

# Sustainable Livelihoods for Equine Owners: Insights of Working Equines on Pilgrimage Route in Uttarakhand

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## ABSTRACT

Working equines play an important role in the economy and culture of Uttarakhand. The present study on working equines in Uttarakhand found that many of these equids are not well-managed, which is leading to a decline in their health and welfare. They are used for transportation, pilgrimage and tourism. However, the use of working equines in Uttarakhand is facing several challenges, including lack of access to veterinary care, lack of insurance facility, lack of awareness, ignorance and limited opportunities for training, animal identification system and rest spots and veterinary camps. The study recommends awareness campaigns and training for equine owners and provision of better facilities to improve the management of working equines in Uttarakhand. In addition, access to credit, market linkages and government support are important for the sustainable livelihood of equine owners. The administrators, policy planners and other stakeholders can help to ensure that working equines in Uttarakhand are well-managed and that their owners can sustain their livelihoods by implementing the recommendations of the study. This will not only benefit the animals, but it will also benefit the pilgrimage, tourism, local economy and the environment.

**Key words:** Equine, Equine welfare, Management practices, Working equines.

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## INTRODUCTION

Equines were the reliable and quickest means for transportation for humans before the invention of motorized vehicles. They are strong, sure-footed and able to carry heavy loads over long distances in difficult and hilly terrain. Horse-based tourism is an important and growing sector of the tourism industry, but it has not been extensively researched (Helgadóttir and Sigurðardótti, 2008). Equine tourism includes nature-based or outdoor tourism, adventure tourism, rural tourism, sport tourism, tradition and heritage tourism, and event tourism (Chevalier and Evans, 2015; Helgadóttir, 2015; Sigurðardóttir, 2015). Cultural heritage tourism is another sub-sector which is experiencing significant growth (Helgadóttir, 2006).

The majority of the equine population comprises of ponies that are owned only by socially and economically deprived landless, marginal and small farmers (Fazili and Kirmani 2011). Working equines, including horses, mules and donkeys serve as indispensable contributors to pilgrimage and tourism in India, particularly in regions characterized by challenging terrains. These equines play a crucial role in transporting pilgrims and tourists to sacred sites such as the *Char Dham Yatra* in Uttarakhand, a pilgrimage that attracts millions of tourists each year. The majority of working equines which comprise mostly working mules are owned by individuals who use them as their sole means of income and source of livelihood to sustain often large and extended families living in the hilly and difficult terrain. The economic significance of equine-related activities cannot be understated as the income generated by the owners of these

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working equines contributes to the local economy, especially in rural and hilly regions. However, challenges persist, including concerns about the health and welfare of these animals, the need for proper infrastructure and facilities, and the importance of awareness and training programs to improve management practices.

Demographic profile of equine owners, housing and feeding practices of equines, ownership and utilization pattern, constraints and challenges faced on use of equines in pilgrimage affect the overall management and welfare aspects of working equines. Understanding the social and cultural context of the role that working animals fulfill is crucial to improving their welfare. This is particularly pertinent in the case of working equids who provide vital support for

human livelihoods (Haddy *et al.*, 2020). The gap between recommended and prevailing management practices followed by the equine owners will help to formulate strategies for awareness, training, support programmes for the equine owners and health and welfare aspects of working equids. Keeping these facts in mind, this study was undertaken on working equines on *Char Dham Yatra* route in Uttarakhand to analyze the prevailing management practices followed by equine owners and to study their utilization for sustainable livelihood.

## MATERIALS AND METHODS

The study was conducted purposively in Uttarakhand (India) to comprehensively assess the status and challenges of working equines in the state. Firstly, key districts, including Rudraprayag, Chamoli and Uttarkashi on Char Dham route in Uttarakhand were strategically selected to ensure a representative sample considering geographical and socio-economic diversity. Stratified random sampling was utilized for demographic profiling, ensuring representation across districts. Ethical considerations were ensured through informed consent, confidentiality, and adherence to ethical guidelines.

Demographic profiling was conducted through surveys and personal interview method from 138 equine owners to gather information on age, caste, education, family size, experience in equine husbandry, and income using semi-

structured and pre-tested interview schedule. To assess management practices direct observations, interviews, and surveys with equine owners were conducted focusing on health and management aspects through site visits to base camps and villages. Ownership and utilization patterns were documented, emphasizing economic contributions and impacts during *yatra* and *non-yatra* seasons. Challenges and recommendations were identified through stakeholder interviews, addressing issues such as access to veterinary care, lack of insurance, awareness gaps, and limited training opportunities. The study employed statistical tools for quantitative data analysis and thematic analysis for qualitative data to derive comprehensive conclusions.

