



Challenges and opportunities under COVID-19 on rural populace in Kailash Sacred Landscape (KSL)-India



Ravindra K. Joshi, Ravi Pathak, Rishav Rawal, Shinny Thakur, Vikram S. Negi*, I.D. Bhatt

Center for Biodiversity Conservation and Management, G.B. Pant National Institute of Himalayan Environment, Kosi-Katarmal, Almora, Uttarakhand, India

ARTICLE INFO

Keywords:

COVID-19
Livelihood
Pandemic
Agriculture
Livestock
Western Himalaya

ABSTRACT

More than just a health crisis, COVID-19 pandemic has stressed across social, economical and emotional dimensions of human well being and health. The sudden enforcement although willful and honest, perpetuated a sense of insecurity and uncertainty as a result of livelihood loss, especially for the people employed in unorganized and private sectors across different urban centers of the country. The unexpected scenario not only caused widespread joblessness but also created varied conditions of psychological stresses foreseeing the less likelihood of returning of pre-COVID conditions. As an outcome of the pandemic, the involuntarily return of youth was seen as a boon for reversing the undesirable and unprecedented trends impacting the traditional rural dynamics. Present study is an attempt to highlights impacts, challenges and opportunities under and after COVID-19 on rural populace of Kailash Sacred Landscape (KSL) amid the sudden halt of remittances and jobless aspiring youth. A systematic approach was followed, where 16 villages in eight Blocks of KSL were assessed and migrants (n=815) were interviewed for compiling the information. Results revealed that COVID-19 has impacted (both positively and negatively) various sectors such as agriculture, tourism, overall family income, etc., as perceived by the respondents. Sectors like restaurants/shops, tourism, and agriculture emerged as potential cash generating avenues, with 30 %, 21 %, and 20 % respondent's perception, respectively. It is also revealed that in the absence of immediate alternatives, and policy intervention, villagers engaged themselves in the time tested traditional sectors of livelihoods or created their own niche by integrating traditional wisdom and acquired skills.

1. Introduction

In the course of human evolution, the resilience of mankind has been tested in every steps for its suitability as a species to cope with various pathogens, disasters, stresses, enemies, etc., and every time the *Homo sapiens* appears to be vulnerable and susceptible, the species devised a way out mechanism and emerged victorious, innovating new technologies, invention, and discoveries to make themselves immune and at top of the global food web. With the declaration of COVID-19 as a pandemic by United Nations (UN), the human race faced the greatest challenge of its survival after the World War II (BBC, 2020). Being an invisible enemy and its acquired immunity to our achieved technical knowhow, the SARS-CoV-2 virus responsible for the pandemic exposed our vulnerabilities and drastically impacted our lives and livelihoods (Paul et al., 2021; Kesar et al., 2021). The COVID-19 pandemic has brought huge socioeconomic and psychological sufferings in human life all over the world (Paul et al. 2020). Being more than just health crisis, COVID-19 pandemic has stressed every one by creating devastating social, economical and emotional crunch. In the absence of any possible treatment in

sight, the only option available is to contain its spread by enforcing lockdowns, travel restrictions, avoiding social congregations and new living norms (use of mask, Use of soap and sanitizers, & social distancing. The sudden enforcement although willful and honest, perpetuated a sense of insecurity and uncertainty as a result of livelihood loss, especially for the people employed in unorganized and private sectors (Paul et al., 2021; Rawat et al., 2020). The scene of people exodus from urban areas to rural areas reflected a grim scenario of such uncertainties and is forcing the policy for tactical maneuvering in prioritizing issues of sustenance under the changed socio-economic dynamics of COVID-19. In consequent of the COVID-19 outbreak and subsequent restrictions on movement people were forced to live in their homes with nothing much to do for their livelihoods. The lockdown scenario severely impacted people involved /engaged in private sector as it has led to the extensive disengagement of human resource as an adaptive measure to contain the fiscal drain and to sustain them in the crisis (Rawat et al. 2020).

Mountain economics, which traditionally revolved around agriculture and non-agriculture income sources, has seen a dramatic shift during the last two decades (Perlik and Membretti, 2018). Before the

* Corresponding author at: Center for Biodiversity Conservation and Management, G.B. Pant National Institute of Himalayan Environment, Kosi-Katarmal, Uttarakhand, Almora, India

E-mail address: vikramsnegii@gmail.com (V.S. Negi).

<https://doi.org/10.1016/j.envc.2022.100497>

Received 30 August 2021; Received in revised form 22 February 2022; Accepted 23 February 2022

