

## Review Article

# Impact of COVID-19 on healthcare and livelihood of tribals in Odisha

Sanghamitra Panda\*

Centre of Excellence, Regional Development Tribal Studies, Sambalpur University, Sambalpur, Odisha, India

**Received:** 16 April 2022

**Revised:** 12 May 2022

**Accepted:** 13 May 2022

### \*Correspondence:

Dr. Sanghamitra Panda,

E-mail: [sanghamitraiitk@gmail.com](mailto:sanghamitraiitk@gmail.com)

**Copyright:** © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

## ABSTRACT

Odisha, one of the front runners among the states in India has been fighting COVID-19 pandemic. To curb the pandemic, many state governments including Odisha have been implementing lockdown and different restrictions at different times. This pandemic is heavily impacting the precious lives and livelihood of human beings across the globe. But this impact is pronounced for the people who live in forests and hill areas mainly- Tribal because of remoteness, ineffective planning and execution from government bodies. So, the lives of tribal are getting worse in passing days in terms of livelihood and health care issues. In addition, the restrictions and lockdown imposition to curb the infection has deteriorated the livelihood of the tribal further. This paper outlines in detail about the impact of COVID-19 in terms of health care issues and livelihood of tribal in Odisha since the outset of the pandemic in early 2020 till date. One new solution is proposed to improve the supply chain system so that the tribal products; agriculture, artefacts, minor forest products (MFPs) can be sold without much hurdle and waiting to improve the livelihood of Tribal. Few steps are also proposed to improve the health of Tribal.

**Keywords:** COVID-19, Tribal livelihood impact, Supply chain impact, Tribal health care

## INTRODUCTION

India has almost 10.4 million tribes, i.e., 8.6% of the total population spreading over 15% of the total area (Government of India 2011). The scheduled tribes (STs) account for 8.6% of the Indian population (Census, 2011). Most of the tribal are seen to be isolated, economically backward. They also experience poor infrastructure, and bad healthcare system. It is seen that scheduled tribe (ST) was 45.3% (rural) and 24.1% (urban) are poor as compared to the national average of 25.7% in rural and 13.7% in urban areas (2011–12, Data) (MoTA 2018–19). Odisha has the third highest percentage of tribal population of the country standing at 9590756. There are 62 different tribal communities spread over 30 districts and 314 Blocks in Odisha. They constitute 22.85% of the total population of the state and contribute 9.17% to the total tribal population of the country (2011 Census data).

Lives of tribal are closely associated with forest resources which is their dwelling place. This pandemic has been impacting on all aspects of their lives i.e. their health, livelihood, economic and socio-cultural life. Many other factors such as the lack of access to effective monitoring and early-warning systems, and adequate health and social services are helping to degrade their lives further. Different restriction, lockdown to curb this infection has a significant impact on the above said aspects of Tribal lives unless they are not educated properly on how to manage with restrictions. Although many government bodies try to alleviate the livelihood of Tribal during COVID-19, the impact is not long sustained, effective and deep penetrated. COVID-19 took away the precious lives, devastating the livelihood and deteriorating the crumbling healthcare further of tribal. This paper is divided into two segments, first segment focuses on COVID-19 impact on the healthcare system of the tribal in Odisha since its outbreak in early 2020 till date and the

second one throws light deep into the impact of tribal lives and livelihoods in Odisha. After through research and interaction with tribal, we confirmed that the deterioration of their livelihood is profoundly contributed by very poor supply chain system accessed by them. So, we propose new steps to improve the supply chain system for selling of different tribal products.

### **COVID-19 challenges and tribal of Odisha**

The international labour organization (ILO) in its report entitled “ILO Monitor 2nd edition: COVID-19 and the World of Work” describes the corona virus pandemic as “the worst global crisis since world war II”. The world of work has been profoundly affected by the global virus pandemic. In addition to the threat to public health, the economic and social disruption threatens the long-term livelihoods and wellbeing of millions. The whole world and all the countries around the globe came to a standstill since the outbreak of the pandemic (COVID-19) in early 2020. It has created havoc since its inception from the Wuhan city of China Province in December 2019. Gradually the COVID-19 virus entered India on 30th January 2020.

