

Inclusion or Exclusion: A Case Study of Primitive Jarawa Tribe of Andaman Islands - The Social Justice Issue

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Abstract

There are only five tribes namely the Great Andamanese, Jarawa, Jangil, Onge and Sentinelese inhabiting in the Andaman Island. The total land area of Andaman & Nicobar Islands is 6,496 km². The total population, as per census of 2011 was 3, 79,944. However the tribal population was only 7,000. The other two tribes are Nicobarese and Shompens who are inhabitants of Nicobar Islands. The Jarawas, a hunting-gathering community of Andaman Islands, is one of the two simplest societies (primitive community) and endangered tribe living in the western part of South and Middle Andaman Islands. The Jarawas are hunter-gatherer tribe and one of the four Negrito human groups belonging to indigenous community who have thrived in their forests for more than 55,000 years. For years, the tribes lived life on its own terms, hunting and gathering food within the boundaries of its pristine forest home. The ecological niche of the Jarawas is called as 'Jarawa Reserve' or 'Jarawa territory' which spreads over nearly 765 sq km of area. As per the last count in 2002, the total population of the Jarawas was 266, out of which 85 were in Boiab, 78 in Thidong and 103 in Tanmad territories. The present estimation of the Jarawas is around 400. They are now covered under the Protection of Aboriginal Tribes Regulation, 1956. Location of the base camps of the Jarawas is governed by combination of factors - ecological edges, proximity to drinking water, and easy availability of one of the edible resources according to seasonal requirements. The Jarawas make two types of movements i.e., residential and logistical. However, the expeditions were never more than 15 days at a stretch. Surprisingly, despite living in an island environment the Jarawas do not have well built canoes like that of the Sentinelese, Onge, and the Great Andamanese. The input-output analysis showed that the average value of Index of Subsistence Effort for the Jarawas was 0.295. The average work input varied between 3.7 to 3.9 days a week. About 3.1 to 3.3 days in a week were left for leisure, socializing, and other activities. The quality of life of Jarawas is poor and the health facilities for them were awful. They have limited contacts with the outside world. The Jarawas are an endangered tribe as revealed by their population count. The present study on the adaptation of the Jarawas is a maiden study as no prior study has been conducted on the Jarawa's adaptation in the island's environment, the impact of their contact and conflict in the changing situation. In view of the above problems faced by the endangered tribe, the study discussed the social work intervention strategy for the survival of this tribe.

Keywords: *Inclusion, Exclusion, Jarawa tribe, Social justice, Andaman Island.*

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Introduction:

Ecological perspective has been concomitantly present in social work literature right from its inception as a dynamic man-environment relationship. It describes the "reciprocity between the people and their environments and attention is on the goodness of fit between an individual or group and the places in which they live out their lives" (Sands, 2001). The emphasis is more on process than on form to gain insight into the total man-environment interrelationship. The social work discipline has expanded this perspective to explain that an individual is "constantly creating, restructuring, and adapting to the environment as the environment is affecting them" (Ungar, 2002). In order to explain the man-environment relationship a number of fundamental aspects are taken cognisance of, viz. i) Understanding the intricate and intimate relationship between organism (man, plant and animal) and environment, ii) Understanding the human behavioural pattern involved in the exploitation of natural resources of a particular area by means of a specific set of technology and strategy, and iii) Analysing the human interference in the ecological system in course of exploitation of natural resources. In social work practice, applying an ecological approach is best understood when we deepen our understanding at persons, families, cultures, communities, and policies and to identify and intervene upon strengths and weaknesses in the transactional processes between these systems. This Holistic thinking provides a paradigm for understanding how systems and their interactions can maintain an individual's or group or even community behaviour.