2667-0100/© 2022 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license

(<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

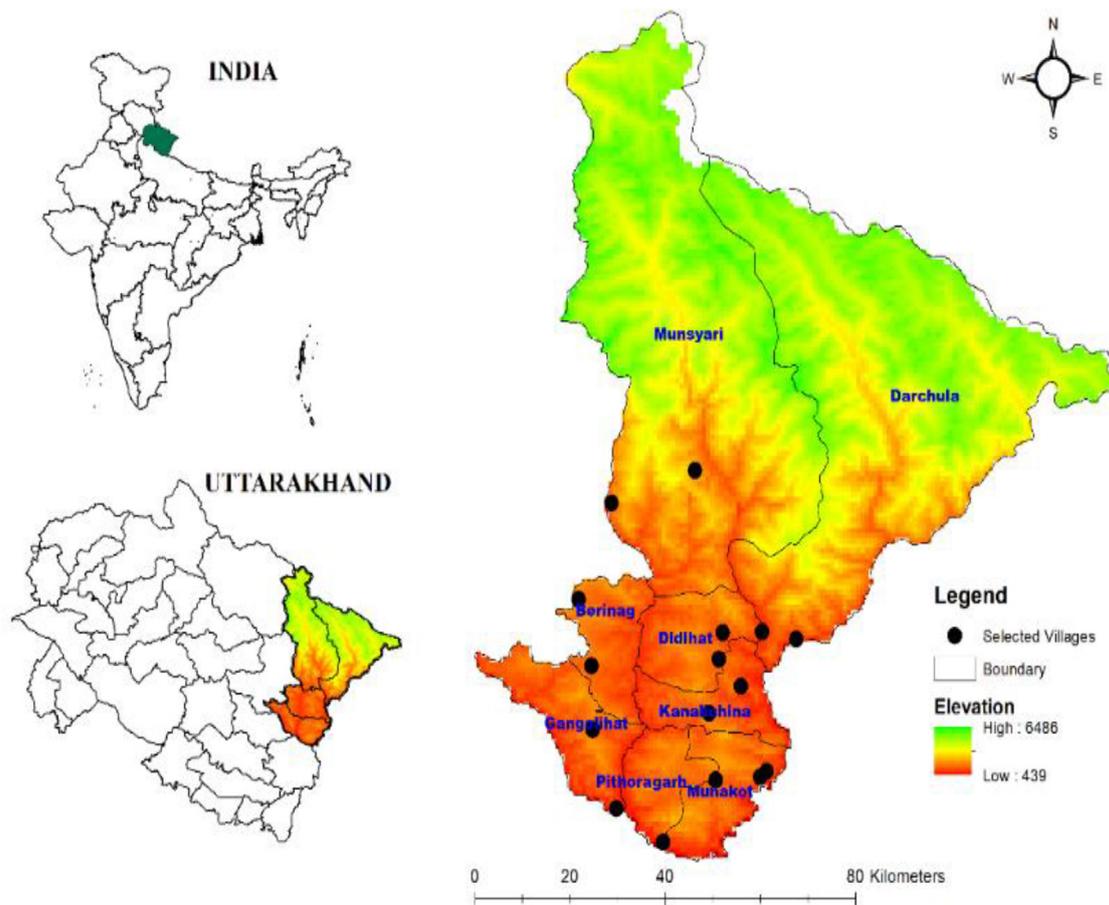


Fig. 1. Map of study area with selected villages for COVID-19 impact assessment.

COVID-19 pandemic, new socio-economic norms led to unprecedented migration of youth from the rural areas, dramatically changing the sectors and its relative contribution towards the household income. In pre COVID-19 regime, the sectors traditionally contributing/flourishing in family income started losing their shine and luster because of their limited capacities to meet the renewed needs and aspirations. The return of the youth was rather involuntarily, pushing and full of apprehensions. Contrary to the initial understanding, where the lockdown was envisaged to be effective in containing the spread of disease and of short duration, the situation turned rather obnoxious with dis-infodemics and seeing no sight of returning to the normal. Although the situation could be considered challenging and pressing for most of the youth yet it opened scope for opportunities for the rural landscape to prove its ingenuity of traditional strength and wisdom in terms of safeguarding the requirement of basic needs, interest and capacity to provide a suitable refuge.

Besides the challenges of lives and livelihood, new norms emerged to cope with the uncertainty and insecurity of SARS-CoV-2 virus; it includes frugal expending, good hygiene practices, and exploring new and innovating means for livelihoods. They were struggling to maintain their personal hygiene because of financial constraints and so became alarmed with the fear of being infected by COVID-19 (Paul et al. 2020). Similarly, it also opens opportunities for reviving the abandoned crop fields, rural demographics, revival of traditional knowledge system/practices and others. Therefore, it quite becomes imperative to document the coping behavior/practices so that appropriate policy interventions can be put in place to make communities well prepared and resilient for the future. This research looked at the impact of the COVID-19 outbreak on the livelihood and the psychological stress of rural people in the villages of KSL, India focusing: (i) major challenges during

COVID-19, (ii) livelihood options during Pre-COVID and during COVID scenario, and (iii) coping mechanism and adaptation measures against COVID-19.

2. Methodology

2.1. Study area

Extending over 31000 km² area that spans over boundaries of Tibetan Autonomous Region (China), India and Nepal, and with immense spiritual and sacred values, the Kailash Sacred Landscape (KSL) is one amongst the most revered and sacred landscape for millions of people across the globe. It represents a highly complex and diversified system in terms of biological, physical systems, and life support values ranging well beyond its physical boundaries.

To assess the impact of COVID-19 particularly on the rural communities of KSL-India, an extensive field study targeting sixteen villages interspersed across all the eight administrative blocks of District Pithoragarh was planned (Fig. 1). For selection of villages each of the Block offices was visited to procure the list of migrants of which two top villages with highest number of returnees and situated in rural and semi-urban settings were selected for the assessment (Table 1).

2.2. Assessment of the villages

For the assessment study, a structured questionnaire was developed after having several rounds of consultations and interactions with experts of different subject disciplines. The developed questionnaire was

Table 1
Respondent numbers in each studied village of Pithoragarh district.

Block	Village	Number of migrants during COVID-19	Number of Respondents
Berinag	Kwerali	250	100
	Khola Gaon	140	56
Bin	Lelu	127	51
	Nishni	76	30
Dharchula	Baluakote	252	75
	Toli	121	48
Didihat	Kanda Man Singh	92	37
	Khetar Kanyal	82	33
Gangolihat	Rawal Gaon	130	52
	Timta	180	72
Kanalichina	Siroli	220	88
	Barakote	100	40
Munakot	Majir Kanda	80	32
	Bhatedi	98	39
Munsiyari	Hokra	111	33
	Sarmauli	97	29
Total		2156	815

thoroughly tested during the preliminary field reconnaissance and consequently amended to make it bilingual for easy understanding of identified resources persons and respondents. To undertake the survey across the identified village of KSL India a relatively modified approach of citizen science was employed (Fig. 2). A team of two resource persons (Girls of intermediate to graduation level were preferred) in each village was prepared who were trained to get familiarized with the questionnaire. A mock exercise on questionnaire filling and evaluation was also conducted while training the resource persons. Questions were asked to 40 % of the returned migrants (Table 1) in each study village. Apart from than Focused Group Discussions were also conducted.

