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Attitude and Knowledge of *Belahi* Cattle Rearers for Improve Dairy Farming Practices in Haryana

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HIGHLIGHTS

- *Belahi* cattle rearers have strong knowledge in management but need more education on breeding.
- Many rearers show neutral to negative attitudes towards modern dairy practices.
- *Belahi* cattle are crucial for livelihoods, providing milk and draught power.
- Training and awareness programme related to dairy farming practices should be implemented for *Belahai* cattle rearers.

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ABSTRACT

Belahi cattle are seemed to play an important role in sustaining livelihood security of rural Gujjar pastoralists of the Shivalik foothill of Haryana. So that present study was conducted during June 2019 to March 2021 in selected three districts of Shivalik foothill of Haryana due to native tract of *Belahi* cattle. From each district one tehsil was selected purposively having the highest *Belahi* cattle population. Three villages from each Tehsil and twenty migratory *Belahi* cattle rearer from each village were selected randomly. Therefore, total sample size of the study was 180. Knowledge test and attitude scale developed to ascertain knowledge and attitude of the respondents towards improved dairy farming practices. *Belahi* cattle rearers possessed medium to higher knowledge and low level of favourable attitude towards scientific dairy farming practices. Majority of the respondents were having good knowledge level about management practices, but very lower level of knowledge about breeding practices.

INTRODUCTION

Livestock sector contribute 4.11 per cent to GDP and 20.5 million people depend upon livestock sector for their livelihood. India is the house of the 536.76 million livestock. Livestock contributed 16 per cent to the income of small farm household as against average of 14 per cent for rural households (20th Livestock Census (GOI, 2019).

Livestock is one of the fast growing sub-sector of agriculture. Millions of rural farmers rely on it for employment and income, and it is also rich source of premium products like milk, meat, and eggs. According to the 20th Livestock Census (GOI, 2019), the livestock sector contributes about 26 per cent of total agricultural GDP and also provide employment to approximately 20 million people. India's livestock sector is among the world's largest, with buffaloes (20.45%), cattle (35.94%), sheep (13.87%), goats (27.80%), pigs (1.69%), and others (0.23%). Livestock provides consistent income for farmers throughout the year (Bairwa et al., 2013). Belahi is a newly registered cattle breed of *Bos indicus* from the North Himalayan foothills (Breed Accession Number: INDIA CATTLE 0532 BELAHI 03038). This rare migratory breed has approximately 20,000 animals and is well adapted to the local environment. It is an excellent dual-purpose

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(milk and draught) cattle genetic resource under extensive management and provides livelihood security to Gujjar pastoralists in the region (Vohra et al., 2014).

Pastoralist communities in India account for nearly 6 per cent of the total population, with well-known pastoral groups including the Gujjars, Kinnauras, Gaddies, and Bakarwal in the North Himalayan and Sub-Himalayan regions (Sharma et al., 2003). According to Vohra et al., (2012), Gujjars from the Shivalik range of the Himalayas are responsible for the migration of indigenous cattle known as Gori-*Belahi* or *Belahi,* particularly in Haryana's foothills. Raised under the pastoral management system, *Belahi* cattle are a dual-purpose breed of cattle. In addition to producing milk, this breed of cattle is used in agriculture for other purposes such as drought resistance and dung production. *Belahi* livestock is owned by Gujjar pastoralists in the northern Himalayan foothills. Since the *belahi* breed requires little input, it offers these pastoralists a secure means of subsistence (Vohra et al., 2012).

It can be easily assumed that with the increase in adoption of improved dairy practices the per capita availability of milk will increase. To maximize profit, farmers must surely adopt a more positive attitude toward better dairy practices. It also calls for dairy farmers to adopt new information and disseminate it quickly. To get the most profit and produce healthy dairy products, one must be knowledgeable about improved dairy farming techniques and have a positive attitude toward these practices. In the above context, effort and a study was designed to designed to find out how knowledgeable dairy farmers currently are their attitude about dairy farming practices. Therefore, the purpose of the current study was to ascertain the psychological attitude of a sample of dairy farmers as well as their degree of knowledge regarding dairy practices in the context of *Belahi* cattle.

