



## Case Study

# Socioeconomic Impact of Livestock Farming: A Case Study of Baitadi and Darchula Districts, Nepal

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### Abstract

Dairy is the oldest staple food, along with fruits and vegetables, for humans. This study investigated the socioeconomic factors influencing milk and dairy production in Baitadi and Darchula districts, Shailyashikhar municipality, and Dilasaini rural municipality, Nepal. Among the 5384 livestock farmers, 100 livestock farmers were randomly selected for the investigation. The findings demonstrated the existence of a subsistence agricultural system for livestock farming with small landholdings. There is a dominance of males over females in decision-making, and workload is common for females. There is a unique practice of management for milk produced during the first three weeks of lactation: 99% of people do not consume milk for 19.81±4.597 mean days; 96% of people do not sell milk; 53% do not sell ghee; 73% of parents refuse to give their kids cow's milk during the first three weeks of breastfeeding; and 16% do not consume ghee because of their tradition. There are various problems in livestock farming, i.e., feed management, low land holding, disease, cost of production, less government support, and lack credit. Feed management was ranked first, whereas lowland holding was ranked second. Worms are the most common disease causing organism seen in livestock in the study area because of the lack of access to improved and well-sanitized barns. Herbal plants are commonly used in disease management. Sociocultural factors directly affect livestock production. Different traditional beliefs, a lack of improved breeds, disease, and feed management have direct impacts on milk production.

**Keywords:** Feed management; Livestock diseases; Livestock farming; Socioeconomic impact; Traditional beliefs.

## Introduction

For thousands of years, dairy products made from milk have been a staple of human diets; cheese production began approximately 7,000 years ago. Milk production is considered the oldest subsistence farming system in Nepal. Raw cattle milk contributes 3.9501%, and buffalo raw milk contributes 7.28% to the AGDP of Nepal (MoALD, 2023). The total requirement of milk in Nepal per person per year is 91 liters, but the production of milk is only 88 liters per person on a yearly basis (Economic Survey, 2023). In Nepal, 57.3% of the population is engaged in agriculture.

Milk production is low in Nepal because of the cattle and buffalo populations; only 16% and 26%, respectively, are productive. Owing to religious beliefs, there is a larger unproductive population of dairy animals in Nepal than productive animals. Culling unproductive cows are more challenging, which significantly affect the unproductive population of cows due to religious constraints (Khanal et al., 2022). Although dairy products are important substitutes for commodities and exportable commodities, the government of Nepal has reduced the tax on infrastructure imports to promote Nepal's dairy products (Bhandari, 2015). The dairy sector has high potential to

connect cash flows from urban to rural areas, creating employment opportunities for the rural population (Shingh *et al.*, 2020). Dairy products help small-scale farmers in rural areas improve their livelihoods; they can also be a major source of income for small-scale farmers, which promotes their economic growth (Reg, 2017).

Livestock farming helps to produce various products, such as milk, meat, and manures. Milk is the white fluid produced by females to feed their offspring and helps them in the initial phase of growth and development. This is a specific characteristic of mammals (Singh, 2014). Udder has glands that produce milk. The milk produced during parturition is known as colostrum. Milk is considered a highly nutritious feed, mostly for growing offspring, and contains high amounts of vitamins, proteins, fats, and lactose. Milk commonly contains approximately 85% water, 3.5% protein, 3.7% fat, 4.9% lactose, and 0.72% ash (Mourad & Bettache, 2014). Compared with mature milk, colostrum milk contains greater amounts of growth factors, hormones, nonprotein nitrogen, peptides, fat, minerals, cytokines, nucleotides, and lactose. A study showed that colostrum is consumed as a health food or for medicinal purposes. Animal colostrum is believed to be an important component of the growth and development of children (Roy, 2021). The consumption of dairy products is potentially effective in rural areas of Nepal because of subsistence farming and small-scale farming, which also have positive effects on the growth and development of children compared with those of children in urban areas in terms of the quality and quantity of milk consumed (Broaddus-Shea *et al.*, 2020). The major challenges in Nepal are the unorganized dairy sector; unplanned distribution; and the fact that milk is only used by local tea shops, restaurants, and sweet shops, which do not focus on the production of dairy products on a large scale (Shingh *et al.*, 2020). Milk production in Nepal faces a variety of challenges, including feed management, diseases, topography, social problems, a lack of improved breeds, migratory labour, and farmers' economic conditions. The quantity and quality of milk are heavily influenced by the lactation stage and season. Relative humidity and temperature are the major components of buffalo farming, as they determine the quality of milk (Poudel *et al.*, 2019). Mastitis causes a major loss of milk yield of approximately 8320 million and 4420 million Nepalese rupees due to subclinical and clinical mastitis, respectively, in various parts of Nepal (Kharel *et al.*, 2023). Inputs significantly affect the quality of milk; the source of pasture and grazing management should be well managed to increase the nutritive value and quality of milk (Banskota *et al.*, 2020). The far-western part of Nepal is the least developed in terms

of modern agriculture and technological improvement. Farmers in the western region have unique cultural practices and beliefs regarding the cultural practices of their religion. Other factors affecting production and distribution are environmental factors and the adaptation of practices according to modern farm mechanization.

Socioeconomic status refers to the assessment of the social and economic status of individuals in relation to others (Rajput *et al.*, 2023). It affects the accessibility of resources, patterns of livelihood, and security of food and nutrition. The dairy sector plays a crucial role in promoting rural development and increasing farmers' income (Kumar & Kumari, 2021). In India and Nepal, cows have a reverse effect on Hinduism, which influences the preference for cow milk over alternative dairy sources such as buffalo milk. Milk and dairy products are significant in the cultural traditions of contemporary Hindus, as dairy sweets are presented during weddings, birthdays, and all religious festivities (Bhaskaran, 1996). Livestock farming is the backbone of the study area; most households are involved in livestock farming for their livelihood. This study aims to investigate the social factors affecting the production of milk and milk products and determine the system of farming livestock along with its problems in management and the exclusion of the economic conditions and potential of small-scale farmers in the mid-hill, far-western region of Nepal. Sociodemographic information of rural parts of Nepal and the impact of various factors on the production of dairy commodities. The impacts of yield loss and nutrient loss are due to the various unique practices of managing the first three weeks of lactation and the use of colostrum to produce dairy products, such as the practice of nutrient conservation through various ways of managing yield loss during the first stage of parturition due to the practice of not consuming raw milk, mostly in the far-western region of Nepal.

