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A study on ethno-veterinary practices followed by pastoralists of Punjab

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ABSTRACT

Pastoralist communities have historically depended on ethno-veterinary medicine (EVM)—a crucial, community-derived knowledge system—to manage livestock health, especially in marginal regions lacking access to traditional Veterinary practices. Despite its utility, socio-economic transitions are driving a rapid generational decline of this traditional knowledge base, which remains poorly documented within contemporary research frameworks. The current study was designed to systematically record, enumerate, and determine the utilization of ethno-veterinary practices among pastoralist communities across the three distinct regions of Punjab: Majha (Group I), Malwa (Group II), and Doaba (Group III). Applying a purposive sampling strategy, semi-structured interviews were performed with 90 pastoralists ($n = 30$ per region) using a predetermined interview schedule to assess the frequency, primary motivations, and specific therapeutic measures adopted in animal healthcare. The findings revealed vast deployment of EVM, though usage patterns varied significantly by geographic region. Pastoralists in Majha demonstrated infrequent dependence on these practices. On the contrary, adoption rates were significantly higher and more regular in Doaba, where a significant portion of respondents utilized these remedies daily. The primary factors for EVM adoption in Malwa and Doaba were cost-effectiveness and instant accessibility, whereas pastoralists in Majha prioritized ecological sustainability and environmental friendliness. The wide variety of botanical and locally sourced measures were recorded for managing wounds, digestive disorders, mastitis, fever, milk yield optimization, and ecto-parasite infestations. This study emphasizes the continued significance of indigenous Veterinary practices as an inexpensive, ecologically sustainable, and culturally rooted substitute to conventional pharmaceuticals. The discrete regional variations highlight the urgent need for systematic documentation and the formal incorporation of indigenous Veterinary knowledge into mainstream livestock extension services before it faces complete generational depletion.

Keywords: Dairy, Ethno-veterinary, Pastoralists, Punjab, Traditional

Introduction

India hosts the world's second-largest indigenous population, comprising of approximately 84.4 million tribal individuals (GOI, 2020)^[1]. Academically, these populations are characterized by distinct socio-cultural determinants; as defined in *W.I. Nick's Dictionary of Anthropology*, a tribe represents a distinct social entity categorized by a specific geographical territory, a unique language or dialect, standardized cultural attributes, and a highly harmonious organizational structure (Rai *et al.*, 2019)^[2]. On a global scale, nearly 200 million transhumant and nomadic pastoralists yield their livelihoods in remote (Kaur, 2021)^[3], often harsh environments where conventional farming is either extremely difficult or entirely advantageous (IFAD, 2012)^[4]. Historically, these pastoralist communities have maintained themselves and cared for deserts and dry lands through complex systems of governance (GOI, n.d.)^[5]. These systems include sustainable livestock animal husbandry practices, community-based rules, and the influence of traditional frameworks (Duncan, 2013)^[6]. The term ethno-veterinary medicine (EVM) represents the scientific classification of traditional animal healthcare systems, consisting community-derived knowledge, cultural beliefs, indigenous methodologies, and specialized skills applied to manage illnesses and maintain livestock health. Rooted in these traditional frameworks, diverse indigenous communities have historically relied on phytotherapy (plant-based remedies) to treat a diverse spectrum of anthroponozoonotic and livestock disorders. Simultaneously, EVM serves as an economically feasible and ecologically sustainable alternative to synthetic pharmaceuticals. The utilization of these ethno-veterinary traditions is particularly prominent among pastoralist communities, who frequently apply them due to a systemic lack of access to mainstream veterinary interventions (Ahmad *et al.*, 2017)^[7]. Hence, these communities serve as a critical reservoir of ethno-veterinary knowledge, maintaining herd health and mitigating disease vectors primarily through plant-derived therapeutics. However, this specialized knowledge base is experiencing rapid intergenerational depletion governed by various socio-economic factors. Moreover, traditional, need-based documentation regarding pastoralist populations and their specific ethno-veterinary practices remains largely unquantified in contemporary literature. The present

study was devised to methodically document and elaborate upon these traditional husbandry practices in a thorough manner. Specifically, the central objective of this research is to enlist and evaluate the utilization of ethno-veterinary practices by the pastoralist communities of Punjab.

Research methodology

A total of 90 pastoralists were chosen via purposive sampling from three geographical regions of Punjab i.e., Majha (Group I), Malwa (Group II), and Doaba (Group III)—with 30 pastoralists chosen from each region in order to ensure geographical diversity and contextual relevance. Given the nomadic lifestyle of pastoralists and their engagement in the practice of transhumance, purposive sampling was

applied. A pre-structured interview schedule was used to conduct in-person interviews with respondents at their homes in different parts of Punjab in order to gather data and evaluate their level of understanding and the pastoralists' ethno-veterinary practices were listed.

