	14(11.76)	52(43.70)	119(100.0)
Sedentary lifestyle	44(36.97)	16(13.45)	59(49.58)	119(100.0)
Holding of urine in bladder for prolonged periods	50(42.02)	23(19.33)	46(38.65)	119(100.0)

* Figures inside the parenthesis denote percentage

CONCLUSION

The present study reveals that the study participants (who happen to be the students of Manipur University) have varied opinions regarding the knowledge, attitude, and practice towards the formation of kidney stones. They are to certain extent aware about the prevention, treatment, symptoms, and mode of diagnosis of kidney stone disease. Interestingly, the participants who have

experienced kidney stone disease seem to be more knowledgeable than those who did not have experience. Public awareness of kidney stone is necessary to detect the disease at the earliest and to reduce the burden of disease. Considering the alarming burden of kidney stone disease in the state, this is high time to conduct more systematised thorough investigation to comprehend the problemsd.

ACKNOWLEDGEMENT

We are very thankful to all the participants for their contribution in this research work.

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Address for Correspondence: Sanjenbam Yaiphaba Meitei, Assistant Professor, Department of Anthropology, Manipur University. Email ID: yaipha_meitei@yahoo.co.in.
Mobile: 8794732016.

J. Indian Anthrop. Soc. 54:243-244(2019)

BOOK REVIEW

Natalie Konopinski 2013, *Doing Anthropological Research – A Practical Guide*, New York, Routledge Publications [eBook ISBN9780203743874], Pp 150 + Index. Price 2300 INR.

Students are confronted with a number of dilemmas when they prepare, conduct and write-up a research paper. It is indeed an exciting and satisfying part for students of Anthropological research to put their learning into practice. There may be occasions during the course of research project where students are wondering how to fashion ideas into actual topic for research? There may also be time when students are looking for advice on how to write a research proposal, use secondary data sources, analyse field notes, document visual material which has been collected during field visit. Anthropology is very flexible and wide ranging in its intellectual questions and concerns and possesses its own share of institutional and disciplinary conventions. Undertaking independent research and coming out with substantial piece of academic work is indeed a challenging task personally and intellectually and the students, in these circumstances, desperately look forward to very coherent and rational advice in addressing some of the issues of Anthropological research such as making choices about the Anthropological topic one wants to explore, the sources to be consulted, and methods to be applied. Above all, questions such as, is your topic of Anthropological interest? How we analyse our research material etc. are to be addressed. Dr. Natalie Konopinski has used her own experience in answering all the possible dilemmas of anthropological research students through a well-edited book, which also contains contribution from globally renowned Anthropologists.

"Doing Anthropological research – A Practical guide" is an unambiguous and apt book to answer and give logical solutions to a number of issues confronted by research students while conducting, preparing and presenting Anthropological research. This book, containing views of experienced anthropologists, offers plethora of relevant and succinct advice on how to plan and conduct anthropological research. The book contains 8 chapters and is the product of collaborative writing endeavour of a group of social anthropologists at the University Edinburg. The chapter wise description is covered in the following paragraphs.

Chapter 1- "Getting Started - The search for anthropological questions" by Totrias Kelly explains the subject of Anthropology and also encourages the researchers to bring out their own anthropological interest. The chapter also gives a sound advice to students as to how the ideas could be turned into topic and series of questions for research. This chapter also dwells upon how to start generating ideas. The chapter also helps through a small self-contained research paper as to how a large number of anthropological questions could be answered.

Chapter 2 - "Planning your research project" by Laura Jeferry and Natalie Konopinski, actually prepares the students on dealing with the practicalities of preparing for the research. The chapter throws light on how to turn one's ideas into a topic and relevant questions into viable plan for research proposals. This chapter also guides the researchers on design of research proposal including language, permissions and contacts, as well as research methods. The chapter also throws light on working out suitable timeline for the proposal and ethical issues pertaining to the research project.

Chapter 3– "On the primary importance of secondary research" by Neil Thin reflects the importance of utilizing secondary data in anthropological research. It also explains the difference between research works based on the primary vis-a-vis secondary data and also mentions ways to find and use the variety of information through books, articles, websites, libraries, and documents. It gives guidance on holistically accessing information

through primary, secondary and tertiary sources. The chapter also brings out the fact about the crucial importance of secondary references for anthropological research.

