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ORIGINAL ARTICLE

Commercial broiler farmers' knowledge, attitudes, and practices regarding poultry nutrition and health Management

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Abstract

Background: The knowledge, attitudes, and practices (KAP) of commercial broiler farmers regarding poultry nutrition and health management have a significant impact on the productivity and sustainability of poultry farming. This study was conducted between June and August 2022, involving a total of 150 farms-75 each from the districts of Kathmandu and Rupandehi in Nepal.

Methods: A structured questionnaire was developed to assess farmers' knowledge, attitudes, and practices related to nutrition and health management in commercial broiler farming.

Results: The findings reveal that only 30% of respondents had received training in poultry farming practices, while 73.3% relied on poultry farming as their primary source of income. Despite 56.67% acknowledging good government policies on nutritional feeding, 60% reported inappropriate antimicrobial use in feed formulation. Similarly, 60% admitted to adding antimicrobials to feed at any time to prevent illness in birds. Furthermore, 76.67% admitted to skipping one or two doses of prescribed medication. The study also found that 46.67% of respondents believed that routine feed was sufficient for poultry, while 36.67% thought that the use of probiotics and feed supplements was equivalent. Additionally, 46.67% of respondents added feed additives when birds failed to reach average weight. Likewise, 40% agreed on using probiotics and feed supplements at any age. Although all respondents were aware of who is authorized to prescribe medications, only 73.3% consulted veterinarians.

Conclusion: The study identifies significant gaps between knowledge and practice, particularly in areas such as antimicrobial resistance, feed management, and disease prevention. These findings highlight the need for effective training and targeted policy interventions. The results will help inform educational programs for farmers, aiming to standardize production practices and support the sustainable growth of both the farming community and the poultry industry in Nepal.

Keywords: Knowledge, Poultry, Health, Nutrition, Training.

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Introduction

Nepal is an agricultural country, with 66 percent of its population engaged in farming (Pradhanang *et al*., 2015). The poultry sector has been one of the fastest-growing industries in the country in recent decades. Poultry farming has become one of the most prominent occupations in Nepal today, playing a crucial role in providing job opportunities (Dhakal, 2019; Khanal *et al*., 2022; Upadhyaya *et al*., 2023). The agriculture sector contributes around 34% of Nepal's national GDP, with the livestock sector accounting for 15%, and poultry production making up 3.5% of the total GDP (CBS, 2012). In Nepal, two-thirds of the population is involved in agriculture. Of the 51.9% of households engaged in this sector, 67.8% of them raise poultry, primarily in the Hills, followed by 56.4% in the Mountain region, and the remaining in the Terai region (Sharma et al., 2021). The poultry industry has experienced exponential growth worldwide, with broiler production being a major contributor to the global meat supply. The increasing demand for poultry meat, driven by population growth, urbanization, and shifting dietary preferences, has led to the intensification of commercial broiler farming (Ndondo, 2023). Poultry farming is an essential component of global food production, with broiler chicken being a major source of animal protein (Chatterjee & Rajkumar, 2015; Mengesha, 2012; Mottet & Tempio, 2017; Nkukwana, 2018; Vaarst *et al*., 2015). However, the success of commercial broiler farming is highly dependent on effective management of poultry nutrition and health (Pius et al., 2021; Prabakaran, 2003). In many regions, especially in developing countries, the gap between scientific knowledge and farm practices has led to suboptimal health outcomes for poultry, increasing the risk of disease outbreaks and decreasing *productivity* (Hedman et al., 2020; Kabeta *et al*., 2024). The Knowledge, Attitude, and Practice (KAP) model is an important tool for assessing how well poultry farmers understand and implement health management strategies and nutritional guidelines (Ahmed *et al*., 2024; Subedi *et al*., 2023; Thongpalad *et al*., 2019). The global poultry industry has experienced significant growth, positioning chicken meat as a primary source of animal protein worldwide. This expansion has been particularly notable in regions such as Bangladesh, where the poultry sector has become integral to the economy and food security (Hassan *et al*., 2021). Recent studies have indicated that while many commercial broiler farmers have a basic understanding of nutrition and health management, there are significant knowledge gaps, particularly in areas such as disease prevention, biosecurity, and the proper use of antimicrobials (Acheampong, 2024; Bist *et al.,* 2024; Kiambi et al., 2021). Given the complexities surrounding poultry nutrition and health management, assessing the KAP of commercial broiler farmers provides valuable insights into existing challenges and opportunities for improvement. By identifying knowledge gaps and behavioral patterns, policymakers, researchers, and extension services can design targeted interventions that promote evidence-based practices, enhance productivity, and ensure sustainable poultry farming (Abraham, 2024; Chakroborty, 2023; Shahi, 2022). This study aims to evaluate the current state of knowledge, attitudes, and practices among commercial broiler farmers regarding nutrition and health management, with a focus on identifying areas requiring intervention and capacity-building initiatives. The findings will contribute to the development of strategies that support informed decision-making and long-term industry sustainability.