## **Method and methodology**

### ***Study Area***

The study was carried out in the Baitadi and Darchula districts, which are located in the mid-hill region of western Nepal and have areas of 125.28 km<sup>2</sup> and 117.8 km<sup>2</sup>, populations of 22966 and 21807, and literacy rates of 85.4% and 84.4%, respectively (Table 1). Nepal is a landlocked country with high variation in topography. The study was conducted in Dilasaini-rural and Shailyashikhar-municipalities (Fig. 1). The study area is considered to be the place of high religious belief with the maximum population of Hindu religions, and approximately 97.4% of the population belongs to Hindu according to the 2021 census Nepal.



Fig. 1: Map of Nepal with the study area.

Table 1: Description of the study

Features	Description	
	Shailyashikhar Municipality	Dilashaini Rural-Municipality
Ecological zone	Mid-hill	Mid-hill
Area	117.8 km <sup>2</sup> (45.49 sq. mi)	125.28 km <sup>2</sup> (48.37 sq mi)
Population	21,807	22,966
Literacy rate	84.4%	85.4%

**Data Collection Methods**

*Primary Data*

Primary data were collected from farmers involved in livestock farming via direct interviews and key informant interviews. The questionnaire included multiple-choice questions.

*Secondary Data*

The secondary data used in our manuscript were collected from relevant sources, that are document and publication of MoALD, CBS, AITC.

**Sample and Sampling Technique**

Twenty farmers were randomly selected for pretesting, and questionnaires were prepared after evaluation. A complete enumeration of all livestock farming cannot be performed due to time and lack of funding. Therefore, a definite number of respondents that are representative of the entire

population were randomly selected. Farmers who were part of livestock farming were chosen as samples. The study involved all participants who provided verbal informed consent before being included. Among the 5384 livestock farmers, one hundred male and female livestock farmers were selected from the sampling frame with a 10% margin error (Adam, 2020; Ghimire & Shah, 2023) (equation 1).

$$n = \frac{(1-p)Z^2 * p}{1 + \frac{p * Z^2 (1-p)}{e^2 N}} \dots \dots \dots \text{(equation 1)}$$

where,  
 n= corrected sample size  
 N= population size  
 e= margin of error (MoE).

**Ethical Approval**

The study protocol was reviewed and approved by institutional review boards (IRBs) (Grady, 2015). The participants gave their oral agreement to take part in the study before any data were collected. Anonymized participant data were obtained. The leaders of the farmers gave written, informed approval for the poll results to be published on their behalf. This study did not involve any human or animal subjects requiring ethical approval.

**Consent to Participate**

Every individual who participated in the study gave informed permission. Before being included in the study, all participants gave their verbal informed agreement, and this consent process was authorized by the institutional review boards (IRBs) (Grady, 2015).

**Statistical Analysis**

Data were collected both quantitatively and qualitatively. Data were collected via direct interviews with respondents via a digital data collection tool called the kobo collection. The kobo toolbox was used for data collection. The analytical tool/software used for data analysis was SPSS (Statistical Package for Social Science) version 30.0.0.

**Results and Discussion**

**Sociodemographic Data**

Recording socioeconomic variables is critical in the surveyed study area, as they greatly influence technology

transfer, adoption, awareness, and understanding of the needs of the study site's respondents. The surveyed areas in Baitadi and Darchula had the highest proportion of female respondents (69%). The majority of respondents were between the ages of 26 and 55. Sixteen percent of the respondents were in the 18–25 years age group, 21% were in the 26–35 years age group, 25% were in the 36–45 years age group, 22% were in the 46–55 years age group, and 16% were in the over 56 years age group. Among the surveyed respondents, 37% were uneducated, 26% were primary, 27% were secondary, 5% were graduates, and 5% were undergraduates. As reported by CBS (2021), the literacy rates in Shailyashikhar Municipality and Dilsaini Rural Municipality are 84.4% and 85.4%, respectively. Most respondents (59%) lived in a joint family, 39% lived in a nuclear family, and 2% lived in a grandparent family. The majority of households (approximately 78%) were headed by males, whereas only 22% of households were headed by females. The mean age of the household heads was 52±12 years (Table 2). In our surveyed area, the majority of homes belonged to the Hindu faith. The majority of respondents (59%) belonged to the Chhetri ethnicity group. The remaining 27% of the respondents were identified as Brahmins, whereas 14% were identified as Dalits. A similar case of male dominance was observed in the Nuwakot district of Nepal (Thapa *et al.*, 2020).

**Table 2:** Sociodemographic characteristics of the study area.

Socio demographic data	Percentage (%)	Standard Deviation	Mean
Gender	female	69.0	
	male	31.0	
Age Group	18-25	16.0	
	26-35	21.0	
	36-45	25.0	
	46-55	22.0	
	56 and above	16.0	
Education Qualification	graduate	5.0	
	primary level	26.0	
	secondary level	27.0	
	undergraduate	5.0	
	uneducated	37.0	
Family type	grandparent family	2.0	
	joint family	59.0	
	nuclear family	39.0	
Gender of household head	female	22.0	
	male	78.0	
Age of household head		12	52
Religion	Hinduism	100.0	
Ethnicity	Bahun	27.0	
	Chhetri	59.0	
	Dalit	14.0	