Chapter 4– "Anthropology and Ethnographic fieldwork" by Joost Fontein dwells on the kinds of methods and approaches that the research project will require. This chapter makes use of the work of four anthropologists to describe congruence that exists between research questions and fieldwork. This chapter also provides interesting points on how anthropology uses ethnographic field work in its methodological domain.

Chapter 5– "Fieldwork practicalities" by Joost Fontein describes various field work techniques including advising the research students about how and where to live during field work and how to generate information and how to make ethnographic data out of fieldwork encounters. The chapter also provides suggestions about practical aspects of conducting ethnographic fieldwork.

Chapter 6 – "Ethics" by Ian Harper delineates ethical considerations during a research which is an important aspect and this chapter addresses the ethical dimensions of doing anthropological research. This chapter also places onus on the researchers to bring out their original ideas in their research work after going through various earlier anthropological work of importance and relevance.

Chapter 7– "Sorting things out – Organizing and Interpreting your data" by Lotte Hock impresses upon the management of empirical research data and developing sound anthropological arguments. It mentions usefulness of important tools through which one could analyse and interpret one's source material. Combination of theory and data could be adequately used for creditable analysis and outcome.

Chapter 8– "Communicating the research and writing up" by John Hamic gives guidance on composing a research paper in anthropology. It also gives advice on planning to write and how to form a logical argument. It also gives tips on structuring the researchers' thought process, remaining absolutely unbiased and timely submission of research paper.

All the chapters very coherently bring out various aspects of ingredients which go into plan, conduct ethnographic field work, organizing and analyzing information and right up to writing a well-reasoned paper. All in all, this book provides practical toolkit for carrying out research. The book can serve as *panacea* for all aspiring researchers. This book with contributions from experienced anthropologists could serve as *one stop destination* for students and researchers planning to do research work in anthropology. Overall, this is an excellent book which works through research process chapter by chapter and is a handy guide for providing invaluable advice to all students who are doing or intending to use anthropological methods in their research.

KR Nautiyal
Ph.D. Scholar, Anthropology
I.G.N.O.U, New Delhi

J. Indian Anthrop. Soc. 54:245(2019)

BOOK REVIEW

Joy Hendry. 2016. *An Introduction to Social Anthropology.* London, Palgrave Macmillan. [ISBN 978-1-137-43154-7], Pp. 364. Price: 2369 INR.

The book under review by Joy Hendry of Oxford Brookes University has been written in a lucid style. The purpose of this book is to introduce the readers to the subject of cultural anthropology. There are many available books on this subject but Joy Hendry has made this an appealing read by providing appropriate examples pertaining to every topic discussed. In addition to the examples, other important points included are additional notes, detailed references, and ideas for further research. At the end of every chapter, there is a question posed to the reader under the heading "Topic for Reflection", which helps one to reflect on the concepts mentioned in the chapter. The book is divided into fourteen chapters, each chapter giving its readers a new vision towards anthropology.

The first chapter, i.e. Introduction explains the work of anthropologists in their respective fields and the problems faced by them. It also gives a brief history about the subject and the idea of contents discussed in the chapters to follow. Joy Hendry has conceptually divided this book into two themes: Firstly, she examines the systems of classification, and how these systems help us to behave with other humans and the society around us. She supports this idea with the discussion on topics like reciprocity, rites of passage, symbolism, art, religion, kinship and politics etc. Each of these along with many other topics has been discussed in detail in first part of the book. Second part focuses on the contemporary problems faced by the world and the anthropologists in understanding the different cultures. Different themes like Globalization, Diaspora Studies, Tourism and Identity have been examined.

Last chapter is interesting from anthropological point of view because it brings out the significance of anthropology as a discipline with contributions from a number of anthropologists added to it. It looks at the benefits and difficulties faced in the field with author giving her own examples from the fieldwork in Japan. Ruth Benedict had rightly said that 'the purpose of anthropology is to make the world safe for human differences' and this book justifies this quote in the last chapter. She beautifully explains the answer to a question common to all i.e., what can we offer in order to make this world a better place to live in?

