Nutritional Correlates and Economic Transition among Two Forest Dwelling Tribes of India

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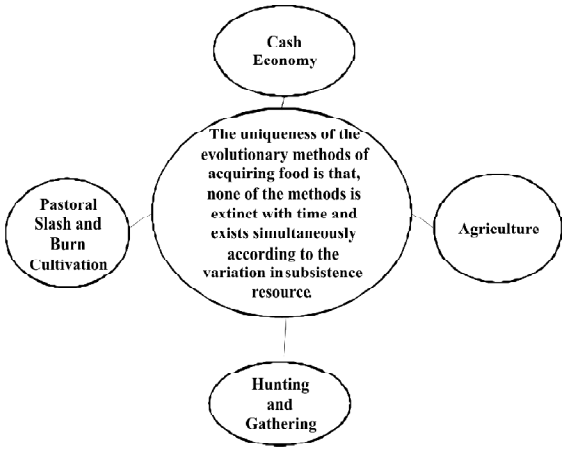
ABSTRACT: Forest is viewed as a source of livelihood by almost all the tribal population living in the tropical countries of the world. The forest dwelling tribes are predominantly dependent on forests for their livelihood. It not only plays an important role in their subsistence but also plays a major role in their economic milieu. Present paper discusses the health and nutritional status of two forest dwelling tribes – Bharia of Madhya Pradesh and Kanikoran/Kani of Kerala. One of these two tribes, Bharia lives mainly on agriculture and wage economy and the other Kanikoran's livelihood is based on cash crops and wage economy. They have one thing in common, that is the use of edible forest products and treatment of diseases with the medicinal plants. Generally, the effect of a cash crop or wage economy on nutrition is devoid of the balance which can be seen under subsistence economy. Present paper highlights the nutrition and health profile of these two forest dwelling tribes, where both of them live in isolation in the forest but differ in their economy and livelihood pattern which plays an important role in maintaining health, nutrition and disease profile of the population.

INTRODUCTION

Forest is the source of food for human beings since prehistoric times and hunting and gathering is the oldest way of acquiring food by the humans. Along with biological adaptation, there are human dietary adaptations in evolutionary perspective. The way of acquiring food evolved from hunting and gathering to pastoral and followed by food production through agriculture, horticulture and peasantry. The transition to cash economy becomes the ultimate form of evolution of acquiring of food. Schematic representation of the general evolutionary pattern of acquiring food by humankind is presented below.



Schematic representation of evolutionary pattern of acquiring food

With the advent of agriculture, food production, distribution and consumption plays an important role in the nutritional status of the population. Hunting gathering group depend primarily on the indigenous food staffs of their local environment, and thus, have less control over diet, that exists in agriculture. Their diet exhibit great range of adequacy, from abundance to chronic scarcity. Hunter gatherers tend to be less destructive of their environment than food producers and have developed numerous cultural mechanisms for maintaining a constant local food supply.

For more than 99 per cent of human history, *Homo sapiens* lived as hunter-gatherer and which has been practicing by the forest dwelling tribes in many parts of the present day world. There are seventy five Primitive Tribal groups in India. Most of these Primitive Tribal Groups (PTGs) along with a good number of tribals who are living in the forest of India, and which plays an indispensable role to provide food security for them.

In 1865, implementation of Indian Forest Act made them redundant in their ancestral land by taking away their traditional rights on the use of forest resources. Though, Indian Forest Act was amended in 1927, there was not much difference with the previous one as it was also not in the favour of shifting cultivation which was practiced by the forest dwellers. Later, under Wildlife Protection Act, hunting was banned in 1972. Land laws then withdrew or limited the legitimacy of shifting cultivation as a valid cultivation practice. This was effective through survey and settlement procedure wherein, land under permanent lowland cultivation was recognized as tenancy land and shifting cultivation land on hill slopes were designated as either revenue water land or forest lands.

