

ROLE OF ANIMAL BEHAVIOUR AND WELFARE IN LIVESTOCK PRODUCTION AND MANAGEMENT

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Abstract Animal behavior and welfare play pivotal roles in livestock production and management, shaping the well-being of animals and the industry's overall success. The primary aim of the study is to find the role of animal behavior and welfare in livestock production and management. The comprehensive study was conducted at University of Veterinary & Animal Sciences Lahore from November 2021 to January 2022. Behavioral data were collected from various livestock species, including cattle, poultry, pigs, and sheep. Observations were made in various settings, such as farms, feedlots, and poultry houses, to capture a comprehensive view of animal behavior. A total of 220 animals were included in the research. Observations revealed that cattle exhibited grazing behaviors for an average of 6 hours daily, while poultry engaged in frequent feeding bouts totaling 10 hours daily. Pigs and sheep displayed flexible feeding behaviors with an average of 8 hours per day, consistent with earlier findings. It is concluded that this study plays a pivotal role in animal behavior and welfare in livestock production and management. Understanding and accommodating natural behaviors, mitigating environmental stressors, and adhering to ethical guidelines contribute to healthier, more contented livestock.

Keywords: Animal behavior; livestock; farms; feedlots; poultry houses

Introduction

Animal behavior and welfare play pivotal roles in livestock production and management, shaping the well-being of animals and the industry's overall success. The relationship between animals, humans, and the environment within the livestock sector is complex, multifaceted, and integral to global food security (Temple and Manteca, 2020). Recognizing the significance of animal behavior and welfare is a moral obligation and a strategic imperative for sustainable and efficient livestock production (Fernandez et al., 2016). Understanding animal behavior, including social interactions, feeding patterns, and responses to environmental stimuli, provides valuable insights into their needs and preferences. This knowledge is the foundation for effective management practices that optimize animal health, productivity, and quality of life. Moreover, it

aids in identifying stressors, disease outbreaks, or deviations in behavior that may signal underlying health issues, allowing for timely interventions (Forbes, 2007).

Ensuring livestock's welfare encompasses providing appropriate housing, nutrition, healthcare, and humane treatment throughout their lives (Garde and Meuret, 2017). Neglecting interest can lead to reduced productivity, increased disease susceptibility, and compromised product quality. Conversely, prioritizing animal welfare contributes to improved production efficiency, reduced resource wastage, and enhanced product quality, aligning with the growing consumer demand for ethically sourced animal products (Guesgen et al., 2016). Animal behavior and welfare are paramount in modern livestock production and management, transcending



mere ethical considerations to become essential components of a comprehensive and forward-looking strategy (Hamzaoui et al., 2013). As the global demand for animal-derived products rises, the need to address these facets becomes increasingly pressing. Affective livestock management is contingent upon a profound understanding of animal behavior. By recognizing how animals interact with each other and their environment, producers can create more conducive and stress-free conditions, ultimately improving animal health and productivity. For instance, designing animal housing that considers their social dynamics and natural behaviors, such as grazing or nesting, can enhance their comfort and reduce stress-induced disorders (Juhnke et al., 2012). Moreover, the importance of animal welfare extends to regulatory compliance and market competitiveness. Consumers are becoming more discerning, seeking products that align with their ethical values. Ethical and humane treatment of livestock is not just a moral duty but also a marketing advantage (Laporte et al., 2010). Investments in animal welfare can bolster brand reputation and consumer trust, enabling businesses to thrive in an increasingly conscious marketplace. Furthermore, ensuring high animal welfare standards often goes hand-in-hand with efficient production. Stress-free animals are less prone to diseases and more likely to achieve their genetic potential for growth and reproduction. This translates into increased profitability for producers (Lescureux et al., 2018).

Objectives

The basic aim of the study is to find the role of animal behaviour and welfare in livestock production and management.

Material and methods

The comprehensive study was conducted at University of Veterinary & Animal Sciences Lahore from November 2021 to January 2022. Behavioral data were collected from various livestock species, including cattle, poultry, pigs, and sheep. Observations were made in various settings, such as farms, feedlots, and poultry houses, to capture a

Table 02: Social interaction in livestock animals

Livestock Species	Observed Social Behaviors
Cattle	Hierarchical structures within cattle herds
Poultry	Flock dynamics leading to increased egg production
Pigs	Flexible social interactions within groups
Sheep	Social hierarchy and group dynamics

Temperature variations continued to impact livestock behavior significantly. Heat stress still led to a 12% reduction in feeding activity and a 20% increase in

Table 03: Sensitivity according to environmental conditions

Environmental Factor	Impact on Livestock Behaviour
Temperature	Heat stress: Reduced feeding activity and increased rest periods Cold conditions: Increased energy expenditure

comprehensive view of animal behavior. Data on environmental conditions, including temperature, humidity, and lighting, were recorded to assess their potential influence on animal behavior. Data on various environmental factors were systematically recorded to determine the potential influence of environmental conditions on animal behavior. These included temperature fluctuations, humidity levels, lighting conditions, and air quality within the livestock facilities. Understanding how environmental variables interacted with animal behavior was crucial in deciphering the complex relationship between the two.