By and large, this book opens up many possibilities in this field of study and one really feels that Joy Hendry has done full justice to the title of the book. This book is a must read for every social anthropology student and I recommend this book to be made an essential read in every university for undergraduate and post graduate courses in anthropology.

Ubaid Ahmad Dar
Ph.D. Scholar, Anthropology
I.G.N.O.U, New Delhi

J. Indian Anthrop. Soc. 54:246-249(2019)

OBITUARY

Professor Falguni Chakrabarty
(02.7.1952 – 03.02.2019)

"*Ei preethibir ran rakto safalata / satya, tabu shesh satya noy*"
(*Suchetana*, Jibananda Das)

[Blood-filled success of the war of this world / is true, but not the ultimate one]
(Translated)

In 1972, Flaguni Chakrabarty and myself were undergraduate first year students with honours in anthropology and attending our honours classes in post graduate department of anthropology, University of Calcutta located at the Ballygunge Science College campus. A couple of weeks had elapsed since our classes had started and friendship developed among the classmates. One day some of us were toiling with some books borrowed from the library to enter into the mystery of the subject, Falguni started to recite, – "*Eikhane tor dadir kabor dalim gachher tale / tirish bachhar vijaye rekhechhi dui nayaner jale*....." (*Kabar*, Jasimuddin). [Here is your grandma's burial under the *dalim* tree/ soaking it with tears since the last thirty years.....] (Translated). He meant to poke fun at our tearful attempt to show our love to anthropology that was buried in books. Actually we did not have any clue where to start for taking notes on the lectures we attended that day. Ignoring the barrage of counter fun he started to recite the poems of Kumud Ranjan Mallik, Satyendranath Dutta from the prescribed texts of school syllabi just to show his eminence in memorising the school day poems. These poets earned their place in the heart of the Bengalee through their rhetoric on the beauty of the Bengal villages, lives of the rural mass and their emotions and sentiments. One can reasonably assume that these poets reacted against the emigration to the cities through their compositions during the first half of the twentieth century. The cities pulled the rural population in its womb as they have turned into cities of power and avenues of all opportunities of life. Those immigrated into towns or cities could not forget their rural past, and their memories of the past were recreated and represented through their urban activities.

It was very natural for Falguni to recite poems related to rural life as he was born, as per the record, in Arambag town on July 02, 1952. His memory of the rural life made an ever lasting impression in his mind that made him comfortable to undertake fieldwork in rural areas of West Bengal in future. After schooling, Falguni also had to come in

Kolkata (then Calcutta) in 1972 for college education. He turned into an urbanite and never had any plan to settle in rural area. At our *adda* during the off time, quite often he plunged into his memories of school day texts probably to cherish his root to establish his non-city identity. He had a stock of such poetry that he used to recite to stave off any emotional discomfort. Other day he was reciting, – "*Sansare sabai jakhon sarakhan shato karme rato / tui shudhu chhinnobadha palatak baloker mato / madhyahne mather majhe ekaki bishanno taruchchhaye /.....Ebare phirao more / loye jao sansarer teere / hey kalpane rangamoyee dulayona sameere sameere / tarange tarange aar, dulayona mohini mayay …* (*Sankalpa O Swadesh*, Rabindranath Tagore). [Everybody is busy while with countless chores / Like a truant boy playing flute alone in the sun / under gloomy shadow of a tree in the midst of grazing field ……Turn me back, oh my funny imagination / to the world of populace / do not swing me onto the waves of gentle breeze / do not lay me into the enchanting illusion] (Translated). A handful of classmates were listening to the recitation of Falguni who was completely absorbed moments after he started to recite the poem. We were astonished finding him not pausing for recollecting a single word as this poem was quite long one. This was one of his favourite poetry at that time and he recited it quite often even at a mature age. One may wonder why a student of science recited the same poem again and again particularly when he was a post graduate student. Where he wanted to come back! After long years of association with him I have understood that Falguni's spontaneous recitation was a channel to respond to any social event and his desire to participate in it.

