

REVIEW ARTICLE

# Health, food security and livelihood diversification in rural Odisha: A review

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## Abstract

Shifting the livelihood is a genuine reason for maintaining family and grasping opportunity for the sake of development. In rural areas, the cause is intended for the ambition/hope of getting good remuneration which helps to revive the condition of health as well as diet. Due to the livelihood of rural people being mainly agriculture, the diversification of farmers from farming to other livelihoods warns us to be cautious and take necessary steps towards sustainability. This review study was meant to find out the reasons and challenges behind livelihood diversification and its impact on health and food security through a thorough observation of earlier research. After encountering the findings, the positive impacts of the OFFDI and Odisha Reform Programme are appreciated and those plans of work could be suggested to the developmental sectors whether there is a requirement for policy modification and close supervision of the administration of PDS. Nutritional status, health condition, as well as accessibility to medical facilities, are yet far behind the national average and seek more focus. Joint initiatives by the public and government, are suggested for fruitful inclusion of schemes along with health and food security. The goal of promoting climate-smart agriculture is to help primitive people become self-sufficient in terms of food security by producing food grains under difficult agroclimatic conditions at high altitudes. More no. of projects having development aspects can be proposed by NGOs which in turn will help in the reduction of diversification of livelihoods.

## Keywords

diversification; farmers; food security; health; livelihood; rural; SDG 2; SDG 3

## Introduction

The activities which secure life's necessities, like getting food, water and shelter is livelihood. Initially households can diversify, but over time they can specialize in specific activities, such as migratory labor or a niche commodity, that can replace traditional farming, or wage employment.

### *The reason behind livelihood diversification*

Diversification is an integral part of the structural transformation process of an economy (1). This diversification of activities and migration is the way to bring the rural poor above poverty (2). Occupational diversification has been observed as a vital tactic to cope with crisis and seasonal stress in both farm and non-farm activities by those who are dependent on livelihood sources that

are impacted by seasonal factors and are, thus vulnerable to climate change effects (3). Livelihood diversification constitutes a component of climate-smart agriculture as well (4). About 70 % of Odisha's population depends on agriculture for their livelihood, which is itself highly vulnerable to climate change (5). This also reflected in family farms where the education of the household head has a positive and significant effect on income diversification (6). The dependence on one source of income, particularly in the agriculture sector, may strain consumption and therefore, the households may have to adopt different sources of livelihood in different seasons (7) and due to the frequent occurrence of natural calamities and environmental hazards, the women are forced to diversify their group activities to sustain their livelihoods. Women SHGs were encouraged to diversify their activities to mushroom cultivation, rice and vegetable cultivation, floriculture, mini-dairy, backyard poultry, mid-day meal preparation, coir work, etc. to strengthen their livelihood in a sustainable way (8). It was also necessary to get over the obstacles by having inexpensive access to agricultural equipment and implements, as well as timely access to agricultural loans and accurate information (9). So, the relationship between farm household livelihood strategies and livelihood capital has received much attention in recent years because of sustainability (10, 11). Participation in the Rural Livelihood Mission has impacted positively livelihood security in Odisha (12).

### **Employment Scenario of India**

Low prices of farm outputs and low growth in wages have produced distressing conditions in rural areas. The Government of India (GoI), responding to the worsening distress, introduced a support scheme in December 2018 to provide a Rs 6000 per annum payment in three installments to farmers' families as a minimum cash grant for sustaining livelihood during periods of distress (13). Apart from this scheme, the GoI also announced a social security scheme for farmers under which farmers between 18-40 years would pay a regular contribution. On attaining the age of 60, they will get a monthly pension of Rs 3000 (14).

The Indian labour force is becoming more educated than ever before, yet they are not acquiring the skills necessary to enter the workforce, as seen by the extremely high rates of youth unemployment, which shows the failure of demographic dividend (15). Again, a coordinated effort including individuals, companies, state and federal governments will be necessary to overcome the COVID-19 pandemic and steer the economy towards recovery (16).