3. Results

3.1. Impact of COVID-19 on various sectors

3.1.1. Agriculture/Horticulture

Villagers, based on production, sale, area of cultivated land, etc., perceived the impact of COVID-19 on agriculture. Agriculture and horticulture in KSL-India was perceived as increased by 71 % of respondents. 10 % of the respondents perceived that this sector have seen decline, while 19 % of respondents perceived no change in agriculture and horticulture sector. The increase was perceived more in rural setting villages (76 % respondents) as compared to semi-urban setting villages (65 % respondents). Decrease in the agriculture and horticulture was perceived more in semi-urban setting villages (15 % respondents) as compared to rural setting villages (6 % respondents). 19 % and 18 % respondents perceived no change in the sector in semi-urban and rural setting villages, respectively (Fig. 3 a & b).

3.1.2. Livestock income. Income from livestock was perceived by the respondents in terms of sale of goat meat, chicken, eggs, milk, etc. Livestock income in KSL-India was perceived as increased by 44 % of respondents. 25 % of the respondents perceived that this sector have seen decline, while 24 % of respondents perceived no change in this sector. The increase income from livestock was perceived more by semi-urban setting villages (69 % respondents) as compared to rural setting villages (18 % respondents), which might be due to the accessibility to the customers the former are nearer to the urban areas. Decrease in the livestock income was perceived more in rural setting villages (32 % respondents) as compared to rural setting villages (18 % respondents). 13 % and 35 % respondents perceived no change in the sector in semi-urban and rural setting villages, respectively (Fig. 3 a & b).

3.1.3. Lifestyle and behavior

Impact on lifestyle and behavior was in terms of expenses on lifestyle and expense on sanitization and hygiene. Expenses on lifestyle was per-

ceived as increased by 49 %, decreased by 34 %, and no change by 17 % of the respondents. On the other hand, expenses on sanitization and hygiene was perceived as increased by 78 %, decreased by 0 %, and no change by 22 % of the respondents. The increase in expenses on lifestyle was perceived more by rural setting villages (54 % respondents) as compared to semi-urban setting villages (45 % respondents). Decrease and no change in the expenses on lifestyle was perceived more by semi-urban setting villages (35 % and 21 % of respondents, respectively) as compared to rural setting villages (33 % and 13 % of respondents, respectively). The increase in expenses on sanitization and hygiene was perceived more by rural setting villages (82 % respondents) as compared to semi-urban setting villages (74 % respondents). No change in the expenses on sanitization and hygiene was perceived more by semi-urban setting villages (26 % respondents) as compared to rural setting villages (18 % respondents). No respondent have perceived that the expenses on sanitization and hygiene decreased in both type of villages (Fig. 3 a & b).

3.1.4. Overall family income

Overall family income was perceived to have decreased in KSL-India due to COVID-19, as many of the people working in private sector or in unorganized sector lost their jobs. 63 % of respondents perceived the decrease in overall family income, and 37 % respondents perceived no change. The decrease in overall family income was perceived more by rural setting villages (64 % respondents) as compared to urban-setting villages (62 % respondents). 38 % of respondents perceived no change in overall family income by semi-urban setting villages. In rural setting villages, 36 % respondents perceived no change in overall family income (Fig. 3 a & b).

3.1.5. Tourism and allied activities

Tourism sector in KSL-India faced a heavy blow due to COVID-19 outbreak and the lockdown. 81 % of the respondents in the studied villages perceived decrease in tourism and its allied activities such as restaurants, shops, local taxis, etc. No change in this sector was perceived by 19 % of the respondents. The decrease in tourism related activities was perceived more by rural setting villages (89 % respondents) as compared to semi-urban setting villages (73 % respondents). No change in this sector was perceived more by semi-urban setting villages (27 % respondents), as compared to rural setting villages (12 % respondents) (Fig. 3 a & b).

3.2. Opportunities in post COVID-19 scenario

Most of the people (30 %) in the study region perceived that self-employment by way of opening shops, restaurants or food stalls is a potential income-generating avenue that they might adopt (Fig. 4). This