**Chi-square gender of household head and ethnicity with different variables**

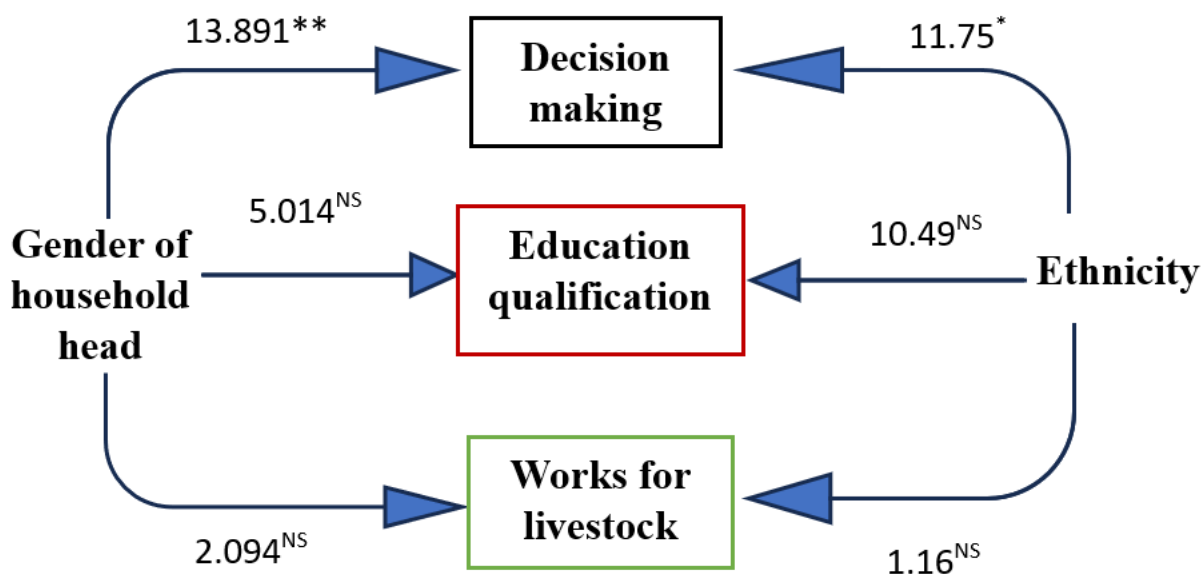
The chi-square associations of sex and ethnicity with different variables are shown in Fig. 2. The gender of the household head is significantly ( $p \leq 0.01$ ) associated with decision-making but is not significantly associated with education qualifications or work for livestock. The ethnicity of the respondents was significantly ( $p \leq 0.05$ ) associated with decision making; however, it was not significantly associated with educational qualifications or work for livestock (Fig. 2).

**Major Source of Income**

Many of the respondents in our surveyed area were engaged in agriculture. Most individuals (44.2%) reported agriculture as their main source of income (Table 3). Agriculture plays a vital role in driving economic growth, contributing to approximately 4% of the global gross domestic product (GDP). In the least developed nations, it can constitute more than 25% of the GDP (Sunjoyo, 2023). Remittance is the next major source of income at 12.9%, indicating the importance of money sent abroad (Table 3). Business and salary were also major sources of income, accounting for 11.6% and 11.2% of the total respondents, respectively (Table 3). Government services, labor, and pensions contributed 8.5%, 8%, and 3.6%, respectively, to the source of income for households (Table 3). Small enterprises play a crucial role in driving economic progress in developing countries through employment, innovation, and local development (Saha et al., 2023). Remittances are a major cause of the decrease in the number of laborers.

Many youths in Nepal are migrating to different countries to generate income, which significantly affects human resource availability and does not contribute to agriculture (Chhetri et al., 2020).

The respondents had average land holdings of  $10.66 \pm 13.750$  ropani,  $6.42 \pm 3.72$  animals,  $1.37 \pm 0.581$  milking animals, and  $3.97 \pm 2.089$  liters of milk each day. According to CBS (2021), the average landholding of the farmer was 10.81 ropani. In the study region, the majority of the people raised cattle, representing 35.1% of the livestock population. A total of 34.2% of the goats, 27.6% of the buffaloes, 2.2% of the poultry, and 0.9% of the other livestock were raised in the studied region (Table 4). Among the 100 respondents, the mean lactation period of livestock was  $12.24 \pm 2.123$ . Among all milk produced, 67.6% was used for household consumption, where only 46 farmers outperformed the mean of  $2.98 \pm 1.513$  liters of milk sold per farmer per day in the season, whereas the mean prices of cattle milk and buffalo milk were  $70.77 \pm 10.175$  and  $78.95 \pm 5.066$  out of 13 and 43 responses, respectively (Table 4). The remaining 32.4% were sold on the local market. Among the milk sold, 48.3% was sold to local tea shops or hotels, 27.6% was sold to dairies, and 24.1% was sold directly to local consumers (Table 4). The mean income generated from milk production per year was recorded at  $55035.56 \pm 37546.536$  by 45 livestock farmers. According to MoALD (2020), the population of milking cattle exceeds that of milking buffalo, and raw milk production contributes 3.9501% of Nepal's gross domestic product (GDP).



Note: \*Standardized coefficient (alpha) is significant at the 0.05 level; \*\*standardized coefficient (alpha) is significant at the 0.01 level; Ns = nonsignificant

**Fig. 2:** Chi-square associations between the gender of the household head and ethnicity concerning decision-making, education qualifications and who works for livestock.