The Genesis of the study:

The Jarawas, a hunting-gathering community of Andaman Islands, is one of the four simplest Negrito human groups living in the Andaman Islands. Their inhibition is limited to the western parts of South and Middle Andaman. They derive resources from terrestrial and marine ecosystems through hunting, fishing and gathering for their subsistence and survival. The adaptation pattern to the island environment has a distinct form and process. They have been living in the Andaman Islands since time immemorial in almost isolated condition until the British landed in the Islands in 1789 and established First Penal Settlement, which continued for a brief period of seven years. Then they came back in the year 1858 and established Second Penal Settlement. The Jarawa, along with other Negrito groups, considered establishment of settlements of the convicts and exploitation of the resources as intrusion in their habitat. It caused resentment among the indigenous groups. This led to the development of hostility and conflict between the Jarawas and Non-Jarawas (all Non-Negrito people). The causes of conflict have been related to sharing of the resources of the same

habitat. The hostility continued until the end of twentieth century. Decades of efforts in post-Independence period to establish friendly contact with the Jarawas culminated at the end of 1997. It was a watershed in the history of relationship of the Jarawas with the Non-Jarawas as it saw the end of unfriendly relations between the two groups on one hand, and on the other gave the Non-Jarawas an unhindered fearless access to the resources base of the Jarawas. It led to greater exploitation of the resources of the Jarawas habitat by the Non-Jarawas who have comparatively much better technology of resource exploitation, and that had detrimental impact on the Jarawas in the form of faster erosion of their resources base. The contact has also brought changes in the material traits and food habits, and caused occurrence of new diseases in the Jarawa territory. In addition, many of the Jarawas fall prey to the intoxicants. These changes had negative influence on the survival of the Jarawa not only as a hunter-gatherer group but also as a human group. Today, the Jarawas are finding difficult to adapt to the changed situation. Therefore, in the present study an attempt has been made to study the Ecology, conflict and adaptation of the Jarawas in Andaman Islands' from ecological perspective of social work.

The Problem:

The Andaman and Nicobar Islands has tropical rain forests and are surrounded by the warm tropical sea, and it is the home of four Negrito foraging human groups including the Jarawas. They have been living in there for thousands of years and have adapted to the environment of the Andaman Islands. Besides the Sentinelese, the Jarawas are perhaps one of the best examples of full time hunter-gatherers anywhere in the world today. For long, they avoided friendly relations with the Non-Jarawas. However, since the late 1997, friendly contacts have been established with the Non-Jarawas and that has ushered changes in the resource base and the adaptation pattern of the Jarawa. Now, there is conflict between the Jarawas and the Non-Jarawas in sharing the resources of their area. In fact, it is competition between two sets of technology; traditional technology used by the Jarawas and developed technology by the Non-Jarawas. Like their counter parts in the Andaman Islands, namely the Great Andamanese and the Onges who have not only been reduced in number from about 5000 to 40 and 600 to 95 respectively, but also have almost abandoned hunting-gathering practice. The Jarawas may also give up the foraging activities someday under the changed situation. It means it is a race against time for the social workers to collect information on their adaptation pattern and process to island ecosystem.

Objectives of the study:

The main objectives of the study were as follows:

1. To prepare an inventory of natural resources (both terrestrial and aquatic) as perceived by the Jarawas.
2. To analyse human adaptation by finding out technology and strategy of resource utilisation by the Jarawas.
3. To examine the impact of contact on the adaptation, environment and resource base of the Jarawas and the new challenges therein.
4. To suggest suitable social work intervention strategies using the ecological perspectives of social work.

Methodology:

The form and process of human adaptation of the Jarawas to island ecosystem was studied taking into account the traditional technology and strategy employed by the Jarawas with respect to utilisation of resources for their sustenance. Emphasis was also given on the changes in the technology and strategy under the influence of new challenges with regard to sharing of resources of their territory by the Non-Jarawas.

An inventory of the natural resources, both terrestrial and aquatic as recognised by the Jarawas, was prepared. It helps to know the number and types of resources used by them. Further these resources were arranged in order of significance as reflected through their dietary preferences. This also explained relative percentage of animal and plant resources in the total food items collected by the Jarawas. Since the resource distribution over space (four physiographic zones) and time (seasons) is not uniform the human perception of resources was also studied highlighting the ways and means of recognising the resources in different physiographic zones viz., coast (shallow sea area), wetlands (area between high and low tides), plains and mountains. The interplay between population and resources was analysed in relation to foraging technology and strategy. While discussing foraging strategy, the stressed out was on seasonality of resources, location of camps, movement pattern and foraging methods. While the role of ecological edges were discussed to find out the determining factors behind the location of camps, the movement of the Jarawas over time and space were explained to understand whether there was any pattern in their movement or not, and if yes then what were the determining factors behind such movements. In addition, the foraging methods used in hunting, fishing and gathering were also discussed in detail. Since the search image, role specialisation and sharing are also an aspect of foraging strategy these factors