## RESULTS AND DISCUSSION

An overall view on findings of the management practices of working equines followed on *Char Dham* route in Uttarakhand is given as follows.

### Demographic Profile of Equine Owners

Present study on working equines on *Char Dham Yatra* route in Uttarakhand found that the majority of working equines are owned by individuals as sole means of income and source of livelihood. A perusal of Table 1 indicates that majority of respondents (72.46%) were middle aged, mostly belonging to scheduled caste (62.32%). Most of the respondents 44.20 % were educated upto middle school, followed by primary

**Table 1:** Demographic profile of respondents

Characters	Category	Percentage of respondents			
		Rudraprayag (n1=78)	Chamoli (n2=18)	Uttarkashi (n3=42)	Total (n=138)
Age (Years)	Young (<26)	11 (14.10)	2 (11.11)	10 (23.81)	23 (16.67)
	Middle-aged (26-43)	59 (75.64)	(66.67)	(69.05)	(72.46)
	Old (>43)	8 (10.26)	(22.22)	(7.14)	(10.87)
Category	SC	59 (75.64)	1 (5.56)	26 (61.90)	86 (62.32)
	OBC	2 (2.56)	17 (94.44)	12 (28.57)	31 (22.46)
	General	17 (21.79)	0 (0.00)	4 (9.52)	21 (15.22)
Education	Illiterate	9 (11.54)	2 (11.11)	3 (7.14)	14 (10.14)
	Literate	3 (3.85)	3 (16.67)	4 (9.52)	10 (7.25)
	Primary	14 (17.95)	8 (44.44)	3 (7.14)	25 (18.12)
	Middle	36 (46.15)	4 (22.22)	21 (50.00)	61 (44.20)
	High school	9 (11.54)	1 (5.56)	2 (4.76)	12 (8.70)
Family size	12 <sup>th</sup> & above	7 (8.97)	0 (0.00)	9 (21.43)	16 (11.59)
	Medium (4-7)	72 (92.31)	15 (83.33)	36 (85.71)	123 (89.13)
	Large (>7)	6 (7.69)	3 (16.67)	6 (14.29)	15 (10.87)
Experience in equine husbandry(Years)	Low (<9)	5 (6.41)	3 (16.67)	12 (28.57)	20 (14.49)
	Medium (9-25)	66 (84.62)	11 (61.11)	28 (66.67)	105 (76.09)
	High (>25)	7 (8.97)	4 (22.22)	2 (4.76)	13 (9.42)
Income/day per trip in <i>yatra</i> season	Low (<800 Rs)	1 (1.28)	0 (0.00)	2 (4.76)	3 (2.17)
	Medium(800-2200 Rs)	71 (91.03)	4 (22.22)	37 (88.10)	112 (81.16)
	High (>2200 Rs)	6 (7.69)	14 (77.78)	3 (7.14)	23 (16.67)

Figures in parentheses indicate percentage values.

(18.12%), higher secondary and above (11.59%) and high school (8.70%). Majority of equine owners (76.09%) were having medium level of experience (9 to 25 years) in equine husbandry, having medium family size (89.13%), i.e. of 4 to 7 members per family and 81.88% had daily income between Rs 800-2200 during *yatra* season.

Socio-economic profile of equine owners indicates that most of the equine owners were educated and were having reasonable experience in upkeep and management of equine, which will be very useful in developing any training programme on equine husbandry and management. Majority of equine owners were having medium level of family size and family members were mostly dependent on the equine husbandry for their livelihood. During the *yatra* season of about six months, most of the equine owners 81.16% earn Rs 800-2200 per day (upto 0.75-1.25 lakh Rs/ equid/year), the income on which their family sustains for rest of the year for fulfilling the family needs. Demographic profile of equine owners is a valuable tool for understanding their needs and developing targeted interventions to improve the welfare of working equines, design training programmes that are tailored to the specific needs of equine owners, create awareness-raising campaigns on animal welfare and advocate for policies that support the welfare of working equines.

### Management Practices followed by Equine Owners

Equines exhibit strong bonds not only within their own species but also with humans. They are efficient users of low quality, high fiber food and can tolerate up to 30% dehydration (Yousef, 1991). Compared to production animals they require less quantity of food and have the ability to conserve more energy. They drink infrequently and irregularly. This makes them suitable animals for harsh environments under difficult working conditions (Swai and Bwanga, 2008).