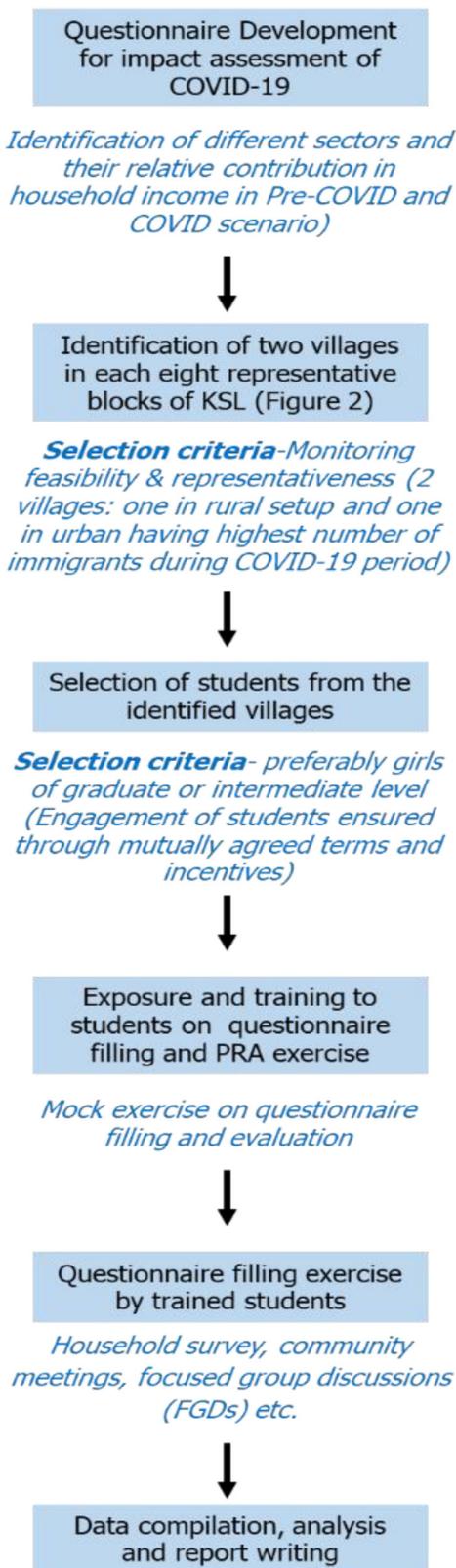
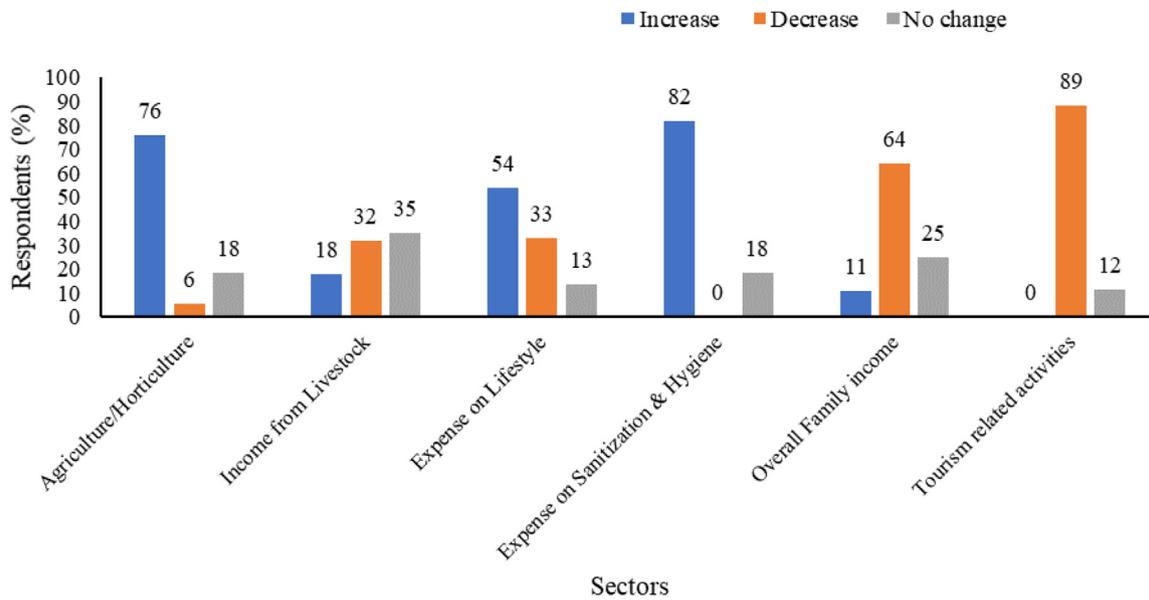
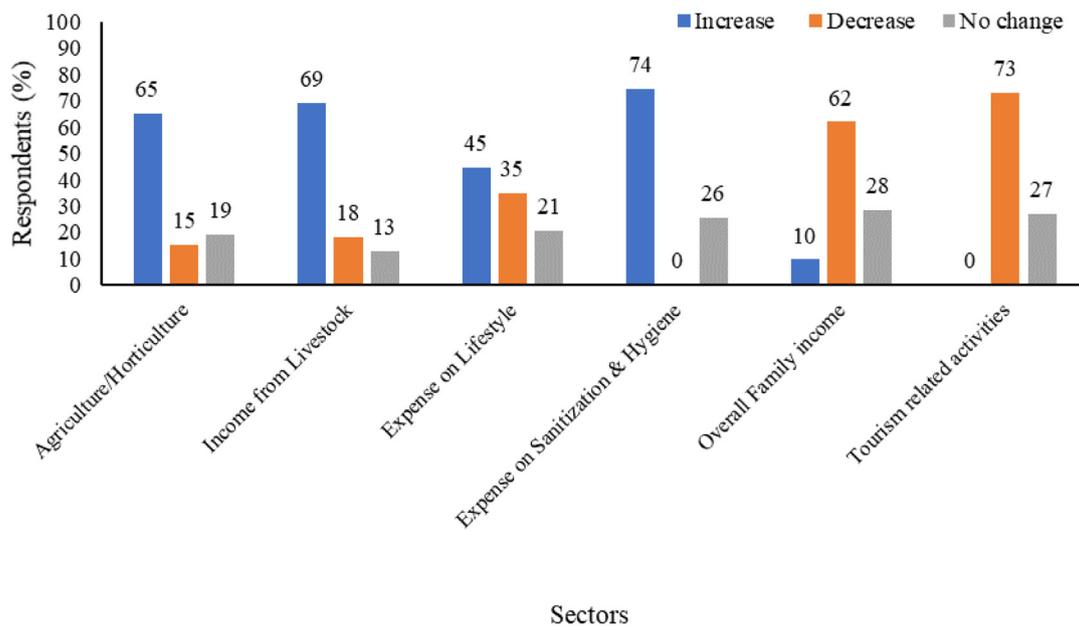


Fig. 2. Approach and Methodology Scheme for the study.



(a)



(b)

Fig. 3. Perception on impact of COVID-19 on various sectors/areas in Pithoragarh district (a) by villages in rural setting, and (b) villages in semi-urban setting.

opportunity, perceived by people was seen as a potential avenue because most the returnees that lost their job were working in hospitality sector and have acquired skills that would support them to successfully run these shops/stalls/restaurants. During the lockdown, returnees got an opportunity to explore their area/village, its biodiversity and realized the potential of their area as an income generating avenue with respect to tourism activities. With their prior experience, personal contacts and

developed liaisoning skill in the unorganized private sectors they used to work, many returnees (21 %), especially youth perceived tourism as a possible income generating avenue in their region. Agricultural fields which were abandoned as they were not able to fulfill the livelihood needs of the rural populace. However, during the pandemic, these fields helped the people to cope the food insecurity and also gave time to the people to think agriculture as a potential cash generating avenue. 20 %