Influx of population in the cities, particularly in Kolkata, was gradually altering its social-cultural system. Sixth and seventh decades of the last century left an indelible mark in the history of West Bengal and Kolkata. Notwithstanding the state and its capital is absorbing the shock of the partition of Bengal during independence, its citizen has to face myriads of problems at public life. Political failure to contain the continuous rise of the price of daily commodities, rise of ultra-leftist movement, and liberation movement of Bangladesh from erstwhile East Pakistan and consequent influx of refugees in West Bengal and Kolkata (then Calcutta) created a period of upheaval – a period of questioning everything one comes across in life. That is also a period of utmost unhappiness and the youngsters were bubbling with anger. Such unhappiness pushed the boundary of given space in social life to create new thinking in all spheres of life. Books prescribed other than syllabi, group theatre, cinema, choir, little magazine etc. were more important than class rooms. Writings of the western mavericks, to name a few, Jean-Paul Sartre, Jean Jenet, Jean-Paul Artur Rabbot, Julius Fuchik and their translations including the mystique poets Omar Khayam, Kahlil Gibran; innumerable Bengali essayist, poets and again to name a few Jibananda Das, Bishnu Dey, Subhas Mukhopadhyay, Shakti Chattopadhyay, Sunil Gangopadhyay were making rounds university canteens of different campus, College street Coffee House, and the roadside tea stalls of Kolkata. We were growing up in Anthropology through participating to the urban cultural space of Kolkata. Mental world of Falguni was gradually built experiencing the tension between social norms practised within the family and tension-full urban cultural space outside the family. He used to oscillate between the two conflicting worlds with poetry. The tension of the two worlds grew in him a realization that is collated with a couple of lines of Jibananda – "*Alo Andhakare Jai – mathar bhitare / swapna noy, - kon ek bodh kaaj kare; / swapna noy, - shanti noy – bhalobasa noy / hridayer majhe ek bodh janma loy*" (*Bodh*, Jibananda Das). [Traversing through the light and dark – in my head / not the dream, – unknown feeling crawls; / not the dream, peace or love / a feeling is born inside the heart] (Translated). His love to poetry was so deep that he translated some Urdu couplet in Bengali and published them in a short lived little magazine 'Raivatak' published from Lake Town where he used to live before the ending of university life.

College and university days of Falguni like thousands other were not peaceful as the student unrest extended beyond college and university campuses to bring entire West Bengal under its ambit. Anthropology department like many other departments of the University of Calcutta had to taste those bitter days. That was the time to know the academic world and its unscrupulous part. Every moment was the moment of despair that left a deep scar in the minds of those who were sensitive to the social issues. Gradually campus descended into quietness and three years debited from our academic life. Finally, we including Falguni crossed over the university boundary successfully in 1980 instead of 1977. Before the publication of result Falguni joined a survey project funded by a Swiss agency on commercial tree plantation. Dissatisfied, he quit the project after three months as he was cut off from his family and friend circle. He hardly mentioned about this service in his bio data. After a brief period of wait he joined the Centre for the Studies in Social Sciences (CSSS), Calcutta as research assistant to work in three projects on 'Tribal Polities and State Systems in Pre-Colonial Eastern and Northeastern India'; 'Rice Civilizations in Asia'; 'Society and Culture in *Rarh* Region of West Bengal: Structure and Transformation' respectively under the supervision of Late Prof. Surajit Chandra Sinha. He did exhaustive fieldwork among the Bhumij of Purulia district, particularly in hilly terrains of Ayodhya and adjoining regions. While collecting empirical data among the Bhumij he noticed the deep interrelationship of ecological conditions of Purulia and its tribal inhabitants. This led him to conceive another research project on ecological adaptation among the Santals and later he earned doctoral degree for his thesis titled 'The Adaptation of the Santal in the Hill Forest Environment: A Study in Cultural Ecology' under the supervision of Surajit Chandra Sinha. He also published the thesis as monograph with the same name. The period from 1980 to 1986, was particularly productive for him. He managed to publish four articles basing on the fieldwork done in this period. His thesis deviates from the usual monographs of the tribal communities.