As illustrated in Table 2, deworming was done regularly by most of the equine owners (46.15%) in Rudraprayag using anthelmintics, whereas in Chamoli (55.56%) and Uttarkashi

(35.71%) respondents were occasionally giving anthelmintics. However, remaining 32.61 % respondents were not providing any deworming tablets but most were giving digestive herbal mixture for deworming their equines. Vaccination in equines was not a regular practice among equine owners, only 8.70 % respondents vaccinated their equines for tetanus only. Daily cleaning of equines was practiced by 28.99 % respondents, whereas 71.01 % respondents were cleaning their animals sometimes and when needed. All the respondents were regularly shoeing their equines. Regular grooming was practiced by 72.22 % respondents in Chamoli and 37.18 % in Rudraprayag and 33.33 % in Uttarkashi. Various types of wounds, injuries, rope marks and saddle sores were observed in about half of the equines surveyed, but these problems were mostly managerial which could be cured by proper management.

Welfare issues are heightened in developing regions, where resource-poor farmers focused on their own survival lack the means or inclination to ensure proper care for their animals (Wilson, 2002). Working equines were experiencing multiple welfare problems and the major constraints that contribute for poor welfare treatment (Zekarias and Tesfaye, 2019). The saddles were locally made using old clothes, rug and other material enclosed by polythene sheets. There is no proper ventilation in the stables and they are mostly overcrowded. The absence of proper pack saddles and lack of rest for working equines with back sores compounded the problem. Back sores and hind leg bruises could be due to the lack of management given by the owners and the nature of the loads they carry.

### Housing Pattern of Equines

Mostly temporary sheds made of polythene sheet, bamboo and other local material like tins, bricks were observed at base camps on the *yatra* route where equines were maintained by the equine owners. In most cases the sheds for equines at base camp had proper ventilation as sheds were mostly temporary and no surrounding walls were observed. The sheds were mostly open in the sides which equine owners

**Table 2:** Management practices adopted by the respondents

Parameter	Category	Rudraprayag (n1=78)	Chamoli (n2=18)	Uttarkashi (n3=42)	Total (n=138)
<b>Deworming</b>	Never	10 (12.82)	8 (44.44)	27 (64.29)	45 (32.61)
	Occasionally	32 (41.03)	10 (55.56)	15 (35.71)	57 (41.30)
	Regular	36 (46.15)	0 (0.00)	0 (0.00)	36 (26.09)
<b>Vaccination</b>	Never	69 (88.46)	18 (100.00)	39 (92.86)	126 (91.03)
	Sometimes	9 (11.54)	0 (0.00)	3 (7.14)	12 (8.70)
<b>Cleaning</b>	Sometimes	55 (70.51)	12 (66.67)	31 (73.81)	98 (71.01)
	Regular	23 (29.49)	6 (33.33)	11 (26.19)	40 (28.99)
<b>Shoeing</b>	Yes	78 (100.00)	18 (100.00)	42 (100.00)	138 (100.00)
<b>Grooming</b>	Sometimes	49 (62.82)	5 (27.78)	28 (66.67)	82 (59.42)
	Regular	29 (37.18)	13 (72.22)	14 (33.33)	56 (40.58)

Figures in parentheses indicate percentage values.



used to cover with polythene sheet or tin during the night. The floor of these temporary stables was uneven and made of stones in most of the cases which was not congenial to the equids. At base camps some of the equine owners rented space and shed from local people for Rs. 1000-3000 per month for staying and keeping their animals during the *yatra* season.

In villages permanent sheds made of stone wall and bricks with thatched roof or covered with tins were observed. At most of the places equine owners were keeping the animals in the ground floor of their houses and were staying in upper part on first floor. Housing provided to animals was not having proper height in most of the cases. During the winter season nearly all the equine owners keep the animals in the sheds which were mostly closed and lacked the ventilation. The sheds were not cleaned regularly by most of the equine owners. At most of the places stone or cemented floor was observed without suitable provision of drainage in sheds. Disinfectants were rarely applied by the equine owners in the sheds. The temporary sheds are not providing a safe and secure environment for the animals and the permanent sheds are not being properly maintained. This can lead to a number of health problems for the equines including injuries, disease, heat stress and poor hygiene.