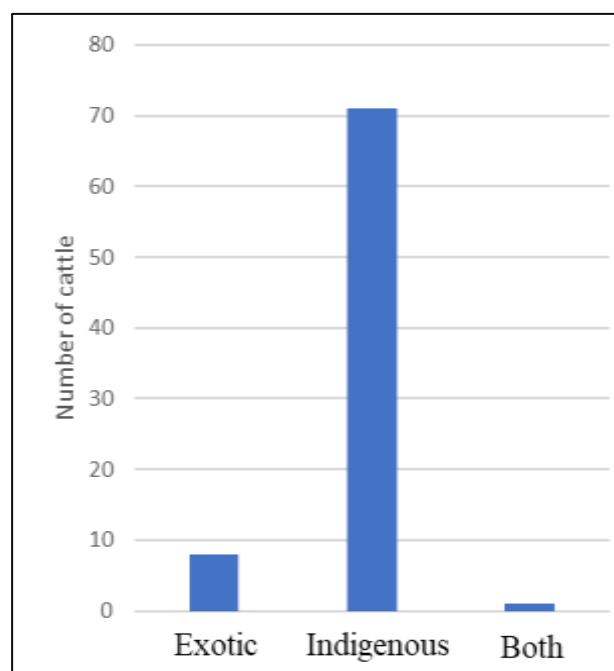
**Table 3:** Major income sources of the farmers.

Major source of income	No. of observation	Percent of Cases (%)	Percent (%)
Agriculture	99	44.2	99.0
Salary	25	11.2	25.0
Business	26	11.6	26.0
Pension	8	3.6	8.0
Remittance	29	12.9	29.0
Government services	19	8.5	19.0
Labor	18	8.0	18.0
Total	224	100	224.0

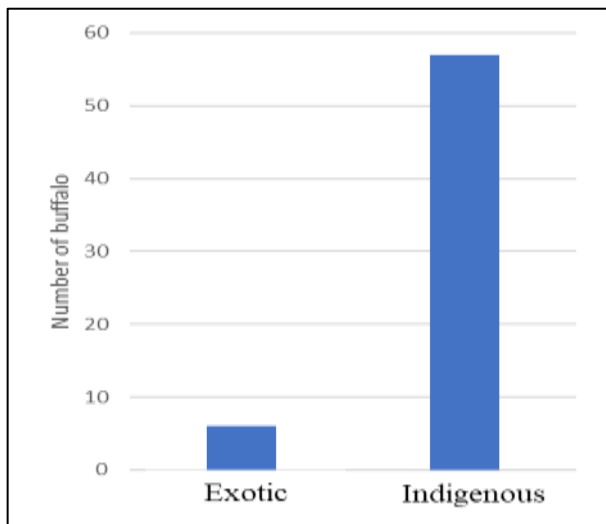
**Table 4:** Population of livestock, milk consumption, and milk marketing.

Livestock Frequencies		Responses	Percent (%)	Percent of Cases (%)
Animal	Cattle	35.10		80.00
	Buffalo	27.60		63.00
	Goat	34.20		78.00
	Poultry	2.20		5.00
	Other	0.90		2.00
	Total	100		228
Milk consumption				
Area	Household consumption	67.60		97
	Sell in neighbour and market	32.40		46.50
	Total	100.00		143.40
Milk marketing				
Field	Dairy	27.60		34.80
	Consumer	24.10		30.40
	Local tea shop/hotel	48.30		60.90
	Total	100		126.10

The majority of the respondents had indigenous local breeds of cattle (71%). In the study area, 8% of the respondents had exotic cattle breeds. Only one percent of the respondents had both indigenous local breeds and improved exotic cattle breeds (Fig. 3). The remaining 20% of the respondents did not rear cattle (Fig. 3). In Nepal's mid-hills, most farmers are involved in goat and poultry rearing. This is because of a higher profit margin. Farmers often rear indigenous breeds of cattle and buffaloes. This occurred because farmers had less access to credit and training (Dhital *et al.*, 2023). In the study area, there was tremendous variation in the rearing of indigenous and exotic buffalo breeds. Fifty-seven percent of the respondents had an indigenous local buffalo breed, whereas only 6% had an exotic, improved breed. Thirty-seven percent of the respondents did not raise buffaloes (Fig. 4). This shows that subsistence-type livestock farming practices were still present. Murrah is the major exotic buffalo breed. There were 38% crossbred buffaloes in Nepal. Lime, parkote, and gaddi are the major breeds in western Nepal that are doing well in terms of milk production (Sharma, 2017).

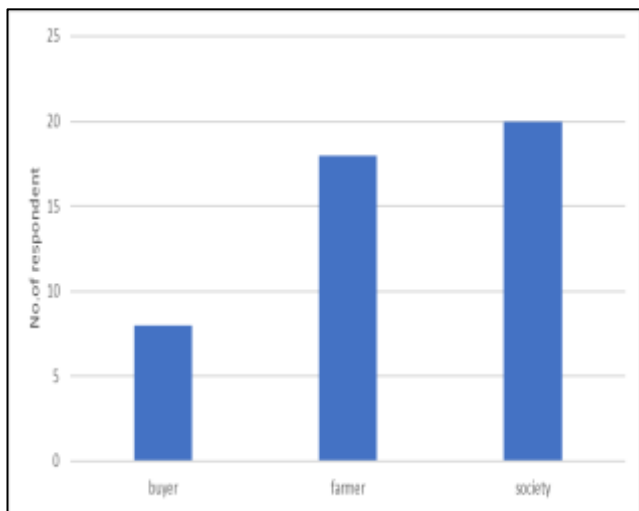


**Fig. 3:** Number of cattle breeds



**Fig. 4:** Number of buffalo breed

In the research area, three bodies are primarily responsible for determining the prices of milk and milk-related products: society, farmers, and buyers. This result showed that 20% of the respondents depended on society to set the price for milk and milk-related products. Eighteen percent of the respondents set their own prices for milk and milk-related products. Eight percent of the respondents were dependent on buyers for the set price of milk and milk-related products (Fig. 5).