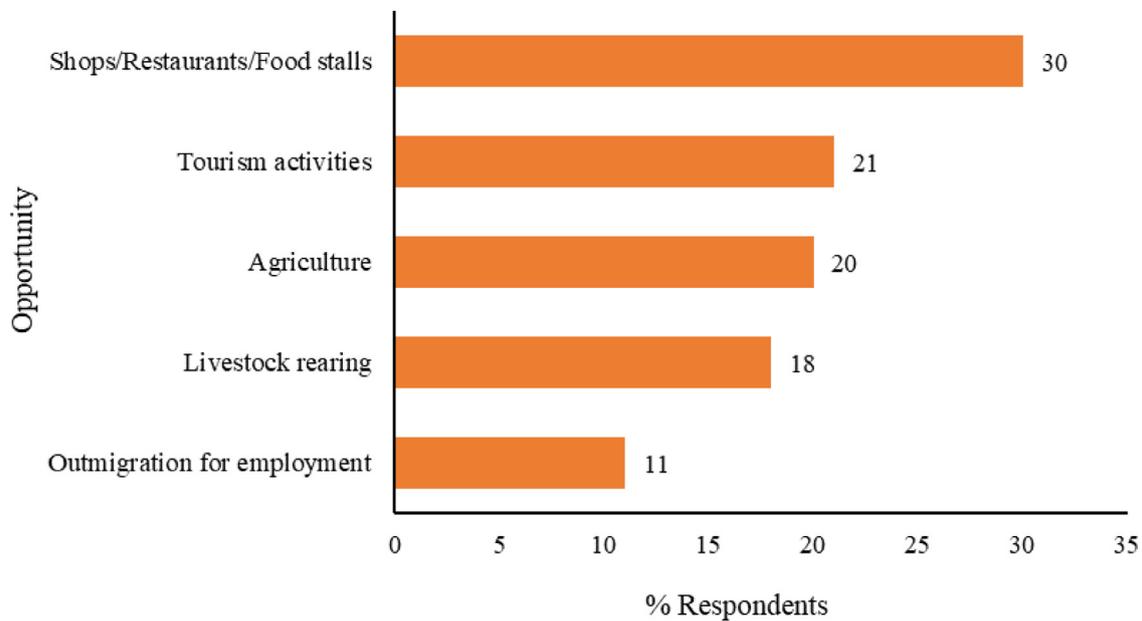


Fig. 4. Adopted and probable livelihood avenues/Opportunity in Post COVID-19 scenario (n=815).

of the respondent perceived agriculture as a potential avenue in the region, with integration of cash crop cultivation (vegetables, flowers, etc.) in their fields along with their traditional crops. Livestock rearing was also perceived to contribute towards improving overall family income by 18 % respondents. Various products like meat, milk, butter, eggs, etc. that the rural populace get from their livestock helped them to ensure cash income during the pandemic. Therefore, rearing livestock was also seen as a potential avenue in the post COVID-19 scenario in the region.

4. Discussion

4.1. Impact on agriculture/ horticulture

Agriculture which has traditionally been regarded as a major occupation for living and sustenance in the Himalaya (Maikhuri et al. 2001; Negi et al. 2018a), no longer remains an attractive avenue for the youth. Besides numerous constraints which impact the productivity and yield, such as climate change and wild-life infestation, there are socio-economic and other factors responsible for the present state of agriculture. Despite few success stories of agriculture as a sustaining livelihood, primarily because of diversification and market driven transformation, the state of agriculture in region is dying profession and art. Being sustenance based, agriculture was never performed with an intention and motivation for monetary benefits. It has always being a family oriented and labor intensive affair till the advent of economics and market driven demands which jolted the very fabric of rural economics (Negi et al. 2018a). Besides agriculture, traditionally the rural life in region is supported by various other subsidiaries, like animal husbandry which were intricately linked and interdependent. These sectors are still relevant in a sense that they meet basic household requirements of food to some extent and minimal monetary gains through the sale of some surplus produce. The capacity of agriculture became gradually irrelevant when there is transformative changes happened in socio-economic landscape and people have started moving out to explore for more greener pastures of cash generating avenues. It was revealed that cheap and subsidized provisioning of grains under various government schemes also contributed significantly towards the dramatic shift in people attitude to abandon the agriculture and to align and run after for contemporary modern living as also reported in previous studies (Maikhuri et al. 2001; Saxena et al. 2005; Negi et al. 2012). The

rural sectors which were once regarded as producer and supplier for urban needs gradually became completely dependent on urban markets not only for things which are only produced in downstream urban and industrial areas but for the basic agricultural produce which were once often cultivated in surplus. The usual pace of out migration which was usually happened with educated and skilled youths was suddenly exacerbated with unseen pull factors of urban life and its glistening advertisement.

The villagers and return of the youth was much eulogized as a blessing in disguise for the revival of different rural sectors, viz. agriculture, livestock, fisheries, bee keeping, collection of non-timber forest produce, and other farm based activities. Secondly, the scenario of reduced or ceased income flow would be seen as way of putting check on extravagant expenses to adopt frugal and minimalism way of life (Table 2). However, it has been observed that without waiting for a policy intervention, youth in the landscape themselves started in the time tested traditional sectors or created their own niche by integrating traditional wisdom and acquired skills. In addition, the present scenario contributed significantly in the paradigm shift in lifestyle and behavior change, which not only helped in coping against financial constraints but also inculcated simple, good and hygienic habits. The return of migrants which was initially regarded and envisaged as an opportunity of revival of agriculture in the region has contributed marginally, especially with towards the Kharif crops kitchen garden produce. The Kharif crops namely Corn (Maize), Bajra (Millets), Bhatt (*Glycine* sp.), Madua or Ragi (*Eleusine coracana*) are still practiced across the region (Maikhuri et al. 2001; Negi et al. 2012, 2018a) therefore, instead of revival, contribution of youth towards practicing and promoting agriculture, could be seen as additional helping hand. However, significant contribution was noticed in kitchen garden maintenance and its produce, possibly because of easy monitoring and upkeep and farm fresh attributes of product(s), for own consumption.