were also elucidated along with other factors. All these factors were discussed in details to unravel the nuances of foraging pursuits of the Jarawas as they are directly related to the question as how the Jarawas derive their food or eke out their livelihood in the given island environment. Impact of contact with the Non-Jarawas on the resources base and adaptation of the Jarawas to the changing situation were also examined.

The Study area:

The Andaman and Nicobar group of Islands has 319 islands with an area of 8,923 sq km spread in north-south length for more than 700 km. Floating in splendid isolation, east of the Indian mainland, this archipelago is situated between 6° and 14° North Latitudes and between 93° and 94° East Longitudes in the Bay of Bengal with Ten Degree Channel separating the Andaman group of islands from that of the Nicobar. Climate of the Andaman Islands is of wet tropical regime with predominance of monsoon rainfall. High temperature and rainfall are two main characteristics, which are mainly responsible for luxuriant growth of tropical forests. The reserved and protected forests are spread over 78 per cent of the Island. The Andaman group of Islands is home to four Asiatic Negrito hunter and gatherer communities *viz.*, the Great Andamanese, the Onges, the Jarawas and the Sentinelese. They have been living in the Andaman Islands from time immemorial. The Jarawa territory, which has been declared as 'Jarawa Reserve', covers an area of about 765 sq km. The resource base of the Jarawas is inclusive of both terrestrial as well as aquatic ecosystems. Besides the Negrito groups, the Andaman Islands are inhabited by Non-Negrito population too. They include the Andaman Indians (local born), Mopillas, Bhandus, and Burmese settlers including Karens, refugees from the erstwhile East Bengal and the people from southern parts of India.

Data collection:

During the field work efforts were made to collect information on the Jarawa population and male-female ratio. Prior to 2001 only the estimated population of the Jarawas was available. To understand the natural endowment, the biophysical resources of the Andaman Island, particularly of the Jarawa territory, were identified and recorded. It includes the preparation of a detailed resource inventory of both terrestrial and aquatic resources used by the Jarawas and Non-Jarawas. The detailed foraging data of the Jarawas were collected from three locations - Thidong, Boiab and Tanmad. It covered the three different seasons - rainy, cool dry and summer dry seasons. The data on the resources collected and consumed by them were gathered through focal family sampling, in which all the food collection activities of a few families were recorded for twenty-eight days in each season. The data thus collected gave quantitative information on the

amount and type of the resources collected and the time spent on it. It also helped in finding the per capita availability of resources. This information also helped in explaining the state of health of resources in the Jarawa area. To ascertain the optimality of their foraging behaviour data on the hunting behaviour of the Jarawas were collected over three different seasons. The data set include distinct hunting trips performed by individuals to capture the games. In order to get information on the location of the Jarawa camp at particular site and availability of resources therein, altogether 69 Jarawa camp sites were visited and the location of the Jarawa camps were recorded. The information on the movement pattern of the Jarawas, both logistical as well as residential, was obtained by visiting their locations and asking the remaining Jarawas of the group. Data was also collected on the Jarawas' perception of the resource, intra and inter-family sharing of the resources, division of labour and other socio-economic activities. The data set include information pertaining to impact of contact in the post hostility phase on dress, ornaments, foraging behaviour, addiction to tobacco, exchange of goods between the Jarawas and Non-Jarawas, etc. For collection of data, the structured schedules and participant's observation and diary record methods were used.