Result and Discussion

The frequency of ethno-veterinary practices among pastoralists in Group I, Group II, and Group III regions is displayed in Table 1. All 30 respondents in Group I infrequently utilize ethno-veterinary methods. For minor injuries or infections, Group II respondents utilize ethno-veterinary methods infrequently (43.33%), frequently (53.33%), and daily (3.33%) as prophylactic measures.

Table 1. Distribution of pastoralists according to the usage of ethno-veterinary practices

Frequency of use of practice	Group I (n = 30)	Group II (n = 30)	Group III (n = 30)	Total (N = 90)
Daily for preventive measure	0(0.00)	1(3.33)	13(43.33)	14(15.56)
Frequently for minor infection or injury	0(0.00)	16(53.33)	17(56.67)	33(36.67)
Occasionally	30(100.00)	13(43.33)	0(0.00)	43(47.78)

Figure in parenthesis indicate percentage

In Group III, the largest proportion of pastoralists (43.33%) use ethno-veterinary remedies daily for preventative measures, followed by those who use them regularly (56.67%) for mild infections and

none of the 30 respondents within group utilize them infrequently. Overall, across all regions, 15.56 percent of respondents use these practices daily, 36.67 percent use them regularly, and 47.78 percent use them rarely.

Table 2. Distribution of pastoralists according to the reason for using ethno- veterinary practices

Reason	Group I (n = 30)	Group II (n = 30)	Group III (n = 30)	Total (N = 90)
Affordable and local availability	0(0.00)	16(53.33)	25(83.33)	41(45.56)
Sustainable and eco-friendly	30(100.00)	14(46.67)	5(16.67)	49(54.44)

Figure in parenthesis indicate percentage

The reasons why pastoralists use ethno-veterinary techniques in the three regions are given in Table 2. Each participant of Group I (100.00%) claims eco-friendliness and sustainability as justifications for employing ethno-veterinary methods. In Group II, 53.33 percent of respondents cited cost and availability as the primary factors, while 46.67 percent of respondents cited sustainability for their use.

Whereas only 16.67 percent of pastoralists in Group III utilize them for sustainability, 83.33 percent do so given their affordability and accessibility. According to Table 2, 54.44 percent of respondents in all three regions use ethno-veterinary practices because they are eco-friendly and sustainable, while 45.56 percent use them because they are reasonably priced and conveniently located nearby.

Table 3. Distribution of pastoralists according to use of ethno-veterinary practices

Practice	Used for	Group I (n = 30)	Group II (n = 30)	Group III (n = 30)	Total (N = 90)
Butter & honey	Wounds	15(50.00)	10(33.33)	11(36.67)	36(40.00)
Saltwater	Maggot	10(33.33)	16(53.33)	27(90.00)	53(58.89)
Aloe Vera (<i>Aloe barbadensis</i> miller)	Burns	12(40.00)	4(13.33)	23(76.67)	39(43.33)
Cow urine	Digestive issues/ Disinfection	6(20.00)	1(3.33)	11(36.67)	18(20)
Charcoal powder	Bloat	4(13.33)	11(36.67)	17(56.67)	32(35.56)
Khus grass (<i>Chrysopogon zizanioides</i>)	Flies repellent	20(66.67)	3(10.00)	22(73.33)	45(50.00)
Onion juice	Eye infection	5(16.67)	4(13.33)	13(43.33)	22(24.44)
Mustard oil massage	Mastitis	22(73.33)	22(73.33)	20(66.67)	64(71.11)
Neem leaf paste	Wound	4(13.33)	15(50.00)	23(76.67)	42(46.67)
Tulsi & ginger	Cough	9(30.00)	2(6.67)	12(40.00)	23(25.56)
Babool bark (<i>Vachellianilotica</i>)	Diarrhea	4(13.33)	0(0.00)	16(53.33)	20(22.22)
Chirchitapaste (<i>Achyranthes aspera</i>)	Swollen joints	6(20.00)	2(6.67)	21(70.00)	29(32.22)

(continued on next page)