4.2. Impact on livestock income

Like, agriculture, livestock rearing is always be an indispensable part of rural life (Negi et al., 2010, 2021), there perceived to be impacted positively with the influx of returning youth. However, similar to agriculture, youth adopted a cautious approach here as well. Only few families in the villages, especially with infants and children risked their

Table 2
Summarized impact of COVID-19 on different sectors in Kailash Sacred landscape-India.

Area/sectors	Impact intensity				Impact nature (+) / Deteriorated (-)	Challenges	Opportunities
	Not impacted (0-10 %)	Less impacted (10 - 30 %)	Greatly impacted (30-60 %)	Highly impacted (Above 60%)			
Over all family income					-	Meeting the basic requirement of family members; Availability of locally viable livelihood options	Possibilities of reviving traditional sectors of income generation; Less extravagant lifestyle; Scope of innovation, diversification and upscale
Agriculture					+	Fragmented and small landholdings; Risky avenue due to multiple factors impacting the produce; Subsistence based; Monitoring constraints; Wildlife infestation	Diversification, considered as premium quality, high demand, at least sustain requirement
Horticulture						High rate of wildlife infestation; Marketing	Cash commodity; Sustainable; High demand; Nutritious
Livestock					+	High investment cost; Fodder availability; Intensive monitoring; Low yielding\	Diversification; High demand of products
Tourism					-	Less known; Market dependent; Marketing	Places of high aesthetic value; Growing trend; Integrated; Source of diversified income; Less likelihood of failure; Life supporting; Sustainable and tested
Biodiversity					+	Highly impacted due to anthropogenic factors	Quite diverse and unique; Source of income
Human wildlife conflicts					+	Human, livestock and crop loss; Restrictive movement	Income and research
NTPF collection					-	Harvesting constraints; Productivity variability; Climate change; Limited market and access	Product diversification; High demand; Marketing
Sanitation and hygiene					+	Additional expenses; High cost; Not skin friendly; Availability; May cause behavioral disorders like obsessive compulsive syndrome (OCS)	Less occurrence of cleanliness dependent disease; Diminished use of medicines; Products are high in demand; A healthy and informed society
Family atmosphere					+	Meeting aspirations of different age groups and demands	Improved interactions, harmony, interdependence and bonding; Possibility of joint ventures

investment in adding a bovine, especially a cow to meet the family requirement. It was revealed that investing in a livestock temporarily for lockdown period would not be a pragmatic and smart move as it usually costs in thousand and most of them were eyeing for earlier return possible. Secondly, despite being a cash commodity the sale of dairy products didn't attract the youth because of marketing and transportation restrictions were in place. Additionally, most of the people who were already involved in the sale of dairy products revealed a reduction in sale and consumption, especially in rural setting villages. Some families however invested handsomely in goat rearing because of sudden surge in demand. It was also regarded as a low investment enterprise with quick and easy return. Besides livestock, poultry has seen tremendous growth in the region, probably because of lowest investment cost, monitoring convenience, and nutritional security of the family members. Other sector such as apiculture has been remained static and not even considered for adoption and up scaling.

4.3. Impact on life style and other sources of income

The pandemic has impacted the life style of the people considerably and forced the community to devise ways to slash down expenses and expend frugally (Bodrud-Doza et al. 2020). During the lockdown when access was limited, the family budget has seen a tremendous shift in money utilization pattern. It was quite natural to observe a usual decline in expenditure in all areas of monthly spending, yet there were some relatively new areas which involuntarily exceeded the expending limits, such as medicine (mainly on herbal connotations proclaiming to enhance immunity), toiletries, sanitizers and floor disinfectants. The pandemic has also caused substantial behavioral change with improved sense of cleanliness, limiting attendance in social gatherings, maintaining distance while having conversations, and unnecessary travel.

The complaint of paucity of time for self and leisure activities has also been vanished. With the time available in plenty, the areas which were occasionally being looked after or often neglected received most of the working hours. The areas where people devoted their times were agriculture work, maintenance of kitchen garden, livestock rearing, renovations and repair work, ferrying water, fuelwood and fodder for animal (Negi et al. 2018b). Among all, time for fuelwood collection was significantly increased and attributed to save the cost of LPG cylinders. Besides engaging themselves constructively in household chores, the leisure time has been extensively utilized for intriguing and self-introspection. Although very few, especially some adolescent child have carved out time for creative things, yet most them have planned to develop some sort of business model by erecting innovative temporary structures with multiple provisioning of goods and facilities. Such models were often built jointly in collaboration by friends with relatively similar skill sets and who decided to start a lease of life. It has been observed that majority of migrants were involved in hotel and food catering businesses followed by driving, metal fabrication work, shop helpers, hosiery and others in different parts of the country, mainly in Delhi, Haryana, Rajasthan and Gujarat. Based on their acquired skills, proximity to road head and possibility of demand quite a few migrant families have started their own shops either on lease basis or on some temporary structures.

Among various other sectors which constitute a substantial share of rural income also get impacted during the COVID. The sectors mainly include collection and sale of non-timer forest produce such wild edible fruits Kanfal (*Myrica esculenta*), Jhula (Lichen) and Yartsa Gunba (*Ophiocordyceps sinensis*). The collection and sale of Kanfal and Jhula, which are usually extracted for local and domestic consumption were severely impacted due to closing of 'Mandis' and absence of buyers/customers. In case of Yartsa Gunba, which was one of the potential source of income

in high altitude villages of landscape (Negi et al. 2020), the collection was usually uninterrupted because of difficult accessibility and monitoring. Also, the price of produce has witnessed a steep fall due to absence of traders from within and across the borders. It was revealed that all the sectors of rural income including tourism were equally impacted in some or other way in the absence of buyers and closure of markets.

4.4. Impact on human behavior

The pandemic has badly impacted the purchasing and spending capacity of the rural populace so is the lifestyle (Rajkumar 2020; Shammii et al. 2020). Soon after the realizing the likelihood of extended lockdown and not foreseeing the possibility of returning of old norms of life, most of the families adopted a minimalistic and frugal lifestyle as an immediate coping measure. The use of internet and television has reported to contribute greatly in spending the leisure as well as getting information about the updates, help and ideas. Additionally, it has paved the way to learn new dimensions for both children and their teachers with new and innovative ways of virtual class rooms. Unlike the increased in demand of household utilities like, mobile tablets, Wi-Fi connections, washing machine, dishwashers, floor mops, the rural families preferred to do work manually and deferred such demands for a time being. However, some slightly better well off few households bought additional mobile phones or tablets in compulsion for supporting online education of their kids.