The Aboriginal People:

Nothing more deserves a special note in the Islands than the aboriginal population. Because of the insular nature of the Islands, the aboriginal population is considered as one of the purest types. Their way of life may be considered as the living forms of the most ancient and primitive style of life. They are short in stature; their skin is black and their hair frizzy. There are some biological and cultural affinity of these tribes with the Negrito groups of South-East Asia like Semang of Malaysia Peninsula and the Aeta of Philippines. Thus it is believed that Andaman Negrito groups migrated to their present habitat from South-East Asia in remote past either by sea or by land route. Nevertheless, evidences to establish this hypothesis are not yet sufficient. Regarding distribution of the four Negrito tribes (aborigines) in three different islands of the Andaman and Nicobar, there are a number of assumptions, but all these have a common proposition that for their nomadic nature either these tribes moved to different islands or some of them were drifted to present habitat by the sea waves, while moving from one place to other in canoes. Their movement further south below Little Andaman was most probably hindered because of the presence of fast flowing turbulent ocean currents at 10° North latitude which is also known as 10° Channel.

The Jarawas are one of the four Negrito groups of the Andaman Islands. They inhabit the western part of the South and Middle Andaman Islands. The Jarawa

territory, also known as 'Jarawa Reserve' measuring approximately about 765 sq km. The total population of the Jarawas is 265 as per the last survey in 2002. They derive their livelihood through hunting, fishing and gathering. The tools used for the collection of resources are simple, which include bow and arrow, fishing hand net, digging rod, metal knife, iron dao (a kind of chopper), wooden bucket and baskets. The resources are collected from both terrestrial and aquatic ecosystem. There are three territorial groups of the Jarawas viz. Tanmand group, Thidong group and Boiab group. The Tanmad group inhabits the southern part of Middle Andaman Island, while Thidong and Boiab groups inhabit the northern and southern part of the South Andaman Island, respectively. The immediate neighbours of the Jarawas are the non-tribal population, which were also referred as 'Non-Jarawas' in the present discussion.

The intrusion and decades of contacts with the non-aboriginal population have brought about a rapid impoverishment and decline of two of the aboriginal people of the Islands, i.e., the Onges and Great Andamanese. The other aboriginal population i.e., the Jarawas has been experiencing a gradual shrinkage in their total command area because of the gradual expansion of the area of influence of the new settlers. The Jarawas are today confined to the western part of the Middle and South Andaman Islands with a total population of about 400 and the Onges in the Dugong Creek and West Bay areas of the Little Andaman having a population of 96. While the Great Andamanese have been resettled at the Strait Island having a total population of about 41 and the Sentinelese are in the North Sentinel Island with an estimated population of 100 souls only. The relationship of the aborigines with the outsiders is viewed with one of deep distrust and hostility, which has rightly been explained by Portman (1899) as an outcome of unfriendly attitude of the outsiders. While the Great Andamanese and the Onges were coerced to be friendly with the use of force during the colonial period, the relation with other two Negrito groups continued to be sour even in the post-Independence period. Decades of friendly gesture by the Andaman Administration ultimately succeeded in befriending the Jarawa in 1997, but this is not the case with the Sentinelese. They are still outside the ambit of friendly relations. However, the acceptance of friendliness on the part of the aborigines has proved to be a bane for them as their numbers have drastically decreased after the friendly contacts due to varied reasons.

The antiquity of the Jarawas or for that matter of the Negrito people of the Andaman Islands is still shrouded in the mystery. In this regard, one has to depend on the materials obtained from the excavation of the kitchen midden sites (shell mounds), which are an assemblage of shells, pottery, implements, equipments etc. buried in successive layers at Beehive Island and Chouldhary, and considered to be the earliest sites of human occupance of the Islands (Man,

1883; Portman, 1899; Holland, 1904; Cipriani, 1966; and Dutta, 1974). Chatterjee excavated one kitchen midden site at Beehive Island of Middle Andaman in 1952, and Cipriani also carried out study of the shell mounds (Dutta, 1974: 13-15). In comparison to the Beehive, lithic industry at this site was richer. Here the flakes were predominant (65%) than core (2.03%) and finished tools (32.93%). On the basis of faunal evidences, flakes, etc. and comparing them with the blade industry found at different Toalean sites of South-East Asia, (Dutta, 1974: 35-38) opined that the Andaman Islanders would not have arrived prior than 300-100 years B. C. The radio carbon dating of these materials put them to be 2,280 years old (Cooper, 1990). The Mesolithic culture of the Andaman Islands was associated with the pottery. When the Andaman findings are compared with those of the South-East Asian ones, it seems improbable that the bearers of this culture existed in Andaman Islands earlier than 300 B.C. It must be noted that pottery could be found in the Upper Toalean layer in Indonesia, allowing some time for the spread and drift of the culture, the Mesolithic culture “possibly arrived in the Andaman Islands sometimes around the beginning of the Christian era” (Dutta, 1974:35). Thus, the archaeological evidences suggest establishment of a cultural link between the Andaman Islands and South-East Asia around that period. Interestingly, the Great Andamanese oral tradition bears memory of a period when they were inhabitants of a large landmass where there were many other people speaking the same language, and large animals used to roam in that land. Then there was a great cataclysm that submerged the large mass of land with man and animals (Portman, 1899:8).