**Table 1: Key activities and challenges for setting up quarantine centre at tribal region.**

Activities for consideration	Challenges
<b>COVID-19 isolation centre establishment</b>	Separate toilets, compliance to social distancing, minimizing sharing of items
<b>Clinical examinations</b>	Clinical examinations to be done daily basis, doctor consultation on daily basis, vehicle for patient transportation, Sample collection at regular basis
<b>Food supply</b>	Separate kitchen, Proper diet preparation
<b>Counselling</b>	Good health counsellor
<b>Environmental cleaning</b>	Proper disposal of PPE, Disinfection of tools used for cleaning

The situation got aggravated when the deadly virus started spreading rapidly across territories. Likewise, Odisha reported its first COVID-19 case on March 15, 2020 when a 33-year-old researcher who had returned from Italy tested positive. Indian Prime Minister Narendra Modi declared a nation wise complete lockdown on 24th March 2020 from 25th March 2020 to 31st May 2020 and partial lockdown from 1st June 2020 which continues till date. Just prior to that announcement by the Prime Minister, the Chief Minister of Odisha Naveen Pattnaik had already imposed early lockdown in

the entire state from 16th March 2020 (one day after first COVID-19 case diagnosed in Odisha). On 13th March 2020, Odisha became the very first state to declare the virus attack as a “state disaster”. Subsequently the state Government imposed restrictions and first phase lockdown started from 23rd March in order to take necessary precautions against the spread of the COVID-19. Moreover, Odisha was again the first state to extend the first phase lockdown (15th April to 30th April) which was ending on 14th April.



**Figure 1: A Bonda woman at her maize field.**

### **DISCUSSION**

Regarding the situation of the indigenous peoples during the COVID-19, the UN Secretary General stated: “The already-critical situation for many Indigenous Peoples, who face entrenched inequalities, stigmatization and discrimination, including poor access to health care and other essential services, is exacerbated by the pandemic. It presents particular existential and cultural threats to indigenous people, and indigenous elders and indigenous peoples in voluntary isolation are especially vulnerable.”

#### **Health care challenges for tribal in particular**

Lack of awareness among the tribal communities is another challenge. Without having knowledge and awareness it is very difficult to tackle the diseases among tribal. The low literacy among tribal accelerates it. Since tribes are living into far-flung areas lack of proper transportation facilities in case of emergency results in increased deaths which is recorded. The deep-rooted cultural difference between tribal and nontribal affects the entire health care system. One of the major issues of the tribal communities in accessing health care is their poor economic conditions. The tribal in Odisha live below the poverty lines which makes them more vulnerable to the diseases. Low income and financial constraints influence their health systems. Resultantly, making them unattended and in a constant state of illness and more deaths are recorded.

Mainly, the impact of COVID-19 in society is on ruination of life and livelihood of human being. Since, Tribal dwells in forests and remote places, the intensity of

impact on them is high. We have studied in details the above impacts. Few propositions have been suggested to overcome the above impediments. Modern health care facility is very much essential for human being as social animal. In India, our health care facility needs improvement as compared to developed countries. And particularly, in Odisha, healthcare facility is not at par even with country level. Again, health care facility for tribal is much below as compared to urban level of Odisha. COVID-19 requires a massive health care facility for human being. So, the people who live in distant area require similar facilities. For tribal, this health care facility needs greater improvement because of their living style and requirement.



**Figure 2: Mahua collection: The non-timber forest produce is used in making country liquor and is a source of sustenance for poor tribal.**

Source: New Indian Express: 01 March 2020.

#### ***Lack of quarantine facility centres in tribal belts***

During the COVID-19 pandemic, isolation is paramount importance to break the spread of virus. To achieve this, quarantine centres are not only required in urban areas, but it is also essential to have it in rural areas. In case of tribal areas, this facility is extremely poor. As per the data one in 20 villages it is there. Also, the same centre does not have proper facilities.