### **Skill scenario in India**

Automation is on its way and AI advancements are driving automation into managerial and decision making roles, demanding cognitive and social skills in future jobs (17). Jobs for (skilled) workers will be created, not lost in India due to Industry 4.0. It requires effective governance, FDI and skill training programs to support and up skill the unskilled workforce (18).

### **Report on Doubling of Farmers' Income**

The Committee on Doubling of Farmers' Incomes (DFI) wound up its work with a final report (Vol. 14) containing a complete

listing of its recommendations in September 2018 (19).

The key recommendations are

1. to focus on the consolidation of land through better land laws,
2. encourage aggregation through farmer groups in different forms,
3. reposition agriculture as a source of raw material for industry rather than limit its scope to food security for man and animals,
4. shift production strategy to respond to demand-pull in an economically sustainable manner, reprioritize activity/crop selection based on job creation,
5. nutrition impact and income possibilities,
6. recognize water as a key resource and invest in gaining the best outputs and incomes out of water use;
7. engage in realizing the full productivity potential in the crops sector, intensify agriculture and promote secondary agriculture activities to create off-season income opportunities;
8. shift policy stance to farm incomes as the starting point rather than the consumer and markets;
9. reform markets and market practices to allow farmers control over how and when to market;
10. create better risk management products (for production and market risks);
11. reform extension services and enhance capacities of extension staff;
12. converge programmes of different ministries in consolidating capital investments and agriculture and encourage flow of private capital investments; and
13. set up an empowered body in the government to monitor implementation of recommendations.

Action on some recommendations has been initiated by the government.

### **Impact of SDGs on Livelihood**

The livelihood sub-systems of people and their economy are increasingly orienting towards the mainstream market economy (20). Subsistence farming is moving toward commercialization, with youth seeking wage jobs. This shift calls for skill development, alternative livelihoods and diverse support. NITI Aayog's SDG India Index 2020-21 highlights this need (21) and was developed in collaboration with the United Nations in India (22) which provide ample scope for the coherent pursuit of all these objectives in an equilibrating manner.

### **Livelihood Scenario of Odisha**

Odisha is an agrarian state and 11.07 % of its rural population is below the poverty line in 2023 (23,24). In Odisha, 83% of the population is rural, with 62% engaged in agriculture. Rice cultivation dominates, covering 45% of the state's 8.88 million hectares of cropped area (25) which has total gross cropped area of 8224 thousand ha and cropping intensity of 154 percent in 2019-20 (26). The state faced frequent natural calamities that made agricultural

production too risky and unstable over the years (27).

### **Structural Change in the Economy of Odisha**

From 1950-51 to 2013-14, Odisha's economy saw a major shift: though the absolute income of all sectors grew, the share of the primary sector declined whereas that of the tertiary sector increased (28).

### **Diversification of rural Odisha**

Farm households affected by climate change may explore livelihood diversification, but it may not ensure any significant improvement unless they have the knowledge of climate change and adopt diversification strategies accordingly. The secondary resources on communal land, which are usually called 'hidden capital' (29), are utilized by low-income households to augment their household income. Hence, some rural activities, like agriculture, are not able, per se, to solve the problems of rural poverty, unless these additional sources are exploited. Interventions are required to facilitate opportunities that encourage secondary sources of livelihood and, thus, help households escape poverty. Farm households affected by climate change may explore livelihood diversification, but significant improvement is unlikely unless they possess adequate knowledge of climate change and implement diversification strategies accordingly (30). Diversification was most remarkable towards pulses and oilseeds, though after 2000, the area under oilseeds has declined (31). The rural non-farm economy has close linkages with the agriculture sector. When productivity in agriculture sector rises, labour from the non-farm sector gets attracted towards agriculture sector (32).