Practice	Used for	Group I (n = 30)	Group II (n = 30)	Group III (n = 30)	Total (N = 90)
<i>Lantana</i> leaves	Fly bites& Wounds	2(6.67)	19(63.33)	20(66.67)	41(45.56)
Jaggery + fennel seeds+ Carom seeds	Bloat	22(73.33)	27(90.00)	22(73.33)	71(78.89)
Fatkari water	Fever	8(26.67)	20(66.67)	19(63.33)	47(52.22)
Chumarkanda (<i>Asparagus racemosus</i>)	Mastitis	12(40.00)	18(60.00)	28(93.33)	58(64.44)
Maukh	Mastitis	7(23.33)	13(43.33)	29(96.67)	49(54.44)
Basuti (<i>Justicia adhatoda</i>)	Mastitis	0(0.00)	15(50.00)	30(100.00)	45(50.00)
Banna (<i>Oroxylum indicum</i>)	Mastitis, Jaundice	3(10.00)	8(26.67)	25(83.33)	36(40.00)
Haldi roots + ghee	Lactation	11(36.67)	6(20.00)	27(90.00)	44(48.89)
Blackpepper+ghee	Mastitis	19(63.33)	10(33.33)	21(70.00)	50(55.56)
Meetha soda	Teats cleaning	15(50.00)	14(46.67)	22(73.33)	51(56.57)

Figure in parenthesis indicate percentage

Table 3 shows that butter and honey were utilized for wound management by 40 percent of the total cohort, with Group I indicating the highest preference (50.00%). Neem leaf paste served as another preferred intervention (40.67% overall), showing the peak adoption rate within Group III (76.67%). Additionally, *Lantana* leaves, typically indicated for wounds and insect bites, were utilized by 45.56 percent of respondents, with usage primarily concentrated in Group II (63.33%) and Group III (66.67%). To manage bloating and digestive disorders, a combination of jaggery, fennel, and carom seeds was identified as the most prevalent treatment, utilized by 78.89 percent of participants. In comparison, charcoal powder was utilized by 35.56 percent of respondents. Additionally, cow urine—historically recognized for its therapeutic and disinfectant properties—was utilized by 20.00 percent of the total respondents, with its highest utilization observed within Group III (36.67%). For the treatment of mastitis, a mustard oil massage was revealed as the primary intervention, preferred by 71.11 percent of the surveyed population. Among other observed ethno-veterinary practices, Chumar Kanda presented the highest overall adoption rate at 64.44 percent, followed by the utilization of black pepper combined with ghee (55.56%) and Maukh (54.44%). While Basuti was utilized by exactly 50.00 percent of the total respondents, Group III indicated an exclusive 100.00 percent reliance on this remedy. This distinct distribution highlights a strong, community-specific preference for Basuti within that particular group.

As indicated by Table 3, Fatkari water was the first-line therapy utilized for managing fever, adopted by 52.22 percent of the total respondents and showing the highest prevalence within Group II (66.67%). For lactation enhancement, a traditional remedy of Haldi roots combined with ghee was utilized by 48.89% of the surveyed respondents, with Group III presenting the highest adoption at 90.00 percent. Other marked ethno-veterinary applications included the use of Meetha soda for teat washing (56.57%) and Khus grass as a fly repellent (50.00%). In addition, saltwater served as a prevalent treatment for maggot infestations, generating an overall utilization rate of 58.89 percent and achieving a distinct metric of 90.00 percent specifically within Group III.

Conclusions

The conclusion of this study exhibit that ethno-veterinary medicine (EVM) remains a keystone of livestock healthcare among the pastoralist communities of Punjab, although its effective scope and hidden objective vary significantly by agro-climatic region. A marked regional variance was observed in therapeutic frequency and motivation. Pastoralists in Majha (Group I) shown infrequent dependence on

EVM, driven mainly by ecological sustainability concerns instead of financial constraints. Conversely, pastoralists in Doaba (Group III) surfaced as the most frequent and various users, utilizing EVM daily for preventative care and attributing to affordability and resource accessibility as their primary drivers. This geographical divergence strongly suggests that local access to formal veterinary infrastructure and regional economic conditions determine EVM adoption just as much as rooted cultural preferences. The extensive list of documented remedies—ranging from mustard oil massages for mastitis and jaggery-fennel-carom seed mixture for bloat, to neem paste (*Azadirachta indica*) and *Lantana* leaves (*Lantana camara*) for wound care, and Fatkari (alum) water for fever—highlights the significant reservoir of traditional practical knowledge presently maintained within these populations. The high consensus and dependence on these locally sourced, plant-based, and domestic measures for common diseases confirm that EVM serves as a functional, highly flexible healthcare system. This is specifically vital in regions characterized by poor standardized veterinary infrastructure. Considering the well-documented generational decline of indigenous knowledge systems in modern literature, these results showcase the pressing need for holistic ethnobotanical documentation before these practices face complete depletion. Besides, this research demarcates a strategic opportunity for veterinary policy formulators by clinically verifying and systematically merging effective ethno-veterinary practices into formal livestock extension protocols and outreach programs, stakeholders can offer a low-cost, sustainable, and culturally suited alternative to conventional veterinary medicine while protecting foundational traditional ecological knowledge (TEK).

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