Leaving aside the aboriginal people, the Islands are being inhabited by those who came or were brought to Andaman Islands after the arrival of the British. The convicts of the penal settlements have settled in these areas by bringing their family members from the mainland or by getting married with the convict women. They are now called as ‘local born’. The settlements of these people have grown exclusively in the South Andaman, particularly in Port-Blair and the neighbouring villages. Though having hailed from different parts of India and speaking different languages, they have become an integrated community and the Hindi is their spoken language- a binding force. Such formation of a homogenous community is verily an example of fusion under a given set of geographical setting- isolation of the Islands. Apart from them, a few groups of Bantus and Mopillas, and a few Burmese and Karens have also settled in these Islands. Except the Karens, who have settled through free enterprise in the northern part of Middle Andaman, all other groups were brought to the Islands to serve the terms of their conviction. After termination of colonial rule, very few of them opted to go back to their native place. However, all these groups have settled quite peacefully in these islands. Initially the agriculture was the basis of

economy. Now many of them are engaged in other enterprises also like service, business, transport etc. With a view to attain all-round development of the Andaman Islands, the Government of India initiated a programme to rehabilitate persons displaced from the then East Bengal in the Andaman Islands immediately after Independence. At that time, it was very difficult to get any large patch of suitable land for settling the refugees as the Andaman Islands were covered with dense forests. However, some lands were identified, acquired and cleared of forest in different parts of the South, Middle and North Andaman Islands for locating settlements of the refugees. Out of approximately 5,000 refugee families, 1,328 families were settled in South and Middle Andaman Islands (Census of India, 1961). Each of the family was given 10 acres of land for agriculture and horticulture.

Main Findings:

A. Habitat and Resource Base

The Jarawas are one of the four Negrito human groups inhabiting the Andaman group of Island. The ecological niche of the Jarawa is called as 'Jarawa Reserve' or 'Jarawa territory' spread over nearly 765 sq km of area. There are three territorial groups among the Jarawas, who inhabit the Boiab, Thidong and Tanmad territories of the Middle and South Andaman Islands. Each group has exclusive rights over its territory, and the other groups are forbidden to gather any resources from it. It means a strong sense of ownership and possession of resources exists at group level, which ensures sustainable subsistence and survival. The same is applicable to the Jarawa human group as a whole since they are traditionally used to defend their territory from being exploited by the Non-Jarawas. This, in fact, has governed their behaviour towards the outsiders, right through the known history. As per the last count in 2002, the total population of the Jarawas was 266 persons, out of which 84 were in Boiab, 78 in Thidong and 103 in Tanmad territories. The hunter-gatherer Jarawas eke out their livelihood through collection of roots, tubers and fruits, and hunting and fishing activities.

The Jarawas has a 'broad resource base', inclusive of both terrestrial and aquatic resources, ensured their subsistence in all seasons with adequate diet. At cognitive level, the resource base was divided into five zones- *pilleh* (sea shore), *tagidh* (marshy area), *chanhanap* (plain land), *tinon* (thick forest area) and *wa* (fresh water bodies and streams), from which specific resources were gathered in different seasons of the year to maintain their survival. Of the total resources used by the Jarawas, so far about 139 species of plants were identified of which 54 are edible and remaining non-edible. The major plant food includes tubers (*Dioscorea* sp.), *Cycus rumphii*, jackfruits, and *Nipa fruticans*. The pig, monitor