METHODOLOGY

The present study was carried out in the year of from June 2019 to March 2021 across districts falls under Shivalik Foothill of Haryana. Based on availability of *belahi* cattle livestock farmers. Three districts of Haryana state namely Ambala, Panchkula and Yamunanagr were selected purposively as these districts are native tract of *belahi* cattle. Three tehsils Naryangarh, Raipur Rani and Bilaspur were selected purposively based on highest population of *belahi* cattle from Ambala, Panchkula and Yamunagar, respectively, from each districts one tehsil having highest *belahi* cattle population were selected. Further three village from each tehsil were selected randomly and those who were having *bellahi* breed cattle and engaged in migratory system of livestock rearing was considered as respondents for this study and 20 respondents from each village were selected respondents randomly, thus total sample size for present study was 180. Data collection was carried out using a semi-structured interview schedule. It was developed with the study's objectives in mind. The interview included both open and closed form questions. The schedule included direct and simple questions and statements to collect data on the dependent and independent variables that were selected. The researcher herself conducted personal interviews to gather data.

A knowledge test which is included items from different aspect of improved dairy farming practices developed to ascertain the knowledge level of the respondents. Moreover, overall knowledge index as well as index for four aspects of improved dairy farming which are breeding, feeding, health care and management were developed. Knowledge was operationalized in the present study as body of understood information possessed by the *Belahi* cattle rearers regarding improved dairy farming practices. Knowledge towards improved dairy farming practices were measured by the knowledge test developed by the Das (2003). Finally, all the *belahi* cattle rear farmers were categories into three categories using the cumulative square root frequency (CSRF) method. Attitude of the *Belahi* cattle rearers towards improved dairy farming practices has been conceptualized as their degree of positive and negative orientation of the respondents regarding utilization and adoption of improved practices in dairy farming. Final Comparison among the four different aspects of the improved dairy farming practices Multiple comparisons based on the Duncun Multiple Range Test (DMRT) was used.

RESULTS

Results regarding knowledge level of different aspects of improved dairy farming presented in Table 1 which revealed that majority of the respondents (36.11%) were having medium level of knowledge regarding improved breeding practices. These findings are similar to the results obtained by Das (2003). Low level of knowledge regarding improved breeding perspectives among the respondents might be due to the fact that being Gujjar pastoralist (both Hindu and Muslim), they had strong skepticism or suspicions against the Artificial Insemination (A.I.) to get their *Belahi* cattle conceived for crossbreeding as well as non-availability of the semen of the *Belahi* cattle for AI. Knowledge regarding improved management practices 29 percent of farmers fall under medium category, followed by the small category (27%), the marginal category (23%), the large category (14.5%), and the landless category (6.5%) (Mane et al., 2016). They are very poor and backward community. The *Belahi* cattle rearers did not take help of the veterinary doctor for pregnancy diagnosis and A.I. services.

Table 1. Distribution of the Belahi cattle rearers in the Shivalik foothill of Haryana according to their knowledge level of different practices in cattle rearing

S.No	Particulars	Low	Medium	High
1	Breeding practices			
	Reference range	0.47-0.66	0.67-0.75	0.76-0.88
	Frequency	58 (32.22)	65 (36.11)	57 (31.67)
2	Feeding			
	Reference range	0.66-0.76	0.77-0.89	0.90-1.00
	Frequency	52(28.89)	72(40.00)	56(31.11)
3	Health care			
	Reference range	0.69-0.75	0.76-0.83	0.84-0.94
	Frequency	52(28.89)	79(43.89)	49(27.22)
4	Management			
	Reference range	0.71-0.86	0.87-0.93	0.94-1.00
	Frequency	53(29.44)	108(60.00)	19(10.56)
5	Overall knowledge index			
	Reference range	0.72-0.79	0.80-0.83	0.84-1.00
	Frequency	60(33.34)	76(42.22)	44(24.44)

(Values in parenthesis indicate percentage)

Training program related to breeding perspective including A.I. services, pregnancy diagnosis, problem of repeat breeding, etc. may be conducted by which they would be able to overcome their beliefs and doubts as well as to enhance their knowledge.

Knowledge level of the respondents

Table 1 revealed that majority of the respondents (40.00) had medium level of knowledge regarding improved feeding practices. Their knowledge level which was relatively low because they were fully depend on the grazing, tree leaves and grasses, which was sufficiently available in the hilly region of the Shivalik foothills range of the Himalayas. Therefore, they possessed very little knowledge about the cultivation of fodder crops Kumawat & Verma (2016). It is evident that most farmers do not follow the advised feeding requirements. For the production of milk, concentrate, dry fodder, and green fodder are more crucial inputs. Colostrum feeding is necessary to shield the newborn calves from illness. They were having very little or no knowledge about mineral mixture and ration for pregnant animals. This might be due to lack of awareness or lack of extension service and training facilities in the study area. Most farmers follow common feeding practices, such as feeding regular grazing, feeding advance pregnant animals with extra concentrate, feeding prepared hay/silage, feeding colostrums to newborn calves, feeding concentrate to animals based on milk production, and regular feeding of the recommended dose of green fodder to the animal (Sudhanshu, 2019).