#### ***Lack of proper health infrastructure to treat COVID***

Proper health infrastructure is very much essential for human being. Because of lack of health infrastructure in tribal areas, the situation has worsened and controlling the spread of this pandemic has become a daunting task. The state of health of tribal further complicated because of their remoteness of the areas, inaccessibility to urban health infrastructure. Most of the tribes in Odisha live in hilly terrain and forests and hence the health care facility becomes further difficult. The health care facilities of any communities can be recognized by the availability of it within the border of their reach. From different studies it is evident that the tribal's health care system is largely dependent on the traditional health care practice, i.e., magico-religious. Based on the local practice and traditional habits, tribal people have their own system of medicine for diagnosing the diseases and treatment of the same. The knowledge of herbs and medicinal plants is

getting transferred from generations through an oral culture.



**Figure 3: Impact on collection of minor forest products in tribal areas.**

Source: <https://india.mongabay.com/2020/05/covid-19-lockdown-dents-the-economy-of-indias-forest-dwellers/>.

It is evident that dependency only on the herbal treatment is due to unavailability of health care services in their villages and nearby areas. There are large number of ethno-medicine studies describing the tribal people's dependency and relationship with the natural medicinal plants used for the treatment of many health ailments starting from cold to malaria also.<sup>1,2</sup> The modern health care system in the tribal areas is in complete negligence state and getting ignored from time to time. Though Govt. Initiatives of National Rural Health Mission was able to establish the health fracture into the most of the remote areas including the tribal population, but lack of medical personnel has restricted this. Many studies state that there is a shortage of medical staff in the tribal areas in Odisha. So, the traditional medicines have become only the way among the tribal population which is still strong in the tribal universe. Government has provided for the establishment of primary health centres for every 20,000 population and sub-centres for every 3000 population in tribal areas (National average), In spite of that health care is not available to the majority of the tribal. Lots of factors are responsible for the inaccessible health care system and hence the traditional practices and superstition and beliefs stay among the tribals. In the present scenario, pandemic like COVID-19 tumbles the modern health care system in most urban metro areas. With the above said tribal healthcare system is not capable of tackling the health of tribal. Hence the precious lives need to be protected by establishing modern healthcare system in their reach.

#### ***Lack of information and proper testing***

Proper testing is very much essential to tackle the COVID-19 pandemic. Testing facilities are below state average for different tribal in Odisha because of the remoteness. Lack of information and awareness is most common for COVID-19 spread among tribal. Tribal live in remote places like hill and forest areas and hence it is



difficult to spread the information among them unless special effort is not given. The poor healthcare facilities, lack of testing facilities severely limits the capacity to deal with COVID-19 outbreak in tribal areas, posing a serious threat to the tribal population. Major challenge in tribal area is the allocation and monitoring of testing equipment because of the limited testing facilities in those areas.

### Impact of COVID-19 on tribal livelihood

Agricultural products in tribal areas of Odisha: The primary dependency of tribal is on agriculture production known as farming and its sale for their livelihood. The Dongria Kondhs of Koraput, Rayagada, Kandhamal and Kalahandi districts, cultivate their farms on lower hill slopes. They grow varieties of crops ranging from rice, millets, sorghum, leaves, pulses, legumes, throughout the season and harvest them crop by crop from October till the end of February every year. Tribal produces varieties of beans and several types of vegetables. The Bonda community, particularly vulnerable tribal groups (PVTG) in the country, farms dangarchas (highland cultivation) for their food and also sell to non-tribal for money. They also cultivate varieties of paddy, or danger dhaan, along with native millets and oilseeds in the demarcated seedbeds Taking an example in Kandha community of Odisha's Rayagada district, on an average 60% of the land is owned by tribal and they practice shifting cultivation for three cycles in a year to get maximum yield. Mainly, crops grown in the tribal areas is finger millet, fox tail millet, little millet, kidney beans, turmeric, red gram, green gram, and some tubers. Usually, during March-April, tribal identify land for cultivation and do ground work like doing boundary, cut down small thorny shrubs etc. Overall, they harvest multi-crop from their lands. In the bewar fields they sow a wide variety of seeds, including millets (sikia, kang, kutki, sawa, mandiya, degra, jhurga, jhujhru), pulses (Black Gram, mung, bedra, salar), and vegetables like lauki (gourds) and cucumber.<sup>2</sup>