lizard and turtle are game animals of the Jarawas. They have a dietary preference for meat, fish and molluscs, but pig is the most preferred one. Honey is another important food item. The 'key stone resources' are the molluscs, fish and tuber (*Dioscorea* sp.). In fact, the Jarawa rely upon a limited range of plants and animals to fulfill the bulk of their calorific requirements. Hunting is an exclusively male activity while there is predominance of females in gathering activities. Interestingly, the Jarawas do not hunt the deer, as it is an exotic species. Both males and females do fishing using different means but the success rate is directly related with the number of the person fishing in an area, size of the area and size and density of fish in that area.

The availability and collection of many of the edible resources are season specific. However, the seasonality is not applicable in case of pig though it is hunted most in rainy season when it has maximum fat due to availability of plenty of food. There are three broad resource seasons: (i) Dry summer in which wild jackfruit collection is at peak along with honey; (ii) Rainy season in which thrust is on pig hunting and collection of the seeds of *Cycus rumphii* and *Nipa fruticans*; and (iii) winter season which is meant for collection of honey and turtle eggs, followed by pig hunting. The Jarawas get iron tools and metal utensils from the AAJVS and at times, they procure these items from settlements. However, in the past they used to collect iron from jetsam, i.e., broken ships washed ashore. Sharing of flesh of the prey (game) animals at constituent family level and other foraged items at intra-family level is a strategy of better survival for all. Though cultivation is the primary activity of the settlers, they do extract timber and minor forest produces, hunt wild pigs and deer, and catch crab, sea cucumber, lobster and prawn from the 'Jarawa Reserve', means sharing the resource base of the Jarawas.

B. Foraging Strategy

Selections of the site for location of the camps (*chadda*), the number of camps in an area and movement pattern of the Jarawas within their territory are part of the foraging strategy. The permanent and semi-permanent camps are of large size and remain occupied for longer period than the temporary camps. Hence, the former two types of camps serve as 'base camps'. Location of the base camps of the Jarawas is governed by combination of factors- ecological edges, proximity to drinking water, easy availability of one of the edible resources and season. Now the camps are also located along the ATR to avail various benefits. Surprisingly, despite living in an island environment the Jarawas do not have well built canoes like that of the Sentinelese, Onges and the Great Andamanese. Seasons play a decisive role in the location of the camp along the coast and inside the forests. The underlying strategy is to exploit both the terrestrial and aquatic

resources. The Jarawas make two types of movement i.e., residential and logistical. The foraging expeditions are never more than 15 days at a stretch. There is division of labour to carry out different activities related with food gathering. Hunting is exclusively a male activity; about 29 per cent of the total adult male population is involved in it, which account for 30 percent of the total man-days of work; while most of the fishing is done by the females. The input-output analysis showed that the average value of Index of Subsistence Effort for the Jarawas was 0.295. The average work input varied between 3.7 to 3.9 days a week. About 3.1 to 3.3 days in a week were left for leisure, socializing, and other activities. Testing of the Jarawa hunting behaviour conformed to the hunting behaviour of a true hunter-gatherer/forager as prey was encountered sequentially as a Poisson process. The net acquisition of resources in case of the Jarawas was satisfactory because on an average an adult Jarawa get approximately 2,500 K Cal. from the major resources alone. If the minor resources are also included then it would well be around 2,800 K Cal.