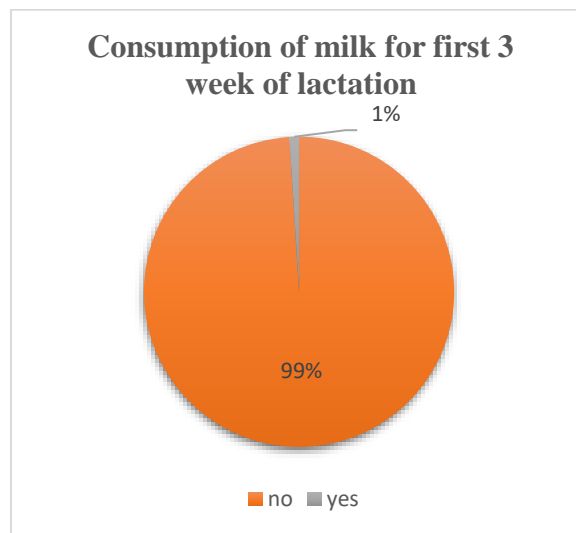


**Fig. 5:** Price determination of raw milk and milk products.

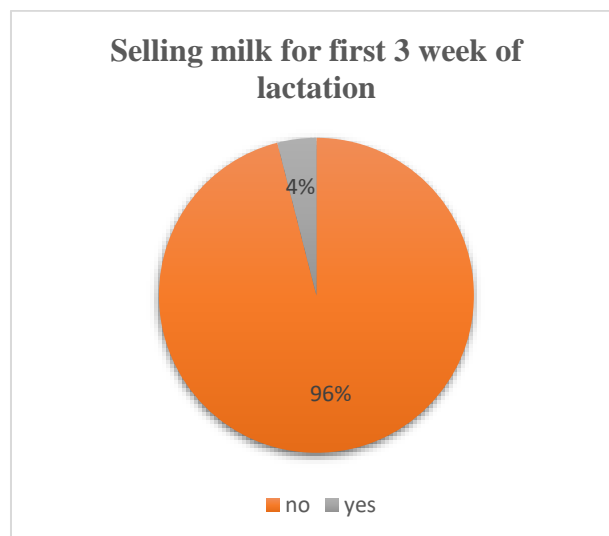
**Unique Management Practices for Milk Produced During the Breastfeeding of Livestock**

According to the chart, 99% of the population did not consume colostrum milk, whereas only 1% of the individuals did (Fig. 6). During the first three days of lactation, people in the study area did not consume milk for  $19.81 \pm 4.597$  mean days. The data suggest that most individuals utilize colostrum milk primarily for the production of milk byproducts rather than for direct consumption. Ninety-six percent of the participants did not sell milk after calving, whereas only 4% did (Fig. 7). Only 3% of people threw milk completely for the first three

weeks of calving, while others used it alternately. Among the different alternative methods, ghee making and calf feeding were the most common, representing 31.4% and 34.7% of the total respondents, respectively. Other uses, such as feeding farm animals, making Khuwa, and making Panner, also accounted for 29.9%, 0.7%, and 0.4% of the total respondents, respectively (Table 6). Livestock husbandry is crucial for food security and the agricultural system in Nepal, with the government focusing on increasing milk production and marketing to improve livestock farmers' livelihoods (Pandey, 2020). Practices such as omitting milk for the first three weeks of lactation will have a direct effect on milk production in the studied areas. Colostrum milk contains fat, protein, casein, whey, lactose, and ash, which are essential to the human body (Arslan *et al.*, 2021). Therefore, avoiding the ingestion of colostrum milk results in a deficit in these essential nutrients in the human body.



**Fig. 6:** Consumption of milk for first 3 week of lactation.



**Fig. 7:** Sell of milk for first 3 week of lactation.

However, they did not consume unprocessed milk but instead consumed milk byproducts. A total of 73% of

people did not even give this milk to their children, whereas only 27% responded by giving it to their children (Fig. 9). According to the chart data, 84% of individuals consumed ghee made after calving, whereas 16% did not consume the butter produced at all (Fig. 8). Ghee production during the first 3 weeks of lactation was recorded as 2.81 kg±2.595, which was obtained from 84 respondents. The mean price of 1 kg of ghee produced was recorded as Rs. 745±83.051 from 40 respondents. 47% of people sell ghee after colostrum milk, whereas 53% do not, indicating that they use it for home consumption (Fig. 10). The low consumption of milk for the first three weeks of lactation suggests a stronger preference for processed milk byproducts, such as ghee. Practices such as prohibiting the sale of ghee and milk during the first three weeks of lactation will directly decrease the income of farmers.

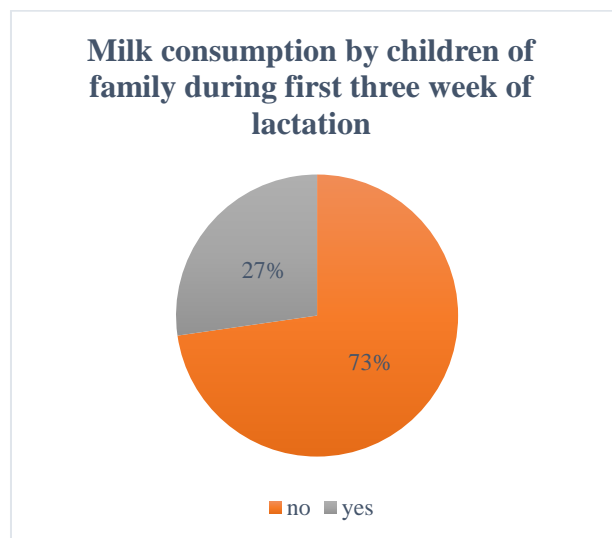


Fig. 9: Raw milk consumption by children of family.

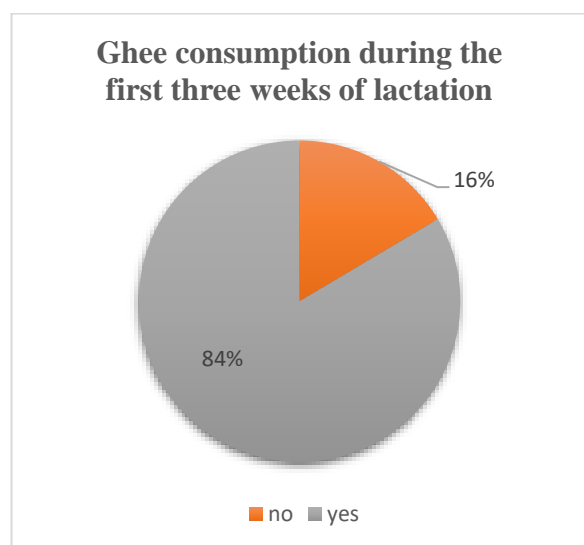


Fig. 8: Ghee consumption during the first three weeks of lactation.