### Impact on collection of minor forest products in tribal areas

Minor Forest produce or MFP is a critical source of livelihood for the tribal people. MFP forms the basis for subsistence as well as cash income for the forest dependent communities. Tribal people derive a major portion of their food, fruit, medicine, and other consumption items from the MFP. They get cash income through sale of MFP. According to the ministry of tribal affairs estimate, tribal people derive 20-40% of their annual income from MFP. It has been rightly observed that "MFP starts with the word 'Minor' but is a major source of livelihood for tribal who belong to the poorest of the poor section of society". Tribal co-operative marketing development federation of india limited (TRIFED), 2020, NTFP (non timber forest produce), popularly called MFP, stands for all non-timber forest

produce of plant origin. NTFP includes tendu leaves, sal leaves, tejpatta (bay leaves), mahua (or mohua) flowers, mahua seeds, neem seeds, karanj (pongamia) seeds, sal seeds, wild honey, mango, and tamarind. These NTFPs are collected during the summer season. Around ten million people in Odisha collect NTFPs such as tendu leaves, mahua flowers, tree-borne oil seeds, siali and sal leaves.

**Table 2: List of MFPs and their period of collection in Odisha.**

Minor forest products	Botanical name	Period of collection
<b>Kendu leaves</b>	<i>Diospyros melanoxylon</i>	April- June
<b>Mahua flower</b>	<i>Madhuca longifolia</i>	January- March
<b>Bamboo</b>	<i>Bambusoideae</i>	February- June
<b>Mahua seeds</b>	<i>Madhuca longifolia</i>	April- June
<b>Bel (Wood apple)</b>	<i>Aegle marmelos</i>	April- June
<b>Char seeds</b>	<i>Buchanania lanzan</i>	April- June
<b>Sal seeds</b>	<i>Shorea robusta</i>	April- June
<b>Sal leaves</b>	<i>Shorea robusta</i>	April- June
<b>Karanja seeds</b>	<i>Pongamia pinnata</i>	March- May
<b>Kusum</b>	<i>Schleichera oleosa</i>	February- April
<b>Siali leaves</b>	<i>Bauhinia vahili</i>	April- June
<b>Amla</b>	<i>Emblia officinalis</i>	February- March
<b>Bahada</b>	<i>Terminalia bellirica</i>	February- June
<b>Harida</b>	<i>Terminalia chebula</i>	January- March
<b>Tamarind</b>	<i>Tamarindus indica</i>	February- April
<b>Bay Leaves (Tejpatta)</b>	<i>Cinnamomum tamala</i>	February- August
<b>Genduli</b>	<i>Sterculia urens</i>	April-May
<b>Neem</b>	<i>Azadirachta indica</i>	April-June
<b>Bhuinneem</b>	<i>Andrographis paniculata</i>	February- June

Almost 60% of the annual collection of MFP takes place during April-June. As the peak harvest season of MFP coincided with the lockdown period, the Indigenous Peoples struggled to sustain their forest-based livelihood. The lockdown due to COVID-19 has affected the livelihoods of the primary collectors who used to take out a living by collecting MFPs such as Amla, Harida, Bahada, Tamarind, Lac, Tendu, Char seeds, sal seeds, Mahua flower and Mahua seeds, as the lockdown coincided with their collection season. NTFP collection, processing, and marketing has been stalled as that involved gathering of people either at the processing center or at the buyers' place, and the social distancing

was to adhere. But, more than this aspect of social distancing, it was panic and the urgency for COVID-19 that pushed the priorities of NTFP collection and processing to back foot. Processing or value addition of the NTFPs has stopped altogether. Lockdown has collapsed the NTFP market linkages. After hearing the news of the possible lockdown, the traders have stopped coming to the villages and the local market places or even trading the NTFPs in the forest areas. Tribal people are finding it hard to get the fair price of their products like tamarind as there are no buyers in villages due to lockdown.