After serving Vidyasagar University, which was the newest then, for a couple of months as guest teacher, he joined the same as a lecturer in February 1987. To be a faculty in the new university like Vidyasagar was like a soldier without any arsenal. Taking classes and talking research was not enough to build a new department with very limited resources. Falguni had to invest extra effort along with other faculty of the department to continue the expected academic chores. Changing the faculty from humanities to science and accordingly the degree that comply the UGC regulation and academic job market as well as the syllabi to make it fit for the contemporary anthropological practice of the country were uphill task. Falguni and other faculties had been able to pass that trying time. Personally he had to pass through a trying time due to his sharp tongue, uncompromising attitude, disagreement with the administration and extra-academic reason. He had to suffer for more than a couple of years till he was acquitted of all charges by the administration and reinstated to his position with full honour. Though the period was a setback to his life and career his indomitable spirit did not put him into the quiet sanctuary of inaction. During his tenure as lecturer, Reader (Associate Professor) and Professor till his retirement in 2017 he supervised more than hundred M.Sc. dissertations, research work of twelve registered Ph.D. students out of whom six had been awarded the degree so far. His untimely death restricted the number of his published article to fourteen in national level journals and edited books. Published articles witness his shifting of research interests from cultural ecology to rural handicrafts, educational anthropology, and social gerontology with a peep into the world of prehistoric archaeology. He had also five major research projects funded by the Government of West Bengal in his credit. His expertise had also been utilized by governmental organizations and universities of different states. He was also member of two professional bodies namely, Indian National Confederation of Anthropological Associations (INCAA) and Indian Anthropological Society.

In post-sixty everyone grows a tendency to look back and narrate one's own experience, which is generally dismissed as the cynical imagination of an aged. A man's identity is not just exhausted in his profession. Everyone is wrapped up in time warp, relations, activities and above all leading a life of one's own. In busy urban life we care little about a person beyond his professional identity. Falguni was a music lover and had a good collection of different categories of recorded songs starting from folk songs to contemporary 'band' albums. He used to keep them playing most of the time even when we are on thundering *adda*. Nobody would appreciate Falguni's art of singing but he won his peers' heart through recitation of poems composed by modern and contemporary poets. His capacity of memorising scores of poems, inimitable style of reciting poems – stress on particular words, appropriate pause as desired, restrained but sometimes melodramatic voice – rendered a new dimension to the meaning of the recited poems. He was also a good cook and liked to cook Bengali traditional dishes. His acquaintances would appreciate his capacity of organizing and managing an academic seminar as well as *adda* with sumptuous food. He passed away silently on 3rd February 2019 early in the morning. For a couple of years his health was failing though he was attending invited duties in some universities. I still hear his whispering voice reciting a poem of one of his favourite poet Jibananda coming forth, –

"*Dhansirih nodir kinare ami shuechhilam – pousher rate – / konodin ar jagbo na jene / konodin jagbona ami – konodin jagbo na ar –*"(*Andhakar*, Jibananda Das)

['am laid back on the bank of Dhaansirih river – at one night of *poush* / knowing that I won't be awake any day/never I would be awake – I won't be awake any more] (Translated). Had he foreseen his death!

Poems mentioned in the text are adopted from the following sources.

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2. Jashimuddin 2000 *Jashimuddiner Shreshtho Kabita*. Kolkata, Dey's Publishing. [Best Poems of Jashimuddin (in Bengali)].

3. Jibananda Das 2011 Shreshtho Kabita. Kolkata, New Script. 5th Edition.

GOPAL KRISHNA CHAKRABORTY

Former Professor,
Department of Anthropology,
University of Calcutta

A Note of Appreciation

Journal of The Indian Anthropological Society (JIAS) expresses sincere gratitude to the esteemed reviewers who have helped in reviewing the articles for JIAS, volume 54, 2019.

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References should be arranged alphabetically. The reference list should include all articles cited in the text and tables. Please do not pad your list with papers you do not cite. Each reference should be complete (see examples given below).

Book

Single author

Sarana, Gopal 2008. Explorations in Method and Theory in Anthropology. Jaipur, Rawat Publications.

