BEYOND SUBSISTENCE: ADVANCING RURAL POULTRY FOR ECONOMIC EMPOWERMENT IN TOBA TEK SINGH

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ABSTRACT: This study was planned to look at the influence of rural poultry farming on poverty reduction in Tehsil Toba Tek Singh that involved 302 farmers from 35 villages and. The majority of farmers used backyard poultry for both food and revenue, raising 10–40 birds per household. The results showed that farmers were between the ages of 36 and 40 on average. Thirty percent passed the matriculation exam, while forty-six percent had less than ten years of education. It was observed that 263 farmers (87.1%) came from low-income group and 46% of the poultry care and management was done by women and children. While there was a positive association between financial status and education level (0.205), family size and education level (0.071), and family size and financial status (0.032), the study found a negative correlation between age and education level (-0.159).The birds kept in study area produced just 39 eggs annually and were late to lay their first egg (6.75 months). Hatchability was 69% and the average egg weight was 39 grammes. Poultry birds cost an average of 819.2 ± 59.80 PKR per year, housing cost 952.5 ± 92.93 PKR, feed cost 1111.6 ± 142.30, immunisation cost 168.5 ± 15.42, and treatment cost PKR 508.3 ± 31.81 respectively. There was no funding allocated for sanitising rural poultry housing and biosecurity, and very little was spent on vaccination. Egg sales generated average revenue of 9742.2 ± 674.17 PKR/year, making 95% of total revenue. Poultry farming generated an average yearly profit of 6438 PKR. Less activity (77%), off-feed (57%), feather loss (6%), diarrhoea (55%), blood in the faeces (9%), and trouble breathing (13%), were the most prevalent illness signs seen. Only Newcastle Disease was vaccinated, and 72.6% of farmers vaccinated their chickens. Sanitation practices were not followed, despite farmers adopting preventative measures such adequate housing (64.9%), immunisation (72.6%), and correct diet (66.3%). Dogs (40.9%), snakes (21.2%), rats (8.3%), cats (7.9%), and foxes (9.2%) were the most common predators. Predation was the main cause of disease outbreaks (23.5%) and poultry deaths caused due to predation was (75.8%). Due to unorganized marketing structure, farmers did not receive premium pricing for their rural poultry and the products. A lack of a marketplace (65.2%), fluctuating pricing (49.3%), erratic demand (40.6%), and the involvement of intermediaries (20.5%), expensive transportation (20.1%), and a lack of money (4.3%) were among the issues encountered when marketing. Farmers looked to NGOs for support in order to enhance the rural poultry industry because there were no loans available for poultry production.

Keywords: Rural Poultry, Livelihood, Poverty Alleviation, Subsistence, Punjab.

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INTRODUCTION

Rural poultry refers to birds that are raised on a subsistence basis, on a small scale within family households (Birhanu et al., 2023), often as scavengers, either for household consumption of eggs and meat or for generating small cash income (Mohammed et al., 2020). Rural chickens are the most preferred poultry species, comprising 47.5% of poultry farming in these areas (Mujyambere et al., 2021). Family poultry contributes 19-50% of rural household income, makes up about 77% of the national poultry flock (Ybañez et al., 2018), and provides around 98% of poultry products in rural villages of developing nations (Alemayehu et al., 2015).

Furthermore, national poverty reduction strategies frequently mention family poultry as a crucial element in accomplishing the Millennium Development Goal of halving the number of people living in poverty by 2015 (Wong et al., 2017), and it has helped ensure food security for the landless poor (Islam et al., 2014). Therefore, it is becoming more and more common to use small-scale, family-run poultry systems as a starting point for initiatives aimed at reducing poverty (Abebe, 2017). To improve rural development and reduce poverty, these

issues must be addressed in order to increase the number of poultry in rural areas (Evans et al., 2021).