Restriction on slash and burn cultivation "Kumri" on Western Ghats were posed from 1848 (Buchanan, 1807), (Rangarajan,'96). Attempts to control shifting cultivation 'Dahiya' in Central Province (present day undivided Madhya Pradesh) started from 1862 with the imposition of forest rules that banned 'Dahiya' in well timbered areas (Rangarajan,'96). By 1896, shifting cultivation was eradicated in all most all forests directly under British control in the Central Province. By the time of independence, shifting cultivation had more or less been stamped out in most of the mainland India by the colonial regime and was confined to parts of North East India, Eastern Ghat in Orissa, Northern Andhra Pradesh and Bastar region of Madhya Pradesh. Two tribal population Kani/ Kanikaran of Western Ghats (Kerala) and Bharia of Satpura Range (Madhya Pradesh) have to give up their traditional system of food production due to imposition of forest laws. Present paper deals with the adaptive strategies of these two tribes towards acquiring their food in a changing scenario of abandoning their traditional food procuring method i.e. shifting cultivation.

MATERIALS AND METHODOS

The primary data for the research have been collected through intensive anthropological field work. The data have been collected through structured and unstructured questionnaire and schedules. In order to ascertain nutritional status, a single day diet survey has been conducted by weighing raw food material before cooking following the method of Akroyed and Krishnan ('37). Nutrient components of the food have been analyzed and compared with the tables provide by Indian Council of Medical Research (Gopalan, 2011).

ECOLOGY

The habitat of Bharia in Patalkot comes under the transition zone of Panchmari Biosphere Reserve. The area is a part of Tamia tehsil under the Chindwara district of Madhya Pradesh. Habitat of Kani under study comes under the core area of Peppara Sanctuary of Agasthyamalai Biosphere Reserve. The area is a part of Nedumangad tehsil of Thiruvanandapuram district. In both the cases, ecology of the area compelled these two tribes to live in isolation.

Patalkot is located in a deep gorge of 1500ft-1700ft. The area is a bowl like natural formation surrounded by dense forest of steep hills. In this peculiar geographical location, they are supposed to climb at least 400 feet; to reach upland world and this has forced them to live in isolation and also to live on a self sufficient forest based livelihood since time immemorial. The tribe is distributed in 12 villages scattered over 79 sq km valley at a depth of 1500-1700 feet from the surrounded hills. The villages are situated in the fold of steep ranges locally known

as "Kanat". Out of the 12 villages, the village Gaildubba has been selected for the study. A kachha road from Tamia reaches the periphery of the valley and there after one has to go down 400 feet on foot only. The village consists of 28 households and all of them have been coved under study.

The tribe, Kanikoran/Kani of Kerala is distributed in thirteen settlements scattered over 56 sq km inside the core area of Peppara sanctuary. Out of thirteen settlements six have been visited for the study. The settlements are selected as suggested by forest officials on the basis of their accessibility i.e. one can reach the settlement by walking 2-4 km on foot after reaching the nearest point by a four wheel drive jeep.

The settlements are Amode, Cherumangad, Mukkothivayal, Pathode, Podiyam and Vlalavala. Each settlement has 10-20 households scattered in different elevation up to 500 feet. The six settlements understudy consists of 91 households and all of them have been covered understudy. Due to their geographical position both the tribes are devoid of basic infrastructure facilities like road, transportation, piped drinking water facilities etc. (Gangopadhyay, 2011).

ECONOMY AND LIVELIHOOD

Enforcement of ban on hunting and shifting cultivation compelled these two forest dwelling tribes to find out adaptive measures for their livelihood. Nowadays Bharia lives mainly on agriculture and wage economy and the other tribe Kani's livelihood is based on cash crops and wage economy. Both of them now lead a primarily settled life. Economic transition from forest based hunting gathering and shifting cultivation to a subsistence economy like agriculture as practiced by Bharia and market based economy amongst Kani brought radical changes in their life style and dietary pattern. Hunting and gathering leads to an omnivorous food habit with more nutritionally efficient hunting of animals and the gathering of more ecologically efficient vegetal materials. Thus, a change in the use of subsistence resource also brought changes in their food habit towards a carbohydrate weaning diet for both the tribes Kani and Bharia.

In their settled lives, these two forest based semi nomadic tribes choose two different ways of land use for food – plantation by Kani and agriculture by Bharia. The Kani understudy, use the forest land for rubber plantation which gives them sustainable economic support. They get the bud from Tropical Botanical Garden and Research Institute (TBGRI) and when planted, it takes 7 years to grow to a latex producing plant. They collect rubber and prepare rubber sheets after treating the latex chemically with formic acid and water. They cultivate two types of rubber plants one is local and known as "Nudan" in local language and the other is a hybrid variety. The bud of the hybrid variety is provided by TBGRI and thus popularly known as "bud rubber". However, the yield of "Nudan" is less than the hybrid rubber bud and thus, they prefer "bud" rubber than "Nudan". Maximum yield they get in January and minimum in May-June. From the collection of rubber from ten rubber plants they can prepare one rubber sheet per day. The weight of a single rubber sheet is about 750 gram and they sell it at the rate of Rs.175/- per kg. Along with rubber sheet they also cultivate spices like Black Pepper, Cardamom and Banana as cash crop.