COVID outbreak has caused a dramatic change in human behavior by creating an atmosphere of uncertainty and helplessness (Paul et al., 2021; Kesar et al. 2021). It impacted the generations varyingly. For children initially it was treated as vacation from monotonous school life, therefore, they appeared to be happiest, blissful and carefree without thinking about the turmoil in their life. The adolescent group also considered it as a vacation and enjoyed the break for first few months. They appeared relatively less exuberant than their younger siblings as they were tended to be familiar with repercussions of extended lockdown conditions on their education and family well being. On questioning their behavior and attitude, they responded like adults and revealed that besides paying attention to their studies, they have subsidized their demands for food options and other non-essential things. Among all, adults, especially parents were seemed to be undergoing through unseen and inexperienced distress of joblessness and concern to support their family well being and their future. They usually appeared to be calm and peaceful but their sudden outburst became apparent while expressing their plans and future strategies. It was more visible in youth which moved out in compulsion due to limited or no resources available at their end to plan something viable in rural settings. Lastly the behavior of aged and old one were quite similar to the children, exuberant and blissful probably because of the presence their grand children hovering across the village asking them for refuge from possible outrage of their parents due to unreasonable demands and nuisance as also reported by Rajkumar (2020). However, despite their inclining and likings they were the most concerned about the wellness of their child and anticipating some governmental support so that their children could abdicate their thoughts of returning and start a new venture to support their family well here in the village.

4.5. Implications of COVID-19

The lockdown imposed due to COVID-19 outbreak was initially seen and treated as summer holiday break and vacation by most of the migrants and their families. With their limited savings and privy-purses majority of the families lived relatively extravagant life with lavish cuisine for the few months. Some families invested their time more constructively by spending their time and money on repair and renovation work at the home. However, in subsequent months with no signs of relaxation in restrictions and restoration of old norms of living, the vacations suddenly got over (Rawat et al., 2020). With their savings getting

thinned, the families soon realized to adopt a minimalistic way of living to contain the depleting saving reserves. After some initial hiccups and hesitation they started exploring opportunities in the village for some sort of employment. In consequent of the limited options available most of the families turned to traditional and tested sectors, like agriculture, livestock rearing for which they have guidance available from elders to hone their dormant and rudimentary skills of surviving in the already familiar settings of rural life.

The outbreak of COVID-19 impacted the livelihood of millions of rural youths especially working in unorganized and private sectors and compelled them to return their ancestral home in uncertainty and despair (Rawat et al., 2020; Kesar et al. 2021). The gruesome accounts of their returning journeys and hardships they faced while facing lockdown restrictions not only created a gloomy atmosphere of pessimism and despair but also raised expectations of the seemingly impossible revival of different rural sectors with unprecedented inward trend of reverse migration (Rawat et al. 2020). The loss of livelihood during the COVID-19 severely impacted the life styles of people and forced thousands of people into extreme poverty and left with meager resources not only in the KSL but across globe (Paul et al., 2021). The return of old traditional norms looks quite likely as people left with no alternatives. The present study attempted to delve upon the 'Implications and opportunities of COVID-19 scenario on rural livelihoods in KSL-India', primarily to record the adaptation ways of rural youths to withstand against the devastating impacts of pandemic.

The pandemic has considerably impacted the families living temporarily in urban settings and forced them to abandon all what they had and planned for their family future. It has engraved a deep psychological scar when they were forcefully relieved from their work and treated inhumanly like refugees. Their return which were usually celebrated and welcomed by family and neighbors was usually absent this time, as most of the migrants were seen as a COVID suspect. The youth which receive due attention and treatment on their vacations also started feeling neglected and mistreated because of prolonged joblessness and extended lockdown. However, their families especially the children were seen to be enjoying the freedom and liberty of the rural settings. The often seen preponderance of women and old were altogether absent with scattered liveliness across as everybody appears busy, happy and joyful.

The prolonged lockdown scenario has created unrest among the youth, especially in the earning members of the family but subsequently motivated them to develop their abandoned and available resources; this has also reported in previous studies (Rawat et al., 2020; Kesar et al. 2021). Although many of them wanted to return but most of them got enrolled and engaged themselves in rural employment schemes of Mahatma Gandhi National Rural Employment Guarantee Act (MGN-REGA) and other rural sectors by toiling in their farms and rearing livestock to support their families.

4.6. Adaptation to minimize the impact of COVID-19

The scenario of COVID-19 was unprecedented and never imagined by the mankind (BBC, 2020). It exposed the vulnerability of unorganized and private sectors in terms of safeguarding the interest and livelihood of families, while establishing the importance of public sector for financial security and benefits (Paul et al. 2021). In view of the restrictive operating environment, the families appeared quite clueless to suggest and demanded governmental assistance to ensure respectable and sustainable living for rural families. Citing the importance of economic security for livelihood and well being of people, the villager suggested crucial role of government in bringing and to enforce policy and best practices to make optimized use of available resources. They suggested better showcasing and outreach of government schemes and programmes for easy adoption and interested beneficiaries. Citing the constraints of rural communities in getting the benefits of government schemes, the villagers suggested a single window facility in place for clearance of government schemes

and help from authorities. They suggested the government programmes should be reoriented further to make it more relevant and attractive for the villagers, like concurrence in wages with increase in employment days in MNREGA; easy loan from the banks with minimum mortgage or interest free loan at least for first two years; land bank development for addressing the issue of unused, small and fragmented landholdings; and empowerment of Gram Pradhans (GP) for outreach of government schemes and developing village and individual plans. Keeping the GP' role as an effective interface between policy and people while helping the village migrants during isolation and quarantine, the migrants suggested that the Gram Pradhan should have more constitutional powers and funds to take decision for the well being and welfare of the people. Also recognizing the role of frontline workers like police, doctors, health workers, ASHA members, cleanliness workers, the villagers said due recognition and appreciation must be given conferred for keeping their morale high and intact.