### Feeding Practices

The feeding pattern of equines in Uttarakhand is largely dependent on the availability of fodder and the season. During the *non-yatra* season, when there is more availability of fodder in the villages, equines were left for grazing during off hours. Equines are fed dry fodder, gram, wheat flour and a concentrate mixture. The dry fodder is mostly locally available, such as wheat and rice straw. The gram and wheat flour are also locally available and the concentrate mixture is typically purchased from a feed store. The equine owners were feeding 5-6 kg dry fodder which is locally available like wheat and rice straw. They also provided ½ kg-1 kg gram and ½ kg wheat flour. Besides that, they were providing 2-3 kg/

animal/day concentrate mixture which is mostly purchased by the equine owners. The animals are also given access to drinking water twice daily. In the villages, equines were left for grazing during off hours.

However, during *yatra* season the owners feed working equines purchased green grass 8-10 kg/animal/day at high rates of about 10-12 Rs/kg. The feed is provided in equally distributed ration twice a day generally in the morning before the start of the work and in evening or night after the working hours. Mostly the equine owners provided water twice daily to the animals. Additional supplements like Jaggery 250 g/animal/day (69.56 %) and/or oil 100-150 g/animal (63.0%), mineral mixture and salt were provided to mules and horses by 46.4 % respondents during working season. Besides 42.0 % equine owners were providing homemade or purchased herbal digestive mixture to their animals regularly. Feeding practices for working equines in hilly terrain are a delicate balance between utilizing available natural resources, supplementing with locally sourced feeds, and adapting to the challenges posed by the landscape and changing seasons. A well-structured and seasonally responsive feeding regimen is crucial to ensuring the health, stamina and productivity of working equines in these challenging environments. There are a number of equine ailments that are commonly seen that could be prevented if dietary rations were better understood by those who administer ration (Leahy *et al.*, 2010).

### Healthcare Practices

Equine keepers were mostly ignorant about preventive healthcare of their animals. As long as the horses and mules are working properly wounds and injuries were of least concern to most of the equine keepers. Colic is one of the prominent healthcare issues in working equines. Improper feeding, use of whole gram, other grains as feed, irregular feeding patterns result in occurrence of colic in working equines. Equine keepers occasionally go to veterinary hospital for treatment.

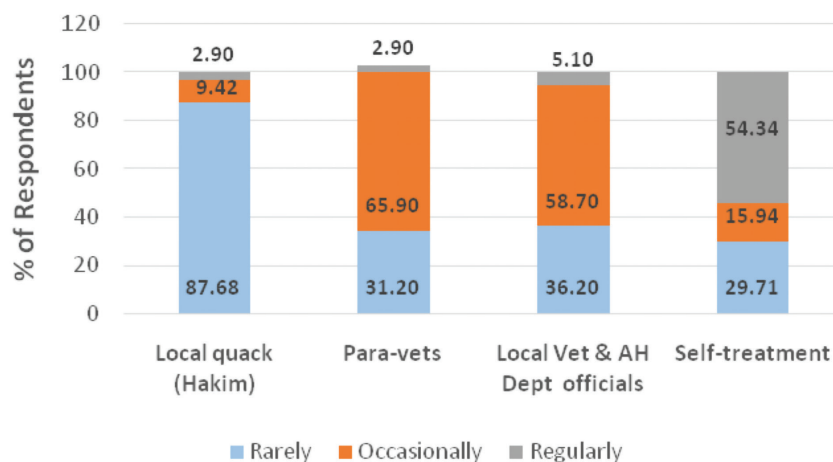


Fig. 1: Management of equine health related issues by equine owners

As depicted in Fig. 1, during *yatra* season equine owners avail the services at veterinary camps by government. Assistance of veterinarians was sought occasionally by 58.70 % and regularly by 5.10 % respondents mostly during veterinary camps and at the base hospital, whereas para-vets were providing assistance to 65.90 % respondents. Most of the equine owners (54.34 %) were doing treatment of their equids by themselves mostly using ITKs. The saddles mostly made of old cloths, rugs and blankets were rarely cleaned and dried. The harness locally made by the equine keepers usually cause damage to neck girth, back and legs of the animal. The majority of the sores and wounds are caused due to overloading, poor quality of harness material, saddle.

### Ownership and Utilization Pattern of Equines

Equines especially mules play an important role in the economy of Uttarakhand. They are strong, sure-footed and source of employment, transportation and tourism in the hilly areas. Mules are often used in pairs and a pair of mules can cost between Rs 80,000 and Rs 1.15 lakh. Most equine owners in Uttarakhand own a pair of mules. During the *Char Dham Yatra*, which takes place from April to October every year, mules and ponies are used to transport pilgrims and tourists to the four holy sites of Kedarnath, Badrinath, Gangotri and Yamunotri. They also carry agricultural produce from farms and construction material and goods in the hills during the *non-yatra* season.