Unlike Kani, the Bharia of Patalkot does not practice multiple use of land. The adaptive response towards the change from semi nomadic to settled agriculturists did not ameliorate their life style as the later is not environmentally sustainable. The soil of the valley does not provide good yield and in the absence of proper irrigation system they have to depend on rain fed agriculture and thus suffer from seasonal resource variation.

Both the tribes collect NTFP for self consumption and sell which also includes medicinal plants. Majority of NTFP collection of Kani is meant for sell where as Bharia collect NTFP mainly for self consumption. However, both of them sell honey and medicinal plants. Rice is staple food for both of them but Kani has to purchase rice from the market. Bharia even produce their cooking oil by crushing the seeds of "Mahua" flower and "Jagni". The Kani has a society and six market places where they sell their NTFP and medicinal plants. The Bharia however do not have such an organized society and market. Thus, economy of Kani is mainly cash oriented whereas the Bharia depends mostly on subsistence economy.

RESULT AND DISCUSSION

Mead ('55) observed effects of transforming economy on nutritional status of the population by stating "In general, the effect of a cash crop or wage economy on nutrition has been one of lowering the level by disturbing the balance achieved under subsistence economy." The shift to cash economy also means a large part of food is purchased instead of produced as has happened amongst the Kani under study. Food consumption thus depends on the purchase capacity and varies between sufficiency and scarcity of food amount according to cash at hand and cost of food. This however, reflects in the lower consumption of two important nutrients of the body calorie and protein by the Kani in comparison to the Bharia (Fig. 1 & 2). The same can be applied for vitamin B1 (Fig. 4).