### **Livelihoods on medicinal plants**

Promotion of traditional knowledge and conservation among Adi, Monpa and Khasi tribes in northeast India is generally seen where knowledge holders' participation in village activities can enhance traditional practices, knowledge conservation and subsistence survival (33). Research in KwaZulu-Natal, South Africa, reveals that indigenous medicine is crucial for rural livelihoods. Villagers frequently use medicinal plants and have extensive knowledge of plants and household remedies. They are flexible in using indigenous and Western healthcare and improved cooperation between healthcare systems could improve health standards (34). Farmers were initially dependent on wild collection of Medicinal and Aromatic Plants, but later engaged in cultivation practices (35). Investigation by researchers on three programmes i.e., the Sustainable Environment Management Program (SEMP), Livelihoods, Empowerment and Agro-Forestry (LEAF) and the National Program on Promoting Conservation of Medicinal Plants and Traditional Knowledge for Enhancing Health and Livelihood Security found that initiatives, combining healthcare and livelihood objectives, have successfully conserved resources, promoted their status and enhanced primary healthcare situations, utilizing a mix of *ex-situ*, *in-situ* and production system approaches (36). The scope of developing an integrated implementation strategy on the conservation and sustainable use of medicinal plants, strengthening traditional medical knowledge, traditional health practitioners and other local knowledge experts,

integration in Primary Health Care, enterprises, equity and livelihoods and local resource centers for education and capacity development revitalize health-related cultural heritage and improve overall health and well-being (37).

### **Health and Food Security on Livelihoods**

The rate of food insecurity and its determinants can be explored in relation to measures intended to lessen elder nutrition issues, elders' life experiences, the area's economic history and more general issues with older rural folks not being able to obtain enough food (38). Food insecurity in rural areas will also spread to urban areas, making planning and policy-making even more important to address this problem while considering the structural and functional continuity of both urban and rural communities (39). The main factors influencing a household's food security status were accessibility to health services, household size, farm size and food expenditures; non-farm income was a major factor influencing a household's likelihood of not being impoverished (40). Minimal levels of food insecurity are related to self-reported levels of health status (41) along with education as primary education more than secondary or tertiary education for rural people contributes to the promotion of rural food security (42). Farmers believe that rising food costs, crop diseases and a shortage of water pose serious threats to their livelihood and level of food security. These significant threats are either directly or indirectly related to the current climatic shifts and appropriate action is required to safeguard the way of life for small farming communities that rely only on agriculture (43). Scheme coverage in rural areas may be high, but insufficient to enhance access to inpatient care and guard against financial ruin and household deprivation because of healthcare costs, particularly for the underprivileged and chronically sick at times (44). The provision of food for all is fraught with political, technological and financial difficulties. They cannot be satisfied unless successful private agriculture for small and medium-sized holders, as well as rural well-being in general, are fostered and enhanced. They will call for increased and continuous international commitment and financial support, as well as continuous improvements to national and international institutions, policies and public spending (45). The way that natural resources and food security are now viewed can lead to self-fulfilling prophecies (46). Addressing hunger and poverty offers further space for the development of solutions that advance the goals of justice and equity in policy. To address food security and nutrition, interventions are required. These interventions should centre on fair trade, gender inequality and community control over productive resources. Put differently, food sovereignty must be ensured by these initiatives (47). Improving market accessibility and, consequently, chances to make money should be a major component of plans to enhance diets and nutrition in the small-farm industry (48) along with family planning as a policy option and targeted interventions for the food-insecure and impoverished in rural areas (40). Again, the creation of a worldwide food security monitoring system has long been necessary (49), where all pertinent stakeholders, including the public and

commercial sectors, civil society and non-governmental organizations, should be involved in the strategy process of development from the outset for it to be effective in terms of the quality of the strategy document and the extent of implementation (50). To address the broad objective of educating policymakers and the public about rural structural issues, health communication scholars can use campaign design, organisational development and rhetorical strategy. They can also effectively use and improve current institutions for more focused issues, like modifying assistance programmes to be spread out over different times throughout the month and changing the kinds of foods (51).