Materials and methods

Study area

The present study was conducted over a period of three months from September to December 2024, across four municipalities in two districts of Nepal-Kathmandu and Rupandehi. A cross-sectional study was carried out on broiler chicken farms located in

Tarkeshwor and Tokha municipalities of Kathmandu district, and Tilottama and Sainamaina municipalities of Rupandehi district (Figure 1).

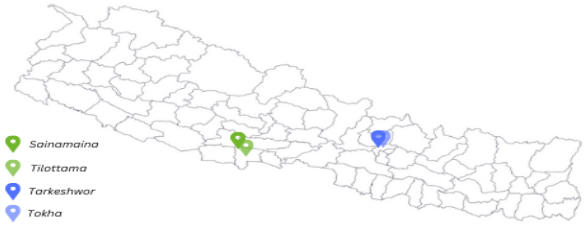

Figure 1: The Map showing the location of study Municipalities in Nepal.

Questionnaire on KAP

A pre-designed and pre-described questionnaire on KAP was used to generate cross-sectorial insights, farmers were interviewed face-to-face and personal observations on each farm to elicit their knowledge, attitudes, and self-reported practices regarding nutrition and health management. Following the verbal consent to be included in the study, respondents were given suitable questions. Questions were designed to assess the knowledge, attitudes, and practices of farmers.

Random Sampling method

A single proportion estimation method was used to calculate the sample size (Thrusfield, 2018). In this survey, a total of 150 broiler-rearing farmers were interviewed from two municipalities in each of two districts: Kathmandu- Tokha (n1 = 37) and Tarkeshwor (n2 = 38); and Rupandehi- Tilottama (N1 = 37) and Sainamaina (N2 = 38). Both the study sites (districts and municipalities) and the participating broiler farmers were selected using a random sampling method. A total of 150 poultry farms, each with a flock size ranging from 1,500 to 5,000 birds, were visited by the end of the study period.

Data analysis

The primary data collected was coded and tabulated in MS-Excel 2013. In the same MS-Excel 2013 Percentage frequency analysis is applied to normalize responses across districts and allow direct comparison. A horizontal grouped bar chart was used to visualize "Yes/No" trends by region, with data labels added for clarity and ease of interpretation. Consulted to Veterinary experts with data and discussion.

Results

Attributes of respondents

Survey data (Figure 1) shows that out of 150 respondents, only 30% had received formal training in poultry farming, while 73.3% relied on poultry farming as their primary source of income. Additionally, 62% of the respondents had completed formal education.

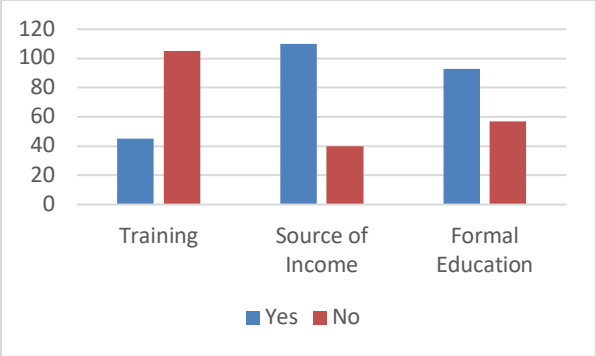

Figure 1: Visual representation of Attributes of respondents

Knowledge on farming

Among the 150 respondents, a total of eight questions were included to assess farmers' knowledge regarding the general management of poultry nutrition and health. Overall, 66.67% agreed that imbalanced feeding is a serious national public health issue. In Rupandehi, 74.67% of the 75 respondents held this view. Meanwhile, 46.67% of all respondents believed that routine mash or pellet feed was sufficient for poultry, and 36.67% considered probiotics and feed supplements to be the same- believing that the use of one was enough. While most farmers demonstrated some knowledge of poultry nutrition and health, 43.33% of the total sample- including 66.67% of the

respondents from Kathmandu- opposed the Nepalese government's nutritional feeding policy, indicating a gap between policy and on-farm acceptance. Additionally, 80% of all respondents (93.33% in Kathmandu and 66.67% in Rupandehi) acknowledged that several poultry diseases were caused by the unregulated sale of low-quality feed. In terms of diagnosis and prescription, farmers showed strong awareness: all respondents stated that only veterinarians have the authority to prescribe medication for poultry. Furthermore, 83.33% of respondents (80% from Kathmandu and 86.67% from Rupandehi) preferred to begin treatment when one or a few birds exhibited clinical symptoms on the farm. When asked about the use of antimicrobials in feed formulation, 60% agreed that it was inappropriate, while 40% still supported or were unsure about its use- highlighting ongoing confusion or disagreement regarding best practices.