Majority (43.89%) of the respondents had medium level of knowledge regarding improved health care practices. The Gujjar pastoralist closely attached with their animals from one generation to another generation might be responsible for their caring nature towards their animals. Majority of the respondents were also having skilled to identify symptoms of different diseases like foot and mouth (FMD), Black quarter (BQ) and Hemorrhagic Septicemia (HS) as they were having long experience of rearing specific breed i.e. *Belahi* cattle. Most of them were depended on own or neighbors or local quack but whenever their animals were in very critical condition then only they preferred to consult with the veterinary doctor. Majority of the respondents were followed indigenous traditional practices for treatment of the diseases like fracture, ticks infestation, mastitis, and FMD. Kumari et al., (2023) primary factors contributing to the parasitic infestation are incompetence and lack of sensitivity, as these impact farmers' attitudes and perspectives toward making decisions. Most farmers were aware of the need for health care, roughly 57.9 per cent of them did not manage the parasite infestation (Zvinorova et al., 2016). A long-standing belief is that increased knowledge contributes to farms becoming healthier and more productive. In the present study area, during migration with animal, they faced various problems like lack of availability of veterinary doctors and inaccessible veterinary materials, etc. for their animals.

From the Table 1, it is revealed that majority of the respondents (60.00%) were having medium level of knowledge about improved management practices. Acharya et al., (2022) found that the most important factor in farmers' decisions concerning animal health care services is their financial situation. It was also found in the present study that majority of respondents had less knowledge regarding clean milk production, caring of pregnant animal, do not take care about proper hygiene of milk vessels. Similar finding was observed by Acharya et al., (2022). 42.22 per cent of the respondents had medium level of overall knowledge regarding improved dairy farming practices, similar finding also observed by Singh and Godara (2002); Das (2003); Sharma & Singh (2008), and also finding as similar result in their study.

Result in Table 2 revealed that comparison among the four different aspects of the improved dairy farming practices revealed that *Belahi* cattle rearers were having significant higher knowledge on management aspects in comparison to the other practices followed by feeding practices, health care practices and breeding practices. Multiple comparisons based on the Duncun Multiple Range Test are presented in the Table 3 and reveled that *Belahi* cattle rearers were having statistical significantly differentiation knowledge in all four aspects of improved dairy practices.

Table 2. Comparison of the knowledge level of the Belahi cattle rearers towards different aspects of improved dairy farming practices

S.No.	Scientific dairy practices	Mean ± Standard deviation
1	Breeding practices	0.71^{d} ± 0.07
2	Feeding practices	0.84^{b} ± 0.10
3	Health care practices	0.81^{c} ± 0.06
4	Management practices	0.88^{a} ± 0.05
5	Overall knowledge	0.81 ± 0.4

Mean with different superscript in a column indicates significant difference at 5 % level ofsignificance. Multiple comparisons were based on DMRT.

Majority of the respondents (46.11%) were having neutral attitude towards scientific dairy farming practices followed by 28.89 per cent were having unfavourable and 25.00 per cent of the respondents were having favourable attitude towards adoption of scientific dairy farming practices. *Belahi* cattle rearers were engaged in migratory system of livestock rearing which is considered as the primitive system of dairy farming. Therefore, they were not exposed to the advanced scientific dairy farming practices. Hence, their attitudes toward adoption of improved dairy farming practices were neutral to unfavourable. Shaik & Chauchan (2022) observed that The attitude of adult dairy farmers toward permanent rural work was positively and significantly correlated with their age, marital status, scientific orientation, economic motivation, and attitude toward farming, while it was negatively correlated with their father's level of education.