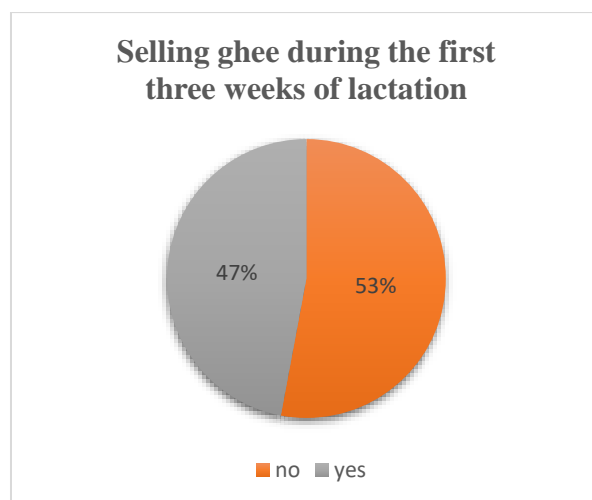


Fig. 10: Selling ghee during the first three weeks of lactation.

Table 5: Perception of colostrum milk consumption

Perception Frequencies		Responses		Percent of Cases (%)
		N	Percent (%)	
Colostrum milk	Religious beliefs	45	31.5	45.5
	Superstition	16	11.2	16.2
	Tradition	72	50.3	72.7
	Scientific region	6	4.2	6.1
	Calf feeding	4	2.8	4.0
Total		143	100	144.4



There could be numerous reasons for the omission of milk during the first 3 weeks of lactation. For these reasons, tradition was the key factor, and 50.3% of the participants said that tradition was the major factor. Religious beliefs also played a significant role in avoiding milk, with 31.5% claiming it to be a reason for avoiding dairy. Superstition caused 11.2% of the participants to avoid consuming milk for the first 3 weeks of lactation. Only a few people avoid milk due to scientific reasons and calf feeding, accounting for 4.2% and 2.8% of the total population, respectively (Table 5). The consumption and ceremonial utilization of dairy products were particularly widespread among Hindu communities, but they seemed to have influenced rural village life in a more general sense. With the decline of Hindus' religious dominance, the production of milk and butter lost its perceived value as a profitable investment (Hoogervorst & Jákl, 2024).

**Alternative Use of Milk Produces During First Three Weeks of Lactation**

The majority of the respondents (73) and the percentage of respondents (66.4%) did not want to change their existing practices of milk selling until the first three weeks of lactation. If prices are high, 20.9% of respondents may switch from their current practices. Some respondents (6.4%) showed an interest in changing their practices if the market facility was good (Table 7). This shows that the availability and quality of milk marketing infrastructure play a key role in influencing farmers' decisions to change their current milk-selling patterns (Bohra et al., 2012). Approximately 3.6% of respondents may change their decisions if they are motivated by others. A total of 2.7% of the respondents could change their practices if they were

influenced by others (Table 7). Targeted awareness programs designed to align with the specific circumstances and requirements of the agricultural community have been successful in altering attitudes towards existing methods (Karki, 2017).

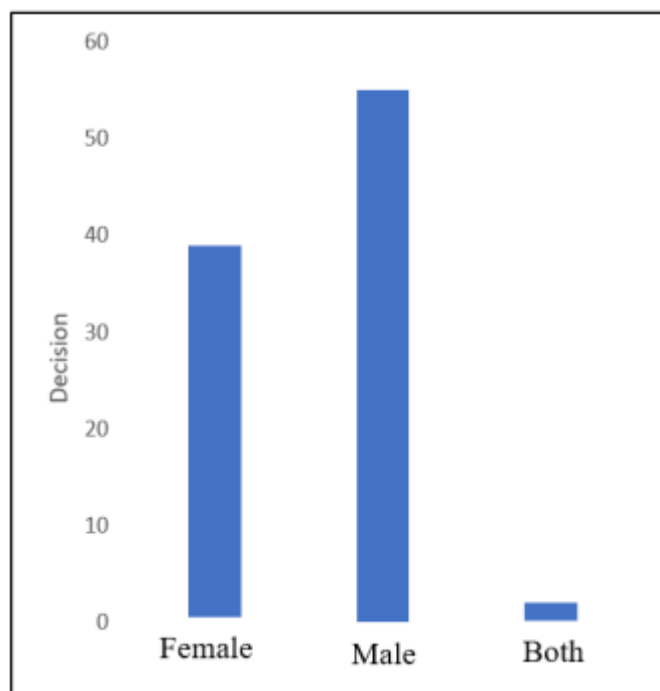
A greater number of males (55%) were involved in making decisions for milk and milk-related products in their families. Second, 39% of females are involved in decision-making regarding their milk and milk-related products in their families. In the two households, both males and females participated in making decisions about milk and milk-related products (Fig. 11). Women are frequently involved in agricultural activities, such as harvesting, fodder collection, milking, and manuring fields, but their participation in agricultural decision-making is typically limited. Most administrative responsibilities are held by men because of the influence of patriarchal society. Similar results were reported by Dhakal et al. (2018). The study revealed that the highest number of females (86%) among the 100 respondents worked for livestock management. After that, 14% of the respondents, both male and female, worked in livestock management (Figure 12). Women are considered major and active contributors to livestock farming management. In rural areas, females are involved in milk processing, cow dung storage, manure collection, caring for diseased animals, and fodder management (Arshad et al., 2013). Women are supposed to be involved in tasks that are relatively more difficult than those of men. Women perform gutter and shed cleaning, fodder collection, and transportation, whereas men perform relatively easier tasks such as selling milk and dealing with the time of buying and selling cattle (Paudel, 2009).