Tribal co-operative marketing development federation (TRIFED) – an arm of the Union ministry of tribal affairs states that the total estimated value of 55 forest products is Rs. 20,000 crores (Rs. 200 billion) and Government's projection stands at 3,802 crores (Rs. 38.02 billion) as the annual revenue from 13 minor forest products gathered from seven states.<sup>3</sup> As per the census data 2011, 8.6% percent of India's total population are tribal people. It is estimated that the tribal people directly or indirectly depend on the forest products for their livelihood. Tribal economy highly depends on MFPs also called as Non-timber Forest Products (NTFP). In Odisha, approximately 10 million tribal depend on MFPs for their food, shelter, medicines and cash income. Across Odisha, there are approximately more than 69 recognised minor forest products including tendu leaf, bamboo, mahua (flower and seed), sal (leaf and seed), lac, chironjee, tamarind, gum and karanj seed.<sup>4,5</sup> Other than MFP that is seasonal in nature, work under the Mahatma Gandhi National Rural Employment Act (MGNREGA) and distribution of essential items under the public distribution system (PDS) and pro-poor schemes are the important bases of livelihood of these poor sections of population since there is low productivity of agriculture. With this, let us now turn to lockdown and its effects on the tribal economy.<sup>6</sup>

### ***Impact on buying/selling of different tribal products***

To prevent the spread of COVID-19, the very first country wide lock down was imposed in March 2020 initially for 21 days and thereafter it was extended many times. Since then state wise/region wise lockdown/shutdown has been taking place in phases till date. Free movement of citizens are seriously hampered nationwide. Likewise, the restrictions on free movement in tribal areas also had a great impact on tribal lives as well as on their livelihood. As it is well known that mostly the tribal depend upon the collection of MFPs from the nearby jungles. MFPs are considered as the great source of livelihood of tribal all over the country. They use the MFPs for their daily consumption and also depend on the selling of MFPs. The sale of MFPs has significant contribution to the tribal economy and livelihood, which are badly affected.<sup>7</sup> Sanjay Kumar Hansda (Jashipur Block of Mayurbhanj district in Odisha) a member of the Santhal tribe, usually earns as much as Rs. 25,000 between March and June by collecting and selling minor

forest products. Because of restrictions and lockdown effect his earnings have plummeted by 70 percent from the usual. He says that he usually collects and sell mahuwa, karanj seed, tamarind and other forest products in the market but because of restrictions no buyer has turned up in their area resulting into no sales and hence loss of revenue.

Upon the sudden onset of COVID-19 and as a result of the lockdowns and shutdowns imposed throughout the country the tribal villages and forest belts were alienated from other regions. And particularly the villages were disconnected instantly from the mainstream markets. Finally it ended up with the unwillingness of the traders to visit the villages and to collect the MFPs from the tribal or forest dwellers. The severity of impact on buying and selling (collection and marketing) of MFPs can be cited from the example that even the state Govt's marketing agency tribal development cooperative corporation (TDCC), which procures MFPs from the forest dwellers at a Minimum Support Price (MSP) could not function properly during the period of crisis. "Usually, we either sell forest products or barter them for salt, biscuits and other items from roving traders," said Jagannath Manjhi, who lives at Dobara, a remote hamlet in Rayagada district of Odisha. "But the traders are not coming now and it's difficult to reach nearby towns because of the lockdown and non-availability of vehicles."

It is clear that the spread of COVID-19 and hence lockdown has largely impacted on the lives of tribal communities.

### ***Sale impact of handmade artefacts***

The pandemic and subsequent lockdown along with the falling economy has a worse impact on the handicrafts sector. Since, artefacts and handicraft products are "non-essential" in nature very less selling/ no selling is getting very little visibility. Since, the nationwide lockdown imposition to curb COVID-19 infection spread, Tribal handicraft and handloom worth more than Rs. 100 crores have found no buyers. This is the estimation done as per tribal cooperative marketing development federation of India. The produce is lying with the Union government.<sup>8</sup> According to Pravir Krishan, Managing Director, TRIFED approximately 0.2-0.3 million tribal families across India produce handicraft and handloom.