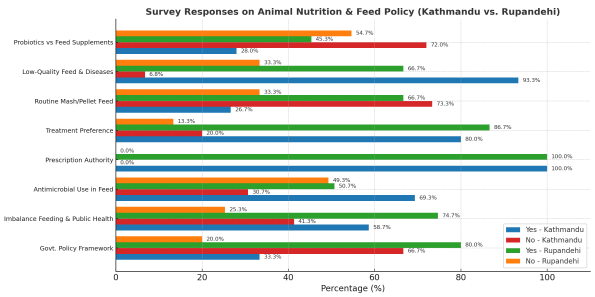

Figure 2: Questionnaire and Farmer response

Attitude of farmer

In the attitude section of the study, a total of eight questions were presented to all participating farmers. While all respondents answered these questions, the data showed variation between farms. In response to the statements "Commercial feeds are safe, so they are commonly used in poultry" and "Feed additives are given only if birds don't achieve their average weight according to their age," 76.67% and 66.67% of respondents from Kathmandu, and 82.67% and 40% from Rupandehi, respectively, disagreed. Additionally, 60% of all surveyed farms reported using antimicrobials in feed as a preventive measure. This included 66.67% of respondents in Kathmandu and 53.33% in Rupandehi. However, only 33.33% of total respondents agreed with avoiding the use of non-prescribed feed supplements and medicines- indicating a lax attitude toward regulated health and nutrition practices in poultry farming.

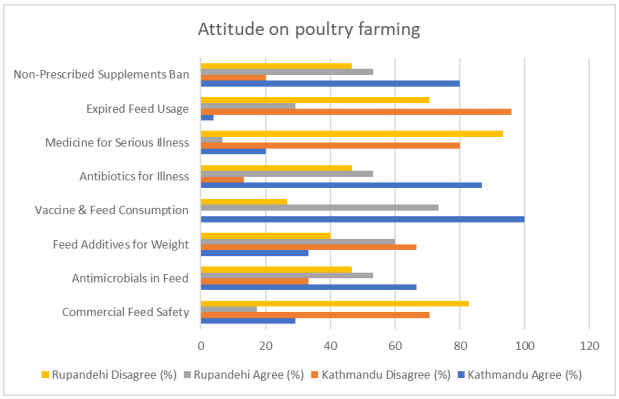

Figure 3: Attitude on poultry farming

According to Figure 3, the study revealed that farmers' attitudes toward key aspects of poultry health management- such as the use of antibiotics for disease prevention, reliance on feed additives, treatment of illness with antibiotics, and the avoidance of non-prescribed supplements and medicines- are generally neglectful. Furthermore, many farmers showed little willingness to change these attitudes, which may lead to serious losses on the farm.

Practice of farming

Despite farmers' general awareness of proper management practices, actual farm operations often did not align with recommended guidelines. As shown in Figure 4, while 73.33% of respondents reported consulting veterinarians, 76.67% admitted to skipping medication doses. Specifically, 66.7% of respondents in Kathmandu and 86.67% in Rupandehi (out of 75 interviewed in each district) acknowledged this practice. Regarding feed storage, 70% of all respondents disagreed with the idea of storing feed mixed with supplements for extended periods. Among

them, 69.33% in Kathmandu and 70.67% in Rupandehi supported this view. In terms of biosecurity, 97.33% of respondents from Kathmandu and 49.33% from Rupandehi did not believe that using a footbath at the farm entrance contributes to healthy production. Additionally, 83.33% of all respondents disagreed with the importance of feed conversion ratio (FCR) alone, believing that climate change plays no role in poultry health. This was supported by 90.67% of respondents in Kathmandu and 76% in Rupandehi. Lastly, 89.33% of respondents in Kathmandu and 57.33% in Rupandehi (out of 75 in each district) showed poor understanding or disagreement regarding age-specific feeding practices. On average, 60% of all respondents did not approve of restricting the use of probiotics and supplements based on the age of the flock, indicating a significant gap in knowledge about age-appropriate nutrition.

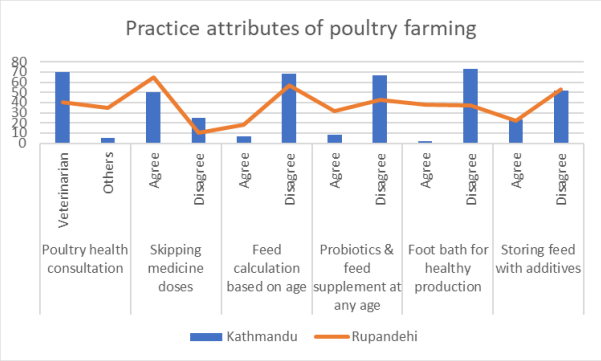

Figure 4: Practice attributes of poultry farming.