The majority's primary source of work is farming, which is not conducive to economic progress. Smallholders may find better employment opportunities in non-farm sectors for which diversifying rural agricultural and nonfarm livelihoods is becoming more and more crucial for job creation, food security, poverty alleviation and economic growth (52). Finding broadly applicable causes and effects of diversification has the benefit of allowing policymakers to either address the causes of the phenomenon (if deemed undesirable), encourage it further (if deemed beneficial), or steer it in specific directions to optimize the opportunities it presents for specific populations (e.g., women, the impoverished, the landless, the risk-prone and so forth) (53). Under the precarious conditions that characterize rural survival in many low-income countries, diversification has positive attributes for livelihood security that outweigh the negative connotations it may possess (54).

Labour is scarce for agricultural activities because of rural-urban migration. The agricultural production decline in the villages can be attributed in large part to inadequate infrastructure and limited access to fertilizer. There is the necessity of significant and ongoing government spending on agriculture as well as the provision of essential infrastructure for the provision of safe drinking water, health care, education and sanitation. This will reduce migration from rural to urban areas and help to ensure food and nutrition security (55). Public authorities and civil society organizations should integrate migration into their development agendas by facilitating internal transfers, encouraging migrant entrepreneurship overseas, facilitating integration in recipient nations and directing investment towards rural areas. Local governments, migrant organizations and civil society should work together to promote co-funding programmes for public infrastructure and women's poverty to foster synergies (56).

Given the strong correlation between education and food security, increasing rural education can help to a considerable extent to improve levels of food security. Furthermore, the goal of policy should be to establish a dynamic, open and sustainable rural labour market with long-term job prospects (57). Food-insecure elderly people in remote areas who may not be aware of the vulnerability of others who rely on shaky nutritional self-management techniques to meet their needs are generally underestimated (58). So, there is a connection between older persons' worse health and food insecurity (59). So, food security is mostly determined by factors such as age,

education, migration, joint families and health insurance; on the other hand, drought negatively impacted food security in rural households (60). During the pandemic, rural populations frequently encountered reduced food availability and access, as well as various changes in food utilization, including decreased diet quality and food safety (61). Compared to mothers who used fewer food and financial skills, those who employed abilities such as budgeting, stretching groceries and meal preparation had a higher likelihood of having households that were food secure rather than mother's inability to pay for medical bills and her symptoms of depression raise higher probability of food insecurity (62). Rural women's general health, as opposed to that of urban women, is linked to household food insecurity. The overall health is similarly linked to poverty and non-White ethnicity, but these associations were only significant for urban women (63).

The most effective ways to produce gains in rural incomes and agronomic productivity, despite global trends favouring urbanization and large farm expansions, are to support land titling programmes, agricultural extension services, a wide distribution of industrial projects located in rural areas and consistent engagement with social capital-based rural networks (64). Since people experience food insecurity at the local level, coordinated solutions to it are necessary there (65). Agricultural cooperatives require a new type of entrepreneurship-driven cooperative, like the Second-Generation Cooperative mode, to enter the food production and marketing economy (66). Adapting rural food systems to diverse driving variables is necessary to improve food security for the impoverished and vulnerable. To ensure long-term success, participatory action research that takes into account the full food value chain should be used in food security-related studies (67). A collaborative effort between the public and the government is required to investigate the many requirements of the impoverished and determine the best forms of social support for them while also optimising the effects on food security and rural development (68).