**Table 6:** Alternative use of milk for first three week of lactation

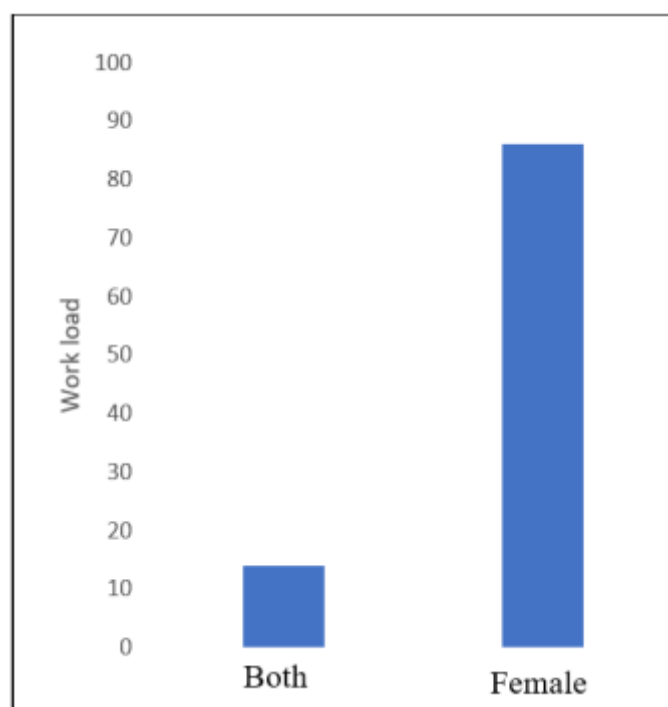
		Responses		Percent of Cases (%)
		N	Percent (%)	
<b>Uses</b>	Making ghee	85	31.40	85.90
	Calf feeding	94	34.70	94.90
	Throw milk	8	3.00	8.10
	Feed animal in farm	81	29.90	81.80
	To make paneer	1	0.40	1.00
	Khuwa	2	0.70	2.00
<b>Total</b>		271	100	273.70

**Table 7:** Will they change their management practices?

<b>Ways of changes</b>		Responses		Percent of Cases (%)
Reason		N	Percent (%)	
	High price	23	20.9	23.0
	High market value	7	6.4	7.0
	Motivation	4	3.6	4.0
	Influence	3	2.7	3.0
	No	73	66.4	73.0
<b>Total</b>		110	100	110



**Fig. 11:** Work load for livestock management.



**Fig. 12:** Decision making on livestock farming and economic activity.

### Ranking of the Problem of Livestock

Different problems in livestock farming were evaluated by pretesting the study area. The variables were ranked according to their major problems. The highest-ranked problem faced by farmers was feed management for livestock because of the low availability of hybrid fodder, less pasture land, and low landholding. Farmers face various problems in livestock farming because of low

landholding and improved farming, as they are ranked as the second major constraint for farmers. Seasonal disease has become a major problem over time. Disease was ranked as the third-most ranked constraint for livestock farming, as it impacts animal health, which directly affects the production of livestock products. The costs of production, less government support, and lack of credit were ranked as the fourth, fifth, and sixth major problems of livestock production, respectively (Table 8), because of the lack of policies, training programs, and grants from the government for subsistence farmers. Feed management is a major problem in livestock farming because of the intensive farming system, low landholdings of farmers, high dependence on roughage and seasonal fodder, and lack of pasture land. A similar result was reported in a study on animal feed resources and management in Nepal (Osti, 2020). Nepali farmers use a multipurpose farming system in which farmers use their land for various purposes of farming, mostly crop production. The Nepali farming system is a subsistence farming system. Farmers do not focus on the production of fodder because they have limited land for crop cultivation, as they have fragmented land (Bhandari, 2023). Livestock death was recorded in more than 60% of the studies of daily production by disease, which is considered a major problem for farmers (Acharya et al., 2024).

**Table 8:** Constraints of livestock farming.

S. N.	Constraints	Rank
1.	Feed management	I
2.	Low land holding and Improved barn	II
3.	Disease	III
4.	Cost of production of livestock	IV
5.	Less government support	V
6.	Lack of credit	VI

**Table 9:** Disease of livestock animals.

S. N.	Disease	Rank
1.	Worm	I
2.	Skin disease	II
3.	External parasite	III
4.	Mastitis	IV
5.	H. S	V
6.	FMD	VI

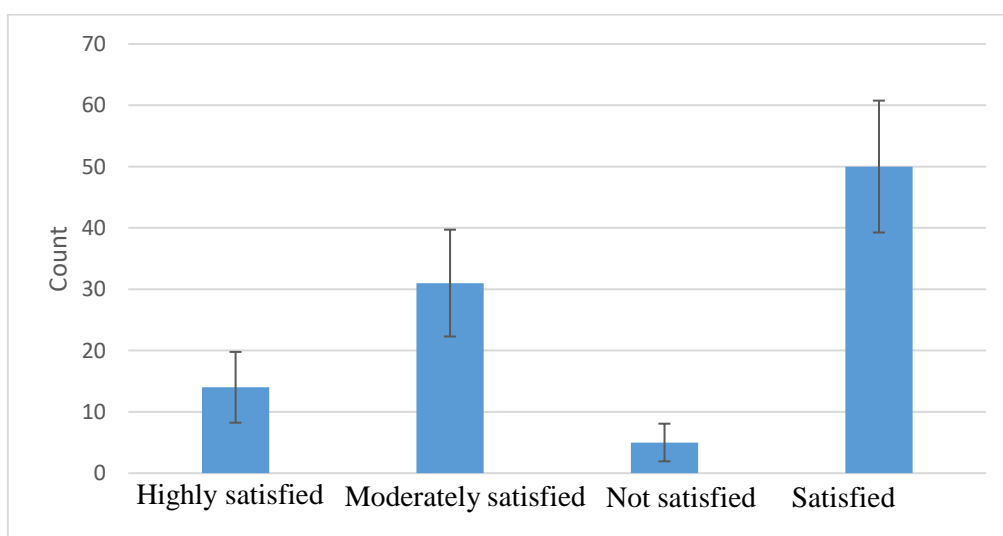
Prior to evaluating the many diseases caused by farm animals, pretesting was performed. Major diseases in the research area that were frequently observed in farm animals were ranked. The most common disease with the highest rank was worms because of the consumption of impure water by animals and the lack of systemic management in barn sanitation. The second most common disease was skin disease, the most common of which is lumpy skin disease, which has been observed in recent years. The third-highest ranked problem was caused by tiny organisms (mites, ticks, and fleas) that damaged the animals on the farm. Mastitis, haemorrhagic septicaemia (H. S), and foot and mouth