Statistical Analysis

Data was collected and analysed using SPSS v29.0. All the values were expressed in mean and SD.

Results

A total of 220 animals were included in the research. Observations revealed that cattle exhibited grazing behaviors for an average of 6 hours daily, while poultry engaged in frequent feeding bouts totaling 10 hours daily. Pigs and sheep displayed flexible feeding behaviors with an average of 8 hours per day, consistent with earlier findings.

Table 01: Animals feeding pattern

Livestock Species	Average Daily Feeding Hours
Cattle	6 hours
Poultry	10 hours
Pigs	8 hours
Sheep	8 hours

The social dynamics observed among the larger group of animals remained consistent, with cattle herds exhibiting hierarchical structures, and poultry flock dynamics leading to increased egg production. These interactions continued to contribute to group cohesion. The sensitivity of livestock to environmental conditions was further confirmed. During hot weather, cattle reduced feeding activity by 20%, while poultry exhibited 15% less foraging. Cold conditions prompted a 10% increase in energy expenditure for pigs and sheep, mirroring previous observations.

rest periods, while cold conditions caused a 15% rise in energy expenditure.

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Lighting Conditions	Natural daylight: 25% more activity compared to artificial lighting
The impact of lighting conditions on circadian rhythms and activity patterns remained consistent. Livestock exhibited 25% more activity under natural	daylight than artificial lighting, emphasizing the importance of proper lighting management.
Table 04: Welfare indicators	
Aspect of Animal Welfare	Key Findings
Ethical Compliance	Adherence to ethical guidelines ensures animal welfare, including access to clean water and spacious housing
Welfare Indicators	Healthy body conditions and reduced stress-related issues among well-managed livestock
Welfare indicators, such as body condition scoring, once again confirmed the positive impact of ethical considerations and proper management practices.	Livestock in well-managed conditions displayed healthier body conditions and lower stress-related issues among the larger sample size.
Table 05: Improvement in productivity	
Management Practices	Productivity Improvement
Enhanced practices (Treatment)	15% increase
Control groups (Control)	Baseline productivity
Groups benefiting from improved behavioral and welfare practices continued to exhibit higher productivity. Enhanced housing, nutrition, and handling procedures contributed to a 15% increase in overall productivity compared to control groups, consistent with previous findings.	benefits of enhanced management practices. Livestock subjected to improved housing, nutrition, and handling procedures showed a 15% increase in overall productivity compared to control groups (Ling et al., 2016). This finding is paramount for livestock producers and underscores that investing in ethical and welfare-centered practices can yield economic advantages (Wu, 2018). The willingness of livestock producers and veterinarians to adopt improved practices highlights the industry's receptiveness to ethical and welfare-focused changes. Engaging stakeholders in discussions about these findings' ethical and economic implications is crucial for driving positive change within the livestock sector (Heleski et al., 2004; Rohlf et al., 2012).
Discussion	Conclusion
The study's findings on feeding patterns and social interactions among livestock species underscore the importance of understanding and accommodating natural behaviors (Lomax et al. 2010). Cattle, for instance, exhibited grazing behaviors in line with their daily rhythms, emphasizing the need for access to pastures and suitable grazing conditions (Macdonald et al., 2008). Poultry's frequent feeding bouts highlight the significance of providing regular access to feed. Recognizing and respecting these behavioral traits can contribute to healthier and more contented livestock (Martinez et al., 2010). The study confirms that temperature and lighting conditions significantly affect livestock behavior. Managing livestock in ways that mitigate the impact of extreme weather conditions, such as providing shade and proper ventilation during heatwaves, is essential. Proper lighting management should also be adopted to align with animals' natural circadian rhythms (Orihuela 2021). These findings emphasize the importance of climate-controlled housing and adequate lighting in livestock facilities (Gallo and Hertas, 2016). Ethical considerations are at the core of responsible livestock management. The study highlights that adhering to ethical guidelines, including clean water and spacious housing access, positively influences animal welfare (Li et al., 2018). The welfare indicators further confirm that well-managed livestock exhibit better body conditions and reduced stress-related issues. These results reinforce the ethical imperative of providing proper care and housing for livestock (Gallo et al., 2018). The comparative studies demonstrate the tangible	It is concluded that this study plays a pivotal role in animal behavior and welfare in livestock production and management. Understanding and accommodating natural behaviors, mitigating environmental stressors, and adhering to ethical guidelines contribute to healthier, more contented livestock. Importantly, these practices are also linked to increased productivity, demonstrating that ethical and welfare-centered approaches are morally sound and economically beneficial for the livestock industry. This study serves as a foundation for ongoing discussions and initiatives promoting responsible and sustainable livestock management practices.
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Declarations

Data Availability statement

All data generated or analyzed during the study are included in the manuscript.

Ethics approval and consent to participate

Not applicable

Consent for publication

Not applicable

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Not applicable

Conflict of Interest

Regarding conflicts of interest, the authors state that their research was carried out independently without any affiliations or financial ties that could raise concerns about biases.



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