#### ***Health and Food security on Livelihoods in Odisha Perspective***

The average amount of food consumed by a household is greatly influenced by factors such as diet variety, the proportion of family members employed in agriculture and the amount of non-food necessities (69). Again, the state's population has substantially changed in food choices, while the growth in the production of food grains has remained extremely unstable. Only a tiny percentage of the land in Odisha is suitable for cultivation; the majority is hilly, mountainous, forested, wet and swampy. A dismal food supply chain, sparse communities in isolated villages and mountainous terrain characterise the uneven distribution system. The forest products are the tribes' primary source of income. The destruction and mining have doubled their misery (70). Marginalized communities, inflated population expectations, jobless growth, a growing number of educated youths without jobs and obvious social discord, despite a stable administration, are signs of a systematic failure of state development plans. The twisted political connection between the governing elite and the general

people is the missing piece, preventing the development agenda from being driven in a positive cycle of good governance and sustainable human growth. It is currently a vicious cycle of unsustainable development and bad governance (71). In such conditions, high value agriculture has the potential to increase farmers' incomes, especially for small holdings, providing a long-term way to enhance nutritional results. The state's many intervention programmes, such as the Mid-Day Meal Scheme and the Integrated Child Development Scheme, must be closely watched to improve the children's food and nutritional status. Special policy intervention is required to address the high incidence of child malnutrition and underperformance in agriculture reported in the majority of the Eastern Ghats region's districts (72). But through awareness raising, NRLM assists by accommodating the poor in achieving food security and a balanced diet. The rural poor also participate considerably in terms of food security (73). Bettering housing conditions, expanding access to hygienic facilities and clean drinking water are also necessary for lowering malnutrition, poverty and rising living standards (74).

Improving farm productivity and accelerating food growth are the main ways to reduce food insecurity. These can be achieved by increasing investments in farm mechanization, research and development, low-cost credit options for farmers, improved irrigation, rationalizing fertilizer subsidies, using high-quality food seeds, crops with higher nutritional value, multiple cropping and intercropping. PDS has few advantages for the underprivileged. Subsidised food grains are also diverted to the open market. This illustrates the PDS operation's leaking issue. Furthermore, PDS is neglecting the nutritional component of poverty by offering primarily cereals and food grains like wheat and rice (75). Although most of the villagers rely on PDS (76), the current PDS system needs to be changed to enable sustainable food procurement and storage. Reputable private sector warehouses should also be encouraged to become more involved in acquiring and storing food grains, as well as to launch MSP operations, which have shown to be successful (77). The fight against hunger requires a significant increase in agricultural output. To maintain food security, farmers security is much needed as the nation's food insecurity resulted from the insecurity of farmers. The cost of vegetables, rice, wheat, pulses, edible oils, etc. skyrocketed. Poor people suffer the most. We must maintain a decent level of buffer stock to provide food for the public at reasonable costs. This can be maintained by making sufficient procurement (78). The present policies' intrinsic deficiencies and implementation difficulties, along with the public distribution system's (PDS) fragility and lack of necessary infrastructure for the storage and delivery of food grains, could be the source of the dilemma of food insecurity. Other contributing reasons to food insecurity include a deficient educational system, poor rural connectivity, income and asset holdings, among others (79). Although PDS items have a favourable impact on household food consumption, full food security has not yet been achieved because most households rely more on non-PDS sources (80). Now, that PDS is operating effectively throughout the state, however, it is challenging to reach tribal and impoverished residents of isolated communities. It is evident everywhere that youngsters are

malnourished and in terrible health (70). Policies that have not focused enough on increasing agricultural output have contributed to the persistence of rural poverty, particularly at a time when climate change is disproportionately affecting the livelihoods of those living in remote rural areas where resilience is lowest (81).

Everyone on the planet would have access to food security, irrespective of caste, ethnicity, religion, gender, age, or any other factor. It is claimed that the right to food eliminates hunger. It is a national shame that 55% of children in rural Odisha still suffer from malnutrition. Similarly, malnutrition and other ailments affect 44% of young children under 5 years old. According to data from the National Family Health Survey, 38.4% of children are underweight for their age. Likewise, 46% of children are underweight and stunted for their age. It demonstrates the malnutrition problems in the state of Odisha (82). The persistent hunger, food insecurity and unsanitary living conditions that the tribal people of Odisha have long endured have a direct impact on their well-being. The eating habits and nutritional status of the state's tribal population exhibit notable regional and gender variations. The most susceptible groups to malnourishment and malnutrition include breastfeeding and pregnant women, preschool-aged children and tribal newborns (83).