Tribal Artisans make natural fibre products from coir and grass, applique products from cloth, terracotta products from clay, dhokra brass jewellery, and also Pattachitra paintings. Artisans were earning between Rs.4000 to Rs.7000 before COVID-19. But aftermath COVID-19 a huge unsold inventory has piled up because there are no potential sellers turning up. Again, situations have been worsened since there are no exhibitions. Through exhibitions, these products were usually attracted from different retail buyers as well as wholesalers. Artisans

have neither food for daily consumption nor enough savings to meet medical expenses.<sup>9</sup> The tribal development co-operative corporation of odisha limited (TDCCOL), the State-run agency helps tribal to sell their products. Situation has worsened because TDCCOL does not have an online platform for selling of these products. We have proposed a new supply chain platform to overcome these situations. “We used to go from one fair to another to sell our paintings. Fairs and exhibitions have been cancelled, and we cannot travel. A painter can earn a minimum of Rs.1.2 lakh a year, which is a good amount for someone who works from his home in a remote village,” said Mr. Gamango.<sup>10</sup> Because of COVID-19, all such activities have been stopped which has worsened their livelihood. “Tribal arts and crafts have a huge market. A few years ago, we tried to tap their potential by bringing changes to paintings’ design and diversifying the product, but we ensured that the essence of the tradition is not tampered with,” said A. B. Ota, Director, SCSTRTI.<sup>11</sup>



**Figure 4: Impact of COVID-19 on tribal products.**

Source: <https://india.mongabay.com/2020/05/covid-19-lockdown-dents-the-economy-of-indias-forest-dwellers>.

#### ***Impact of shut down of haats/bazaars and the non-functioning of local intermediaries***

Mainly the local haats or bazaars are the trading centres of the MFPs. There are around 5000 of its kind of haats and bazaars in India. The village weekly markets in nearby open grounds acts as a chain among the forest dwellers or primary MFP collectors, the buyers or consumers and the traders. In these local haats and bazaars they get an opportunity to sell their products to the local consumers directly and ultimately it becomes a source of their cash income. The Government’s restrictions of mass gathering at any certain place resulted with the closing down of such haats and bazaars. Subsequently, the closing of local haats and bazaars hindered the inflow of market system and the MFP collectors were the worst sufferers as they lost a chance to cash income. The primary level of market channel was closed and the tribal households became handicapped to sell their forest produce. The middlemen or the local intermediaries play a crucial role in functioning of the local market and they act as agents to the supply chain system of MFPs. In Odisha the local intermediaries are

usually known as kuchiyas who helps to facilitate the supply chain of forest products. They play both the role of money or credit supplier to the locals as well as they are considered as the first-level buyer of MFPs. Additionally, they create links between the MFP collectors and the big traders. The financial chain system of local intermediaries was disrupted with the onset of the pandemic. During the lockdown restrictions due to COVID-19, the linkages between the local communities, kuchiyas and the big traders were collapsed. The restrictions on movement of people as well as on transport system heavily affected the procurement of raw products from the local communities which adversely affected their livelihoods.



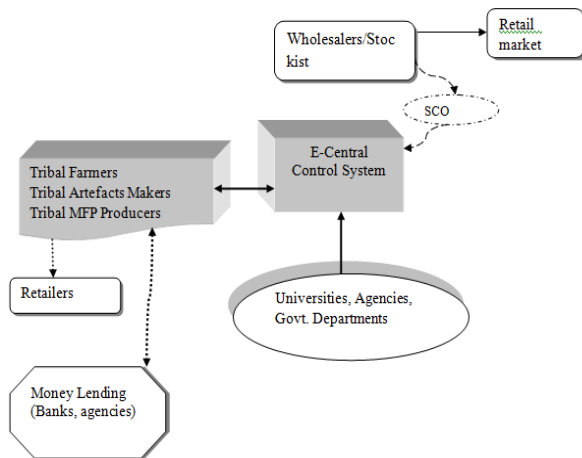
**Figure 5: A lanjia saora tribe youth preparing traditional saora paintings at scheduled caste scheduled tribes research and training institute (SCSTRTI) in Bhubaneswar.**