disease (FMD) were ranked fourth, fifth, and sixth, respectively (Table 9), as they are the least common in this area. Diseases cause significant damage to livestock production, as they are listed as major constraints on livestock production. Livestock, as well as livestock products, face a variety of diseases that directly affect milk production. According to a report from Tanzania (Chacha, 2024), farmers face different types of diseases on their farm animals due to low sanitation and improved Tanzania (Chacha, 2024). Various internal and external parasites have significant effects on livestock, as it is considered the major disease, along with foot and mouth disease, in buffaloes, mostly in various parts of Nepal, as reported in a study of major diseases faced by livestock farmers in Nepal (Poudel *et al.*, 2020). Lumpy skin disease has recently been considered a major threat to livestock production, as it has a major effect on cattle and buffalo. It is a common and fast-spreading disease, also known as transboundary disease, in cattle and buffalo, as reported by Pal *et al.* (2024). Mastitis is commonly observed after 10 weeks of calving, causing significant damage to livestock production. As reported by Kharel *et al.* (2023), approximately 19% of the damage is socioeconomic in nature.

Descriptive statistics were used to examine the specific variables. The results revealed that the number and percentage of responses regarding the use of homemade medicine were 86% and 55.5%, respectively. The farmers used various types of medicinal herbs and organic medicines to treat livestock on their farms, and 86% of the cases were cases. A total of 44.5% of the respondents used veterinary-recommended medicines. The percentage of patients who responded that they used veterinary medicine was 69%. Both methods of disease management were used in 55 out of 155 responses (Table 10). The mean cost for disease management was 3424.64±3266.83, outperforming the 69 respondents. Nepali farmers are mostly dependent on traditional methods of disease management, using different types of herbs and homemade organic medicines for the management of livestock diseases. The western region is known as the home of different herbal plants that can be used for the treatment of farm animals and humans (Kunwar *et al.*, 2010). Owing to modern and scientific methods of disease management, people are adopting and implementing veterinary treatment. It is also a cost-effective method for diagnosing diseases (Martelli & Krishnasamy, 2023).

**Table 10:** Management methods for diseases of livestock.

		Responses		Percent of Cases
		N	Percent (%)	(%)
Management method	Herbal and organic medicine	86	55.5	86.0
	Synthetic medicine	69	44.5	69.0
Total		155	100	155



**Fig. 13:** Satisfaction level of farmers from livestock farming.

This finding clearly demonstrates that farmers have different perceptions of their farming practices. Half of the respondents (50%) were happy with their occupations and farming practices. Second, 31% of the respondents were moderately satisfied with the farming practices they adopted. Fourteen percent of the respondents were highly satisfied. Finally, 5% of the respondents were dissatisfied with their farming practices (Fig. 13). Livestock husbandry has significant economic advantages, as it provides a highly efficient source of income. It also provides social benefits. The consumption of raw milk not only fulfils daily dietary demands but also promotes food security. Livestock, such as meat, manure, and milk, can provide many benefits to farmers, which also contribute to their economy (Salliou, 2023). As livestock have various benefits, farmers are content with the subsistence agricultural system in Nepal. Nepali farmers have a subsistence system of livestock farming; most rural area farmers are satisfied with this farming system. Their self-reliance depends on the consumption of milk, as there are practices of rearing at least one buffalo or cattle to meet the requirement of milk in household consumption (Khanal *et al.*, 2022).

## Conclusion

Livestock farmers were satisfied with the subsistence system of rural farming. In the early stages of lactation, people in the study area were self-dependent on dairy products and their unique milk management practices. Raw milk production contributes 3.905% of Nepal's GDP, with agriculture and livestock being the primary sources of income for farmers. The far western region of Nepal is predominantly rural, with indigenous breeds such as khaila cattle and buffalo gaddi. Milk production is used mainly for household consumption, and some milk is sold as local tea soaps. Far-western people have a unique belief in the consumption of milk produced during the first three weeks of lactation. At this stage, 99% of people do not consume milk, with 72% believing that it is their tradition passed down through the generations. They mostly used raw milk to feed newborn calves, 85% for ghee calves, and 81.8% for farm calves. The respondents refused to change their milk management practices, even when high prices for colostrum milk were offered. In decision-making, there is a preference for males over females, and the workload of livestock is predominantly female. Livestock production poses challenges due to the intricate relationship between feed management and substandard barns, which are the primary contributors to disease and pest infestations. To maximize the economic impact of livestock farming in Nepal, implementing specific measures that focus on improving feed management, increasing production, and facilitating market access for farmers is necessary. Promoting the adoption of superior breeds and more advanced farming techniques has the potential to significantly increase milk production and profitability for farmers in the region.

## Authors' Contribution

Conceptualization: PC; Methodology: PC; Software and validation: PC; Formal analysis and investigation: PC; Resources: PC and DRB; Writing—original draft preparation: PC; AK; DRB; LK; Writing—review and editing: PC, AK, DRB; Visualization: PC Supervision: PC. All the authors have read and agreed to the published version of the manuscript.

## Conflict of interest

The authors declare that they have no conflicts of interest with the present publication.

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