The use of wild food plants has been underappreciated for a long time and more research is needed, especially in the areas of socioeconomic, cultural, traditional and nutritional aspects of these plants. The socioeconomic growth of rural and tribal peoples is directly linked to these wild resources, which aid in supporting their daily needs. Moreover, scant scientific data exists regarding the distribution and eating habits of wild foods among various cultures across various geographies. In tribal groups, the younger generation is either uninterested in learning about wild food plants or does not know enough about them. If for whatever reason traditional wisdom does not get passed down from one generation to the next, there is always concern about its disappearance. The importance of such traditional knowledge is becoming more widely acknowledged, as is the pressing need to record it to support efforts to protect the natural forest resources, which are home to a wide variety of plants and animals. To effectively restore traditional knowledge systems and its biological components, steps must be done to cultivate and use significant wild foods in agroforestry systems (84). Improving the food and nutrition security of tribal households by incorporating cutting-edge agronomic techniques could be a crucial first step towards the socioeconomic and intellectual empowerment of these groups. The goal of promoting climate-smart agriculture is to help primitive people become self-sufficient in terms of food security by producing food grains under difficult agroclimatic conditions at high altitudes. For that reason and to hasten adoption, the novel, well-researched agricultural approaches must be distributed via many extension initiatives (85). An integrated strategy, policy advocacy for climate wise agriculture in millets aims to support nutrient-dense millet farming, increase agricultural output, create jobs and manage natural resources sustainably (86).

Odisha's health situation is far behind the national

average in terms of disease prevalence, nutritional status and accessibility to medical facilities. The Particularly Vulnerable Tribal Groups (PVTGs) in this state are in the worst circumstances when compared to other groups (87). But many foods that are readily available in the area and have health benefits, such as Palta remedies for sons, Babul leaves for fair babies during pregnancy, Kalibahu and Gai chira (a type of root) for postpartum recovery, The locals use bottle gourd and sago dana kheer for improved lactation, Handia for better health and charitia for fatigue reduction. They use a variety of items to treat various illnesses, such as chutney made from wild ants for coughs, juice made from Gangasiuli leaves for fevers of malaria, amar poi leaves for diarrhoea, powder made from blackberry seeds for diabetes, bhalia for eczema, neem leaves and oil for scabies, handia rasi, pedipedica leaves and mehendi roots for jaundice, banana bug for piles etc. There are many kinds of traditional medical facilities in that area, but people are not using them because of ignorance and misconceptions. Therefore, a focus on nutrition and health education for the local population is necessary and more thorough scientific research is needed in this area to implement new methods for the coming generation (88).

Rain-fed subsistence farming is the main agricultural practice in Koraput. Diets in households are dominated by cereals and average daily intake of fruits, vegetables, pulses and milk and milk products is significantly lower than the daily recommended intake level, suggesting a low level of dietary diversity. Adults (over 18) with CED experienced a considerable rise in their DDS (dietary diversity score) as it fell from high to low. As the DDS dropped, the prevalence rate of anaemia in adolescent women and girls grew dramatically (89). During any lockdown periods necessary to avoid disease spread, there is a need for increased government action to limit harm to livelihood and mental, social and nutritional health. There are already some government programmes aimed at achieving food and economic security, but many rural villagers still lacked certain necessities, thus more initiatives are required (90). The security of their livelihood is average for tribes of Rayagada and Koraput. Government and non-government organisations should organise need-based training courses to raise awareness of better farming practices and to enhance the livelihood security of the population with the guarantee that it would remain so over time (91).