C. Impact of Contacts

The latter half of the year 1997 was the watershed in the Jarawa history as it marked the end of the hostility between the Jarawas and the Non-Jarawas. In the post-hostility phase, the poaching by the Non-Jarawa people inside the Jarawa territory had increased. As a result, the Jarawas were competing with the poachers for those resources that were common to both. Though the resource density in the interior of the forests is still adequate to support the foraging pursuit of the Jarawas, there is thinning and receding of the resources base in the area close to the settlements of the Non-Jarawas. It was more discernible in case of fish and pig density. The Jarawas fallen prey to some of the vices of the Non-Jarawas, e.g., addiction to *paan* (betel leaf) and tobacco. A barter trade was emerging between the Jarawas and the Non-Jarawas (particularly tourists), wherein the Jarawas exchanged hunting implements, honey and resin for *paan* and tobacco. There was some sort of barter system existing between the Jarawas and the poachers also wherein the poachers offer *paan* and tobacco and eatables to get safe passage in the forest to exploit the resources of the Jarawa territory. In recent times there were out breaks of various communicable diseases like community-acquired pneumonia (1998) and measles (1999), which were absent before the friendly and free mixing of the Jarawas with the Non-Jarawas. Many cases of *P. falciparum* malaria (2000-2001) were also reported recently. Skin diseases have spread after 1997, primarily due to wearing of used clothes given by the Non-Jarawas, and not washing of these clothes by the Jarawas. Now the Jarawas make use of boat (motorized canoe operated by the Non-Jarawas) during the shifting of their huts along the coastal area and while camping at the roadside they make use of the vehicles plying on the road to cover longer

distances in search of edible and non-edible resources. Nowadays the Jarawas get a regular supply of iron from the AAJVS (Andaman Adim Janjati Vikas Samiti). The Jarawas were now seen using hammer, chisel, sharpening file, and makeshift anvil for making hunting and fishing implements. In addition, they were also getting the cooking and storing utensils. Now they use nylon threads along with traditional bark thread for making nets. Though the Jarawas observe and gather information about some foraging techniques of the Non-Jarawas, like the use of snare to catch pig or use of line and hook for fishing, they are yet to adopt these methods. Now the Jarawas have no hesitation in using any kind of medicines either orally or externally (which has external application). There is a positive change in their hospital behaviour also as they are not wary of the other patients. They have started eating non-traditional foods containing salts and spices, which have caused high blood pressure among few of them, particularly among those who frequently visit the hospital, jetty and the settlements. Recently some of the Jarawas, particularly young boys, have picked-up Hindi. Even the broken knowledge of Hindi on the part of the Jarawas has proved very useful in case of medical treatment also as both the Jarawas and the medical attendant or doctors are able to make each other understand.

Implications of the study:

The Jarawas of Andaman Islands are one of the few remaining hunter-gatherers in the world whose subsistence economy is still in the elementary form, which approximates the economy of the classical hunter-gatherers, for it is based on extraction and the consumption of most of the immediate resources available in their habitat. The hunting, fishing and gathering activities are pursued with an in-depth indigenous knowledge of the ecosystem pertaining to edible and non-edible plant and animal species; different seasons and associated phenomena like rainfall, fruiting, flowering, regeneration of terrestrial and marine plants and animals, availability of resources, nature and characteristics of the coastal and shallow seas, and others.

The subsistence activities are accomplished with intelligently designed strategy related to selection of sites for location of camps in different seasons and physiographic zones; timing, number and distance of foraging movements; selection of prey; image perception; division of labour; inter and intra-family sharing of gathered food items; and proper use of different tools and technology to ensure maximum returns from minimum efforts.

The collection of food is subject to availability and density of food resources in particular zone and season and the distance from the camp. First of all, resources in the immediate vicinity of the camps are harvested then the distant ones, so

that enough resources are available for longer time and regeneration of resources also go on in the already harvested area.

They try to eat a balanced diet comprising of both plant and animal food items that provide them with sufficient carbohydrate, fat, glucose, nutrients, minerals etc. Though flesh of game animals is preferred, the key stone resources consist of plant food items and small animals which are perennially available.

The Input-Output analysis revealed that there are still sufficient resources in the interior of the Jarawa habitat to support the hunting and gathering subsistence activities as exhibited by the less number of man-days in a week. It gives them sufficient time for leisure related activities which is one of the important preconditions for the happy survival of a foraging group.

The hunting behaviour of the Jarawa conformed to the basic premise of the Optimal Foraging Theory by following a Poisson Distribution Curve. It showed that the Jarawas do not manipulate the frequency encounter of the game animal and thus, their hunting behaviour exhibits the hunting behaviour of a classical hunter-gatherer.