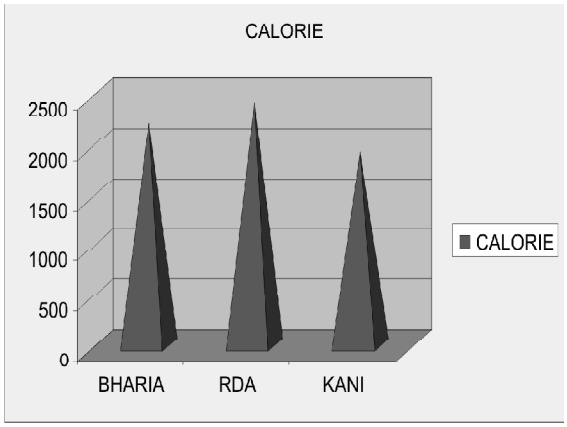


Figure 1: Calorie consumption

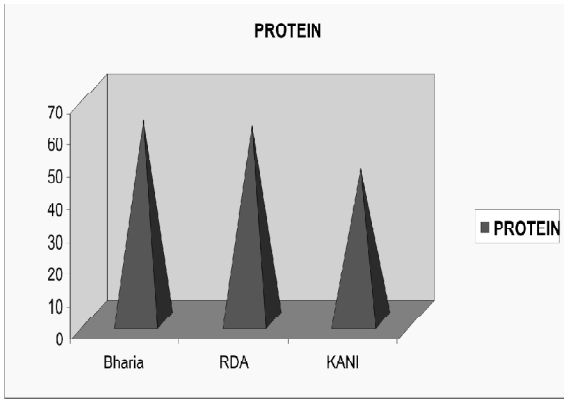


Figure 2: Protein consumption

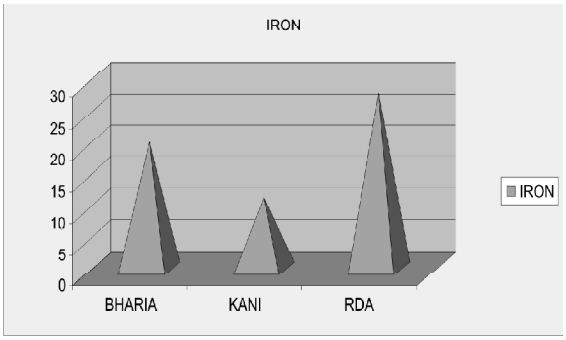


Figure 3: Iron consumption

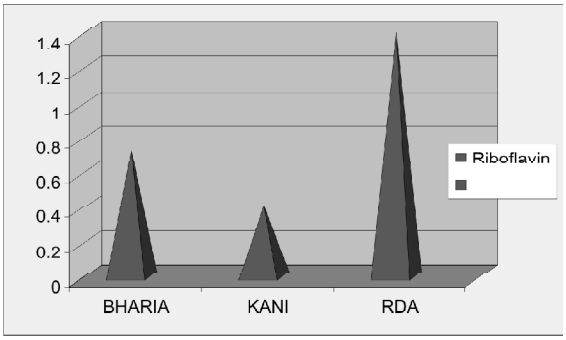


Figure 4: Riboflavin consumption

Iron (Fig. 3) consumption is also better among the Bharia than the Kani. Both the tribes are low in consumption of vitamin A but in the case of Kani it is alarming (Fig. 5).

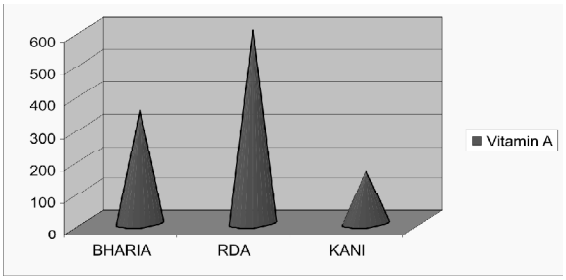


Figure 5: Vitamin A consumption

The Kani depends heavily on purchased food, even for staple food. They purchase locally available per boiled rice and cultivate tapioca as a substitute of rice. Both per boiled rice and tapioca do not contain vitamin A and which reflects in their extremely low consumption of vitamin A (Fig. 5).

Major reason for the difference in nutritional status is the difference in adaptive response to their new environment of settled life. Unlike Kani, livelihood of Bharia of Patalkot is almost self sufficient. Instead of purchased food they depend mostly on agricultural products which includes not only staple food but also fresh vegetables and fish from river.

Crop grown during Kharif season are the main crops of the Bharia of Patalkot. Crops like maze, jowar and course millet like kodo, kutki, ballar and oil seed like jagni, are cultivated during the season in their agricultural land "Khet". Rabi crops are generally grown in the 'Bari" attached to the hutments on some good patch of land. They mainly consume the Kharif crops and sell the 'Rabi' crops. In comparison to the Kani of Peppara sanctuary, they are quite self sufficient.

CONCLUSION

The study reveals that, differential nutritional status of these two forest dwelling tribes are due to the result of differential adaptive response towards a new livelihood after the ban on their traditional system of acquiring food through hunting-gathering and shifting cultivation. Calorie consumption of Bharia though lower than the RDA yet is better than the Kani. Due to shift towards cash economy, the diet and nutrition of Kani depend heavily on the purchased food. Thus, a compromise has always been made on the requirement of food, selection of food items and cash at hand.

The high cost of protein rich food often makes the Kani prohibitive, thereby forcing them into an affordable high carbohydrate diet. Recommended level of nutrients has not been attained for protein, riboflavin and iron by the Kani of Peppara Sanctuary. On the other hand subsistence agriculture and catch from the river flown through the valley of Patalkot helped the Bharia diet to exceed recommended allowance of protein. Presence of commercially prepared food also lowered the nutritive quality of diet of Kani, causing consumption of vitamins much lower than the RDA. Adaptation towards new economy also brought changes in the food habits of these two tribes. Adapting a cash economy, Kani purchase parboiled rice and cultivate tapioca as their staple food. Both of these food items are devoid of vitamin A and the deficiency of this vitamin is alarming among the Kani. Crop like wheat was not produced in shifting cultivation and thus, was not in the nutritional diet of these two tribes. In their settled life Bharia produce wheat and consume the same along with rice as their staple diet. Wheat contributes a good amount of vitamin A and iron.. Unlike Bharia, use of commercially prepared food is common among the Kani which is low with regard to nutrients. Changes in the dietary pattern of these two forest dwelling tribes reflect a composite of economic transition and adaptive strategies that involve responses to nutritional changes. Consequent changes in the food environment which has influenced their dietary standards help the Bharia to be in better position than the Kani.

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