Discussion

Socio-economic data revealed that only a small proportion of farmers had received formal training in poultry farming, despite poultry being the primary source of income for most respondents. This lack of training reflects a significant knowledge gap in best farming practices (Ahmed *et al*., 2024; Hassan *et al*., 2021). However, over half of the respondents had entered poultry farming after completing formal education, offering a foundation for further capacity-building. As knowledge plays a critical role in the adoption of new technologies (Pankaj & Saroj, 2023), bridging this gap through targeted training is essential. While many respondents demonstrated a basic understanding of poultry nutrition and health, several critical gaps remained. These included the improper use of antimicrobials, dependence on routine feed, imbalanced feeding practices, limited awareness of national public health concerns, and confusion between probiotics and feed supplements. For instance, in Kathmandu district, many farmers lacked awareness of government policies related to poultry nutrition. Most believed that antimicrobial use in feed was inappropriate, although they showed strong awareness of the link between poor-quality feed and disease. In contrast, farmers in Rupandehi district exhibited greater awareness of government policies but still largely rejected the inclusion of antimicrobials in feed. These findings suggest regional disparities in both interpretation and application of poultry health and nutrition knowledge. Conversations with veterinary experts and data analysis revealed inconsistent levels of knowledge and attitudes among farmers. For example, 36.67% of respondents incorrectly considered probiotics and feed supplements to be the same, and 40% administered these without regard to the age of the birdshighlighting critical gaps that directly affect poultry health outcomes. Attitudes toward poultry management also varied across districts. In Kathmandu, 70.67% of the 75 respondents expressed distrust toward the safety of commercial feed, though many still used it for convenience. In Rupandehi, 82.67% of the 75 respondents regularly used commercial feed despite quality concerns. Both districts demonstrated generally positive attitudes toward vaccination, but persistent misconceptions about antimicrobial use were evident. Many farmers believed that most diseases could be treated with antibiotics and that antibiotics could be added to feed at any stage of production. Feeding practices in Rupandehi were particularly unstructured, with 42.67% of respondents administering probiotics and supplements indiscriminately across all age groups. In Kathmandu,

66.67% of farmers admitted to skipping medication doses- an issue that significantly raises the risk of antimicrobial resistance (AMR). These findings underscore the urgent need for targeted awareness campaigns on the responsible use of antimicrobials (Abraham, 2024; Hassan *et al*., 2021). Moreover, only a small percentage of farmers considered essential factors such as climate change, feed hygiene, or feed conversion ratio (FCR) in their management practices. Common issues- such as missed medication doses, unhygienic feeding conditions, and a lack of attention to FCR- highlight the need for structured, district-specific training programs. According to the data (Figure 1), only 30% of farmers had participated in any organized training program. This emphasizes the pressing need for training initiatives focused on biosecurity, responsible antimicrobial use, and improved feed management. The high percentage of farmers either misusing or skipping antibiotics (60%) signals a growing risk of AMR (Ahmed *et al*., 2024; Hassan *et al*., 2021). Strengthening veterinary consultation services and enforcing feed quality regulations are essential for fostering sustainable poultry production and protecting public health.

Conclusions

The study was conducted from June to August 2022 to assess the knowledge, attitudes, and practices of farmers regarding the management of nutrition and health in commercial broilers. The findings reveal significant disparities across various parameters. While farmers demonstrated good knowledge and practical attitudes in some areas, inconsistencies emerged between their knowledge and actual practices. For instance, farmers exhibited sound understanding in areas such as disease diagnosis, prescription, clinical treatment, and farm management. However, in practice, the application of this knowledge was often lacking. Similarly, while 60% of respondents demonstrated a good understanding of antimicrobial use, their attitudes and practices did not consistently reflect this knowledge. Notably, 70% of farmers agreed with using antibiotics to treat most illnesses and supported their inclusion in feed at any time, while 76.67% admitted to skipping doses when animals appeared to be recovering. These findings highlight a critical gap between knowledge and implementation, emphasizing the need to translate awareness into responsible practices. The study also identified a lack of supportive infrastructure and practical training, which hinders farmers from adopting effective nutritional and health management strategies. As a result, many farmers respond inadequately to poor nutritional policies and continue to perceive unbalanced feeding as a pressing public health issue. This study underscores the urgent need to improve broiler farmers' knowledge and practices regarding poultry nutrition and health management. The results reveal significant gaps in both understanding and application- particularly concerning antimicrobial usage and waste management. Bridging these gaps through targeted training programs and strong policy frameworks is essential. Equipping farmers with accurate information and hands-on skills will not only enhance poultry productivity but also reduce public health risks associated with antimicrobial resistance (AMR) and environmental contamination. Collaborative action among agricultural extension services, veterinary professionals, and policymakers is vital to promote a sustainable and health-conscious poultry sector.

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