In the post-hostility phase decline in the density of resources in the areas close to villages of the Non-Jarawas was observed due to poaching and illegal extraction of resources. These were initial warning symptoms which need to be addressed immediately, because erosion of the resource base will force them to work for longer period per day/ week, which is undesired in any hunting-gathering society the world over. If the thinning and decline in resources base continues unabated, it would soon force them to be dependent on the dole given by the Government/Local Administration as it happens in case of the Great Andamanese and the Onges - the Negrito neighbours of the Jarawas in the Andaman group of Islands. The friendly contacts after 1997 had some negative impacts on the Jarawas, e.g., spread of many communicable diseases like skin infection, measles and community acquired pneumonia. In addition, they have become addicted to *paan* and tobacco.

The Jarawas are trying to adapt themselves to the changed situation as a part of their survival strategy like using the vehicles and boats plying on the roads and sea to reduce the distance, accepting the medical treatment and learning many of the material traits of the Non-Jarawas. But their failure to learn new techniques and use of new tools, which are used by the Non-Jarawas and which would make them survive in the situation when there is less density of resources in their habitat, is a matter of great concern.

There are three major concerns which need immediate attention. These are related with the health problems, eroding resource base and lack of interest

among the Jarawa youths in learning new techniques of hunting and gathering used by the Non-Jarawas; all having direct bearing on their survival as a pure hunter-gatherer group and the survival of the Jarawas as a human group adapted to typical island environment.

Social work intervention:

The study shows the hunting and gathering economy of a hunter-gatherer group functioning in an island environment, which has both terrestrial and aquatic resources. In addition, it reveals the pattern and process of adaptation of a hunting-gathering group like the Jarawas to the island environment. Since the Jarawas economy has a close approximation to the economy of classical forager, it helps in understanding the forging strategy and behaviour of a hunter-gatherer group. The study also illustrates that when human groups like the Jarawas are exposed to the technologically advanced group having production based economy, what are the impacts on their resources base, health, population, habits and material culture. Equally significant is how primitive groups like the Jarawas cope up with the changing situation in the aftermath of their exposure to the new people and changing environment. Vulnerability of such human groups to the changed conditions, in terms of their survival as hunter-gatherers, and as biological unit, is of great concern to the social workers, social planners, and the humanity as whole. The study also reveals how in post hostility phase (after 1997) the Jarawas as a hunter-gatherer community may soon face survival threat in terms of erosion of their resource base, introduction of new diseases and their addiction to intoxicants. It also helps to look into the problems of post-hostility phase in which the Jarawas as a hunter-gatherer community are facing threat of survival and may meet the fate of their counterpart like Onges and Great Andamanese.

Despite social work's historical commitment to the person-in-environment, most direct practice of social work had not gone beyond the individual's internal processes and the family's interpersonal processes. Attention to physical and social environments and culture, and to their reciprocal relationships with people, is rare in Indian social work. This inattention was due to the lack of available concepts about environments and culture and how they affect and are affected by human development and functioning. Therefore, physical and social environment of the Jarawa community must be understood and worked with as people interact with them. The environment for the Jarawa tribe is more than a static setting in which their lives are played out. The ecological perspective makes clear the need to view the Jarawa community and environments as a unitary system within their cultural and historic context. The aim for social work intervention should be at promoting individual and family growth, health, and

satisfying social functioning. The following intervention strategies are pertinent for the survival of the Jarawa tribe. The first step is to provide them with adult literacy in their colloquial language although previous attempts in this area have failed. The contents of literacy programme should focus their culture and way of life. Secondly, adequate focus should be given for preschool education programme of the children through Integrated Child Development Scheme (ICDS). The pregnant mothers should be provided antenatal care and the lactating mothers should be provided with post natal care to improve the child survival rate. The ecological niche should not be disturbed but the Jarawas should be encouraged to go for settled cultivation with the help of Indian Council of Agricultural Research (ICAR). For this, adequate provisions should be made for their permanent settlement through Indira Awas Yojna (IAY) although the Jarawa tribe has no settlement problem. Health care facilities should be provided through periodical medical checkups in their habitat. The morbidity pattern may be studied and timely help should be provided to the sick and the diseased. Further, for their food security, they should be covered under Public Distribution System (PDS) so that their dependency on the forest produces may be limited. It may take time but the vision and mission should be set forth by intervention of government machinery and NGOs working in the island.

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