#### ***Impact on agricultural production and supply chain system***

Supply chain management system: the supply chain enables the success across the complete chain from source of production to the consumers to create value for consumers with increasing profitability in the supply chain link. Supply-chain management (SCM) is the way the entire chain is managed (production, distribution, and marketing processes) enabling consumers to get the desired product.<sup>12</sup> SCM is the integrated process of producing value for the consumer. SCM is a philosophy for integrating all the activities in the life of a product or a service from the earliest source of raw materials to the ultimate customer, and beyond to disposal.<sup>13</sup> Supply chain is an integrated process in which various stakeholders work together to acquire raw materials, convert raw material to final products and deliver them to end users. The supply chain management serves both the manufacturing logistics chain and distribution logistics chain (Beamon, 1998). It is also defined as the Network of organisations that are involved, through upstream and downstream linkages, in different processes and activities that produce value in the form of products and services for the consumers.<sup>14</sup> Mainly, Tribals produce agricultural products, different horticulture products and collect forest products. A well distribution and selling of above products creates a source of income for the tribals or the forest dwellers. A shortfall in any of these sources of income significantly impact tribal households. COVID-19



phase wise lockdowns and restrictions has impacted the supply chain system across the globe and hence in India as well as Odisha. As a result, the supply chain for agricultural products, fruits, spices, forest products from the tribal area has been hampered in Odisha too.



**Figure 6: Proposed supply chain system to enhance the tribal product sale.**

#### ***Proposed supply chain system for tribal***

We propose a unique supply chain system as shown below for overcoming the present situation for tribal. It provides online platform and connects varieties of wholesalers and retailers. Central control system connects tribal farmers, MFP producers, Artefact makers with wholesalers, stockists through Supply Chain Optimization process.

#### ***E-central control system***

E-central control system (E-CCS) is a central processing system which connects farmers and wholesalers' virtually otherwise the tribal products would not reach to different parts of the country and outside.

#### ***Supply chain optimization***

Supply chain optimization (SCO) is a system envisaged using different algorithms of Machine Learning which opens up/ proposes different routes to collect the goods from tribal through E-CCS. Tribal farmers can also sell their products to local retailers from their local contacts.

#### **CONCLUSION**

Pandemic like COVID-19 has devastated the lives, livelihood, economy and cultural celebrations across the world. Millions precious lives have been lost since the beginning of COVID-19 and also millions of people across globe lost their jobs in organised and unorganized sectors. Also, people who live on their daily business have been devastated. So pandemic like COVID-19 is disastrous for all segments of the society especially the

tribal making them more vulnerable. Particularly the sufferings of tribal that stay in remote places like jungle and hill areas have been increased during this phase. In this paper, we have studied in details about the lives and livelihood impact of tribal of Odisha because of COVID-19 impact. We have also proposed a unique supply chain platform to enhance the sales of different product of products from tribal regions. This particular COVID-19 pandemic and its other implications has directly affected the tribal livelihood of Odisha in many stages. It has had a great impact on the harvesting or collection of MFPs, its procurement and marketing processes of various kinds of MFPs. Moreover, the collection and marketing of seasonal MFPs got hampered due to uneven processes of lockdown and shutdown measures throughout the country especially in the tribal belts of Odisha. The COVID-19 pandemic and subsequent lockdown, shutdowns and various restrictions on movements have created uncertainty and severely affected the supply chain system which paralysed the pre-trade financing mechanism. Additionally, the imposition of lockdown and non-availability of kuchiyas forced the MFP collectors to sell their produce at a half rate and sometimes even with great loss. In addition to the already devastating lives of the Indigenous people or tribal nationwide since the time immemorial, the COVID-19 has only worsened the situation of the poor tribal. The pandemic has similarly affected heavily the lives of the tribal of Odisha. The ongoing pandemic has a great impact on the lives of the tribal. The struggle for food, livelihood (in the form of collection of MFPs) and healthcare still continues. The live and livelihoods of the natives is at stake. On one hand the major task is to fight with COVID-19 and to protect themselves from the deadly virus and on the other hand their very survival is also a big question. Amidst continuous restrictions of movement of the tribal in the form of complete and partial lockdown in the state they have to struggle for their existence.