DISCUSSION

Belahi cattle rearers possess low to medium knowledge of improved breeding practices. Cultural skepticism towards artificial insemination (A.I.), particularly among Gujjar pastoralists, is a major barrier to adopting modern breeding techniques. This is further exacerbated by limited availability of *Belahi* cattle semen for A.I. and restricted access to veterinary services (Das, 2003). Additionally, knowledge of improved management practices varies significantly, with small farmers and the landless having the least access to resources and information (Mane et al., 2016). Addressing these gaps requires targeted training programs focusing on A.I.,

pregnancy diagnosis, and related practices to dispel misconceptions, enhance knowledge, and improve dairy farming productivity in the community. Livestock farmers had a medium level of knowledge about improved feeding practices. This aligns with findings from Kumawat & Verma (2016), which highlight that many farmers in the Shivalik foothills rely on traditional grazing methods and lack awareness about cultivating fodder crops. The limited knowledge of essential feeding practices, such as the use of mineral mixtures and proper rations for pregnant animals, suggests a gap in awareness and the availability of agricultural extension services. Sudhanshu (2019) supports this, noting that while common feeding practices like grazing, feeding concentrate based on milk production, and colostrum feeding are followed, the lack of advanced knowledge in crucial areas hinders the overall productivity of livestock. This points to a need for enhanced training and outreach efforts in the region to promote improved feeding strategies and boost milk production.

Gujjar pastoralists' long-standing connection with their animals has fostered a deep-seated knowledge and care for animal health, as reflected in the 43.89 per cent of respondents having a medium level of knowledge regarding improved health care practices. Their ability to identify common diseases such as Foot and Mouth Disease (FMD), Black Quarter (BQ), and Hemorrhagic Septicemia (HS) is likely a result of their extensive experience rearing specific breeds, such as the *Belahi* cattle. However, reliance on traditional and indigenous practices for managing conditions like fractures, tick infestations, and mastitis is common, which is consistent with findings from Kumari et al., (2023) & Zvinorova et al., (2016), where lack of access to veterinary services often leads to traditional treatment methods. Despite a general awareness of health care practices, there is a gap in managing issues like parasitic infestations, which may be influenced by factors like the unavailability of veterinary doctors and limited resources during migration. This suggests that enhancing access to modern veterinary services and improving farmer knowledge, especially during migration, could play a critical role in improving livestock health and productivity.

Finding from study indicate that the majority of respondents (60%) possessed a medium level of knowledge about improved management practices in dairy farming, which aligns with existing research by Acharya et al., (2022). Acharya's study highlighted that farmers' decisions related to animal health care services are often influenced by their financial constraints. This may partly explain why a substantial portion of respondents (29.44%) in the current study had low knowledge, as limited resources often hinder the adoption of best practices. Moreover, the lack of awareness regarding essential practices such as clean milk production and the care of pregnant animals further supports the notion that knowledge gaps persist in these areas. The observed negligence in maintaining proper hygiene of milk vessels could have significant implications for both animal health and milk quality. These findings suggest that targeted interventions, focusing on improving knowledge in these critical areas, could greatly benefit dairy farming practices.

The findings of the present study align with similar studies, such as those by Singh & Godara (2002); Das (2003); Sharma & Singh (2008), who also observed similar trends in knowledge distribution among dairy farmers. Furthermore, when comparing the four key aspects of improved dairy practices (breeding, feeding, health care, and management), the study revealed that *Belahi* cattle rearers possessed significantly higher knowledge in management practices, followed by feeding, health care, and breeding practices. This differentiation was statistically significant, as confirmed by the Duncan Multiple Range Test, suggesting that targeted extension programs could help enhance the knowledge in specific areas where it is lacking. The emphasis on management practices aligns with practical demands in dairy farming, as identified by previous studies. The neutral to unfavourable inclination can be attributed to the traditional and migratory livestock rearing system practiced by *Belahi* cattle rearers, which limits their exposure to modern dairy farming techniques. Shaik & Chauhan (2022) observed similar trends, suggesting that factors such as age, marital status, scientific orientation, and economic motivation play a significant role in shaping farmers' attitudes toward dairy farming, while paternal education level was negatively correlated. This highlights the need for targeted interventions, such as educational programs, to promote the adoption of improved practices

CONCLUSION

The study pronounced farmers attitude and knowledge about management practices towards *belahii* cattle rearing. Results reveal that Majority of the respondents were having good knowledge about management practices but having very low level of knowledge about breeding practices. *Belahi* cattle rearers possessed medium to higher knowledge and medium level of attitude towards scientific dairy farming practices, but, there were resource constraints (unavailability of AI facility etc.) in the Shivalik foothill region of Haryana. Regarding their education majority of the respondents belong to medium and old group with low level of education. Therefore, Farmers should be educated about the benefits of various dairy management and breeding practices through various training programs, and the government should implement various policies and schemes to remove such barriers in Haryana's Shivalik foothill region.

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