5. Conclusion

The pandemic has pushed million of people into extreme poverties with loss of livelihood and lives. It has exposed our vulnerabilities and questioned the credibility and hype of the present norms to address the aspirations of the people. The capacities of rural landscape have been proven again at least in terms of addressing the basic needs of human survival. Being familiar with rural life and its hardships rural migrant communities seem to have an inherent capacity of resilience in the KSL. The capacity to withstand amid the loss of livelihood and shelter is the testimony of the fact. The pandemic has also caused immense impact of people's mental and psychological health due uncertainty and helplessness. The results have been noticed in terms increased incidence of anxiety, depression, trauma and suicidal tendencies. Keeping this in view, the need of empowering the village frontline workers for mental counselling has been felt to calm the turbulent minds and motivating them to constructively engage themselves in living a fulfilling life. The intactness of present generation with the land helped the people not only to devise new ways of survival but also ensure effortless transitions for a minimalistic and frugal life in the landscape. The displacement of people would also help to devise indigenously suitable policy and technologies/protocols, so that people could find livelihoods and better living opportunities in their hometowns.

Authors' contributions

RKJ: Field survey and manuscript writing, RP: Field survey and editing; RR: Field survey, data compilation; ST: Data compilation and editing, VSN: Field survey, editing and reviewing; IDB: Editing and reviewing.

Declaration of Competing Interest

The authors declare that they have no competing interests.

CRedit authorship contribution statement

Ravindra K. Joshi: Conceptualization.

Acknowledgement

The authors are thankful to Late Dr. R.S. Rawal for his guidance and support for conducting the study. We are thankful to the Director, G.B. Pant National Institute of Himalayan Environment, Kosi-Katarmal, Almora for facilities. Funding support from ICIMOD under KSLCDI-II project, Kathmandu, Nepal is gratefully acknowledged. We also acknowledge various Citizen Scientists of the KSL-India involved in the study.

Ethics approval and consent to participate

Not applicable.

Consent for publication

All authors contributed in the manuscript and agreed to publish the manuscript.

Funding

Kailash Sacred landscape Conservation and Development Initiative-II, ICIMOD, Kathmandu (Nepal).

References

- BBC, 2020. Coronavirus: Greatest test since World War Two, says UN chief <https://www.bbc.com/news/world-52114829>. Accessed on 20.07.2021.
- Bodrud-Doza, M., Shammi, M., Bahlman, L., Islam, A.R., Rahman, M., 2020. Psychosocial and socio-economic crisis in Bangladesh due to COVID-19 pandemic: a perception-based assessment. *Front Public Health*, 8,341.
- Kesar, S., Abraham, R., Lahoti, R., Nath, P., Basole, A., 2021. Pandemic, informality, and vulnerability: Impact of COVID-19 on livelihoods in India. *Canadian J. Dev. Studies* 42 (1), 145–164 -2.
- Maikhuri, R.K., Rao, K.S., Semwal, R.L., 2001. Changing scenario of Himalayan agroecosystems: loss of agrobiodiversity, an indicator of environmental change in Central Himalaya, India. *Environmentalist* 21 (1), 23–39.
- Negi, V.S., Joshi, B.C., Pathak, R., Rawal, R.S., Sekar, K.C., 2018b. Assessment of fuelwood diversity and consumption patterns in cold desert part of Indian Himalaya, implication for conservation and quality of life. *J. Cleaner Prod.* 196, 23–33.
- Negi, V.S., Maikhuri, R.K., Rawat, L.S., 2012. Paradigm and ecological implication of changing agricultural land-use: a case study from Govind Wildlife Sanctuary, Central Himalaya, India. *J Mt Sci* 9 (4), 547–557.
- Negi, V.S., Maikhuri, R.K., Chandra, A., Maletha, A., Dhyani, P.P., 2018a. Assessing sustainability of farming systems in mountain agroecosystems of Western Himalaya, India. *Agroecol. Sustainable Food Syst.* 42 (7), 751–776.
- Negi, V.S., Maikhuri, R.K., Rawat, L.S., Vashishtha, D.P., 2010. The livestock production system in a village ecosystem in the Rawain valley, Uttarakhand, Central Himalaya. *Int. J. Sustainable Dev. World Ecology* 17 (5), 431–437.
- Negi, V.S., Pathak, R., Thakur, S., Joshi, R.K., Bhatt, I.D., Rawal, R.S., 2021. Scoping the Need of Mainstreaming Indigenous Knowledge for Sustainable Use of Bioresources in the Indian Himalayan Region. *Environ. Manage.* 1–12.
- Paul, A., Nath, T.K., Mahanta, J., Sultana, N.N., Kayes, A.I., Noon, S.J., Javed, M.A., Podder, S., Paul, S., 2021. Psychological and livelihood impacts of COVID-19 on Bangladeshi lower income people. *Asia Pacific J. Public Health* 33 (1), 100–108.
- Perlik, M., Membretti, A., 2018. Migration by necessity and by force to mountain areas: An opportunity for social innovation. *Mountain Res. Dev.* 38 (3), 250–264.
- Rajkumar, R.P., 2020. COVID-19 and mental health: a review of the existing literature. *Asian J Psychiatry* 52, 102066.
- Rawat, G.S., Rawal, R.S., Tewari, L.M., Bhatt, I.D., 2020. Proceedings of Webinar on Promoting MAPs sector for sustainable development under post COVID-19 scenario in the Western Himalaya, 3, p. 39 eNewsletter- GBPNHEpp.
- Shammi, M., Bodrud-Doza, M., Islam, A.R., Rahman, M.M., 2020. COVID-19 pandemic, socioeconomic crisis and human stress in resource-limited settings: a case from Bangladesh. *Heliyon* 22, e04063.