The working equines carry one person on their back and usually carry load upto one quintal as pack. They are used for transporting pilgrims and goods on *yatra* route at Kedarnath, Yamunotri and Hemkund Sahib. The working equines generally travel 20-24 km distance per day. The shortest distance on the *Char Dham Yatra* route is about 6 kilometers from Jankichatti to Yamunotri. The cost of a mule ride on this route is Rs. 700-900 for one way and Rs. 1200 to 1500 for a round trip. The cost of a mule ride from Sonprayag to Kedarnath, which is about 20 kilometers, is Rs. 2000 to 2200 for one way and Rs. 3500 to 3700 for a round trip. For the 19-kilometer track from Govindghat to Hemkund Sahib, mule owners charge Rs. 3800 for a round trip and Rs. 2200 for one way. The work of transporting pilgrims and tourists during the *Char Dham Yatra* is seasonal, but it provides a significant source of income for equine owners to sustain during winter season, when there are fewer work opportunities. During the *yatra* season, equine owners can earn about 0.75 to 1.25 lakh rupees per mule. Although the rates for carrying tourist and pilgrims are fixed by the district administration and *yatra* committee in event of less number of pilgrims the people bargain with equine owners and give less than the prescribed fees for carrying the pilgrims on *yatra*.

After the natural disaster in Uttarakhand low congregation of tourists adversely affected the livelihood of the equine owners leading to decline in earning opportunities. Recently the availability of helicopter services to the holy places also affecting the opportunities for the equine owners.

The earnings of equine keepers on the *Char Dham Yatra* route vary significantly throughout the year. After the conclusion of the *yatra* season, the demand for equine services decreases, impacting the earning opportunities for equine keepers. During the *non-yatra* season the equine owners return to their native villages and they use equines in transportation of farm produce to village and transporting of construction material and other goods in villages. However, the overall earning potential during this period is lower compared to the peak *yatra* season. The earnings of equine keepers on the *Char Dham Yatra* route are heavily dependent on the seasonal demand driven by pilgrimage and tourism. The fluctuations in earning opportunities underscore the challenges faced by equine owners in sustaining their livelihoods throughout the year.

### Challenges Faced on Usage of Equines in Pilgrimage

Equine owners and administration are facing several challenges on equines usage on pilgrimage route in Uttarakhand. These challenges include:

**Lack of access to veterinary care:** Equine owners often have difficulty accessing expert veterinary care for their equines. This can lead to health problems for the animals, which can reduce their productivity and profitability.

**Lack of insurance facility:** Lack of insurance facility for equines on *Char Dham Yatra*. Initiatives need to insure the equids on the *yatra* route.

**Lack of awareness, ignorance and limited opportunities for training:** Equine owners are not aware of suitable saddle, mouth bits and welfare of animals. They do not have opportunities for training on how to care for and manage their animals. This can lead to poor animal welfare, enhanced working of equids, poor management of wounds and decreased productivity.

**Animal identification system:** There is need to provide RFID tags or ear tags for animals to track the record of animals and pass system to ensure that animals are not over worked.

**Rest spots and Veterinary camps:** There is need to establish more rest spots for equines and Veterinary Camps for check-up of equids along the way for animals.

**Extension activities advisory and consultancy services** needs to be provided to equine keepers in the form of packages of practices, schedule of vaccination, deworming and preventive measures.

**Awareness programmes** have to be arranged round the year for adoption of the equine welfare measures. These initiatives should be tailored to community priorities, providing expert insights and feedback.

### CONCLUSIONS

The study on working equines in Uttarakhand reveals inadequate management practices, causing a decline in their health. To address this, the study recommends enhanced training for equine owners, improved facilities and awareness campaigns. Access to credit, market linkages, and government support are crucial for the sustainable livelihoods of equine



owners. The findings underscore the significance of good management for equine health, emphasizing the potential issues like malnutrition, dehydration, injuries and disease resulting from poor practices. Such problems not only shorten equines' lifespan but also reduce their productivity. The study aims to lay the groundwork for future initiatives by emphasizing the intricate relationship between equines and owners. The proposed measures target the root causes advocating for proper training to cover feeding, breeding, healthcare, and housing. Awareness campaigns to educate the public on the importance of caring for working equines. Implementing these recommendations will not only benefit the animals but also contribute to the local economy and environment, fostering overall sustainability.

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