Plural authors

Behura, N .K. and Nilakantha Panigrahi 2006.Tribals and the Indian Constitution. Jaipur, Rawat Publications.

For four or more authors, list all of the authors in the reference list; in the text, list only the surname of the first author, followed by et al. ("and others"):

Editor, translator, or compiler instead of author

Lattimore, Richmond [Translator] 1951. The Iliad of Homer. Chicago, University of Chicago Press.

Danda, Ajit K. and Rajat K. Das (eds.) 2012. Alternative Voices of Anthropology. Kolkata, The Indian Anthropological Society.

Editor, translator, or compiler in addition to author

Barthes, Roland 2009. Mythologies. [Selected and Translated by Annette Lavers.] London, Vintage Books.

Radhakrishnana, S. [Translator and notes] 1970. The Bhagavadgita. Bombay, Blackie & Sons.

Chapter or other part of a book

Choi, Hyup 2012. Korean Anthropology in Historical Perspective. In: Alternative Voices of Anthropology, ed. by Ajit K. Danda and Rajat K. Das, pp. 117-135. Kolkata, The Indian Anthropological Society.

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Devi, Mahasweta 1418B (2011). *Aranyer Adhikar* (Right of the Forest). Kolkata, Karuna Prakashani. [Bengali].

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Kurland, Philip B. and Ralph Lerner (eds.) 1987. The Founders' Constitution. Chicago, University of Chicago Press. http://press-pubs.uchicago.edu/founders/, accessed on January 13, 2016.

Journal article

Article in a print journal

Kar, R. K. 2012. The Concept of Culture vis-à-vis Cultural System. J. Indian Anth. Soc. 47: 117-127.

Prabhu, V. and Tanuja Kalita 2013. Ethics and Legality of Euthanasia in Indian Context. EJAIB 23: 46-50.

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Kossinets, Gueorgi, and Duncan J. Watts 2009. Origins of Homophily in an Evolving Social Network. Am. J. Sociol. 115: 405–50. DOI : 10.1086/599247. http:// www.journals.uchicago.edu/toc/ajs/ current, accessed on February 28, 2010.

Article in a newspaper or popular magazine

Mendelsohn, Daniel 2010. "But Enough about Me," New Yorker. January 25.

Stolberg, Sheryl Gay, and Robert Pear 2010. "Wary Centrists Posing Challenge in Health Care Vote," New York Times. February 27. http://www.nytimes.com/2010/02/28/us/ politics/28health.html, accessed on February 28, 2010.

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Book review

Ray, Subha 2009. *Morphology of Primates and Human Evolution.* By Professor R. P. Srivastava. J. Indian Anth. Soc. 44: 250-252.

Thesis or dissertation

Keot, Baijayanta 2007. *Folklore and Nationalism with Special Reference to Assam.* Ph. D. thesis submitted to Department of Cultural Studies, Tezpur University, Assam.

Paper presented at a meeting or conference

Adelman, Rachel 2009. *"Such Stuff as Dreams Are Made On': God's Footstool in the Aramaic Targumim and Midrashic Tradition."* Paper presented at the Annual Meeting for the Society of Biblical Literature, New Orleans, Louisiana, November 21–24.

Website

American Anthropological Association 1998. Code of Ethics of the American Anthropological Association. http://www.aaanet.org/committees/ethics/ethcode.htm, accessed on March 29, 2017.

McCutcheon, W. A. 1983. Industrial Archaeology: A Case Study in Northern Ireland, World Archaeology. 15: 161-172 http://www.jstor.org/stable/124649, accessed on February 23, 2012.

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ACKNOWLEDGEMENTS

The Indian Anthropological Society thankfully acknowledges the financial assistance received from the Indian Council of Social Science, New Delhi and the Department of Higher Education, Government of West Bengal.

Journal of the Indian Anthropological Society

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November 2019 Volume 54 No.3
(Published in December 2019)

Published by Prof. Subho Roy for the Indian Anthropological Society, 'Sukhavati Bhawan', Flat-2A, P-17D, Ashutosh Chaudhury Avenue, Kolkata- 700 019 and Printed at Imprinta, 243/2B, A.P.C. Road, Kolkata-700 006.