#### ***Recommendations***

Based upon our study we can put forth few immediate recommendations. Related to COVID-19 healthcare issues: creating awareness and educating the forest dwellers about COVID-19 by the medical personals. Continuous and elaborate dissemination of accurate information by the ASHA Karmis (preferably in their native language). Provision of free masks and personal sanitization kits. Availability of free testing kits of COVID-19. Functional Primary Health Care Centers working at ground level to save the precious lives of the tribal. Proper maintenance of record about the entry of outsiders in each villages. Quarantine facilities and regular check-ups at micro level for migrant labourers. Related to livelihood of tribal of Odisha: Relaxation of transportation facilities for MFP traders and local buyers/consumers during lockdowns. To emphasise the functioning of Van DhanVikash Kendras (VVDKs) and primary producer agencies (PPA). For extension of the period for collection of Kendu leaves under the purview

of gramsabha. Dissemination of proper information regarding minimum support price scheme through various mediums like (electronic and print) and word of mouth. Establishment of store house for MFPS/NTFPs in every Gram Panchayat under the guidance of Government departments. Mandatory provision of masks, hand sanitizers, soaps and maintenance of proper hygiene for the workers at NTFP primary processing centres. Financial and technical assistance (interest free) to the poor tribal artisans to promote the marketing strategy of their products. Periodical monitoring and evaluation of Government welfare schemes and programmes.

*Funding: OHEPEE, Government of Odisha through World Bank*

*Conflict of interest: None declared*

*Ethical approval: Not required*

## REFERENCES

1. Prasad RS. Tribal Health and Medicines in India. New Delhi: Anmol Publications. 2012.
2. Singh SJ. Shifting cultivation in Odisha and Chhattisgarh: rich agro-biodiverse systems," Jharkhand J Develop Manag Studies Under Risk. 2016;14:7023-36.
3. Joshi H. COVID-19 lockdown dents the economy of India's forest dwellers. Available at: <https://india.mongabay.com/>. Accessed on 20 November 2021.
4. Nayak AN. Primitive tribal groups of orissa: an evaluation of census data, Orissa review (census Special). Available at: <https://magazines.odisha.gov.in/>. Accessed on 20 November 2021.
5. Bag H. NTFP policy regime after fra: a study in select states of India, regional centre for development cooperation, Bhubaneswar. Available at: <https://www.rcdcindia.org/>. Accessed on 20 November 2021.
6. Tripathy AK. COVID-19 and lockdown in india: challenges for the tribal economy of Odisha. J Human Social Sci Res. 2020;2:185-92.
7. Joshi H. COVID-19 lockdown dents the economy of India's forest dwellers. Available at: <https://india.mongabay.com/>. Accessed on 20 November 2021.
8. Kukreti I. COVID-19: Tribal Handicraft Worth Rs 100 cr Unsold', Down To Earth. Available at: <https://www.downtoearth.org.in/>. Accessed on 20 November 2021.
9. Pati A. COVID-19 Impact on Handicrafts Sector: A Struggle that only got Harder. Available at: <https://www.businesstoday.in/>. Accessed on 20 November 2021.
10. Barik S. Hopes of Tribal Painters, Artisans in Odisha Fade in Pandemic. Available at: <https://www.thehindu.com/>. Accessed on 20 November 2021.
11. Barik S. For Odisha tribals, physical distancing has been a way of life. Available at: <https://www.thehindu.com/>. Accessed on 20 November 2021.
12. Cooper ML. Supply chain management: more than a new name for logistics. Int J Logistics Manag. 1997;8(1):1997.
13. Singh V. Contract farming ventures in India: a few successful cases. Spice, Nat Inst Agri Ext Manag. 2003;1(4):23-9.
14. Chircu KR. Strategies for internet middlemen in the intermediation/disintermediation/reintermediation cycle. Electr Market J. 1999;9(1):1-2.

**Cite this article as:** Panda S. Impact of COVID-19 on healthcare and livelihood of tribals in Odisha. *Int J Community Med Public Health* 2022;9:2734-41.