### State Government Initiatives

A very large percentage of workers seem to be residually absorbed in activities characterized by low productivity (92). Besides, many are non-workers. Women earn substantially less than men (93). Agrarian contracts tend to raise workers' probability of joining certain job categories such as forest product collection, non-agricultural labour and services, while it reduces the probability of not working (94). With an outstanding agrarian contract, it is unlikely that the household head or other members of the household would remain outside the job market (95). It is possible that farm labourers are the less physically fit members of the workforce, but their skill levels are likely greater than those of contract labourers for other non-farm activities (96).

While, agrarian contracts compel workers to look for more lucrative jobs having no work with larger land holdings, release some of the household labour to look for jobs outside family cultivation (97). Those, with larger land holdings are better off in terms of income. Among activities, cattle rearing, NREGA work, non-agriculture labour and services show a positive impact on income (94).

Some of the initiatives of Govt. of Odisha are mentioned below.

- Odisha Rural Livelihoods Programme (ORLP) Jeebika is a state initiative for providing an additional livelihood component to 460 ongoing watershed projects under IWDP and DPAP in the State covering six districts such as Koraput, Nowrangpur, Rayagada, Malkangiri, Kandhamal and Mayurbhanj (98).
- The programme called JEEBIKA intends to address and enhance the livelihoods needs of the landless and marginal households that are generally left out and under normal watershed activities. The additional livelihoods component or the Watershed Plus would be integrated into the implementation of the existing watershed projects with a total provision of Rs. 90.46 crore so that the benefits flow not only to the landed households but also to the poorest and vulnerable sections, by developing alternative and diversified livelihoods opportunities (98).
- Odisha reform program has envisaged strengthening and sustaining livelihood systems for poor households with a view to increase their income and reducing poverty (99).
- A pilot programme "Odisha Fund for Development Initiative (OFFDI)" was conceived by the State Planning and Coordination Department in the beginning of 2005 with support from Japan Social Development Fund managed by the World Bank. The prime goal of this pilot project is to increase the income of the poor households belonging to vulnerable population groups through the development of sustainable livelihood systems in the areas of handlooms, sericulture and medicinal plants (100).

### Central Government Initiatives

Recognizing the importance of rural connectivity, the Government of India launched the Pradhan Mantri Gram Sadak Yojana (PMGSY) as the national flagship programme in 2000. The Rural Connectivity Investment Program (RCIP) of the Asian Development Bank (ADB) assists PMGSY through a multi-project financing facility to support construction and upgrading to the all-weather standard of 3998 rural roads equivalent to 13884 kilometers benefiting 5238 habitations in the RCIP States of Assam, Chhattisgarh, Madhya Pradesh, Odisha and West Bengal. The positive impacts of RCIP roads on livelihood diversification, strengthening value chains and augmenting incomes have been observed in the village of Tikana in Odisha through the transformation of traditional occupations into profitable opportunities by the provision of good communication and transport.

## Conclusion

Considering the changes in lifestyle due to livelihood diversification, it can be proclaimed that diversification forecasts better lifestyles. When we zoom in on the scene towards the rural area, very less changes in lifestyles can be seen rather many changes in the livelihoods. So, to increase impoverished households' income and combat poverty, the Odisha reform programme has been designed to develop and sustain their livelihood systems. Odisha has a healthy forest cover as well as a long history in the handicraft and sericulture industries. These two industries provide the primary sources of income for many rural poor people. Therefore, it was deemed appropriate to concentrate on these two areas to enhance and maintain the poor's means of subsistence and again, much focus may be given to the remote areas also. "Orissa Fund for Development Initiative (OFFDI)" has a good impact on the development of the poor. It proliferated its objectives and helped raise the income of low-income households that are members of vulnerable population groups by creating sustainable livelihood systems in the fields of handicrafts, sericulture and medicinal plants. Several projects by NGOs can be proposed aiming for the development of the livelihoods of rural people which may prosper their lifestyle so as the reduction in the diversification.

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## Authors' contributions

DSR conducted field visit, data collection. AN involved in drafting of manuscript and approval of final manuscript. AD performed the design of research analysis. PB analysed the data.

## Compliance with ethical standards

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