The management of poultry in rural areas is significantly influenced by the age of farmers (Singh et al., 2020). According to Hassan et al. (2012), only 13.47% of poultry producers were over 50, 35.47% were under 25, and 51.07% were between the ages of 26 and 50. In rural regions, women are heavily involved in the care of chickens (Shuma, 2021). For instance, women make up 62% of rural poultry caretakers in Nigeria, 35% are over 50, 70% are married, and 43.22% have no formal education (Margaret 2011). Simainga et al. (2011) reported similar roles for women. Very low literacy rates (0%), a lack of accessible markets for chicken goods (98.8%), a lack of institutional support (97.5%), high feed prices (96.3%), and recurrent Newcastle disease outbreaks—which result in considerable mortality—are the main obstacles to poultry farming. Thirty-five percent of output losses are attributable to other causes, including predation (Jaafar and Gabdo, 2010; Moreki, 2010; Mlambo et al. 2011).

In many developing nations, chicken raised in rural areas performs worse than poultry raised in commercial settings (Selam, 2013). With a hatchability rate of 81.90%, village hens normally lay three clutches of eggs (15.45±4.53 each clutch) every year. Males reach sexual maturity between 5.5 and 6.5 months, while females begin producing eggs between 5.5-7 months (Yemane et al., 2014). Although the average hatchability is 90%, there are significant differences across growers (Moreki, 2010). Egg production rates were 68%, 72%, and 75%, while hatchability rates were 89%, 88.5%, and 85%, according to Sammy et al. (2010). Clutch sizes varied from 4 to 19 eggs, with an average of 13 eggs (Mesquita et al., 2020). The majority of farmers (87.5%) gave their chickens drinking water. The time between laying cycles was strongly impacted by housing and feeding techniques (Jamima et al., 2020). The majority of village chickens were kept in kitchens (53%) or shelters of some kind (32%) Amanuel et al. (2023).

The most common breeds of chickens raised in Pakistan's rural areas are Desi and Aseel (Saleem et al., 2025). Because of its hardiness, huge size, and resemblance to the Cornish breed, the Aseel breed is regarded as superior. The Desi chicken, on the other hand, is a slow-growing breed that tends to be broody, has tiny eggs, poor feed conversion efficiency, and poor egg production (Haunshi et al., 2019). Desi chicken productivity significantly increased in terms of growth rates, feed conversion efficiency, and the production of eggs and meat, which improved financial returns for rural households (Sarma et al., 2020). Due to their ability to produce 200–220 eggs annually, new varieties including the Rhode Island Red, Dhoki, and Fayoumi were brought to Pakistan (Aslam et al., 2020). Native chickens weigh between 800 and 2000 grammes, are tiny, mature late (20 to 150 days), produce few eggs (20 to 55 g), have small clutches (2 to 3 eggs), and have lengthy laying pauses, frequently accompanied by broodiness (Shafiq et al., 2021). Nonetheless, compared to exotic breeds, hatchability and fertility are often higher.

Rural poultry is one of the key strategies for poverty alleviation and economic uplift and empowerment in rural areas. By transforming from a subsistence activity to a potential productive, productive rural enterprise, it provides a potential source of livelihood and food security for rural households. This study has been therefore planned with two major objectives. Firstly, aiming to diagnose the current state of rural poultry farming, moving past the traditional, low-input low-output model by analyzing existing production practices, identifying key issues like inadequate biosecurity and nutrition, and assessing the socio-economic factors that limit profitability. The second objective is to develop and implement modern rural poultry production strategies that transform these operations into profitable, sustainable rural enterprises. This involves introducing improved breeds and using of modern management tools, all with the ultimate goal of increasing household income and creating more resilient livelihoods for rural communities.

MATERIALS AND METHODS

The methodology employed in this study was designed to provide a comprehensive understanding of the socio-economic impact of rural poultry farming on poverty alleviation. The approach encompassed a descriptive cross-sectional survey design, including a pre-tested questionnaire, face-to-face interviews, and statistical analysis of the collected data. The subsequent sections detail the study area, target population, sampling procedure, data collection methods, and analytical techniques.

Study Area: The research was conducted in Tehsil Toba Tek Singh, located in Punjab, Pakistan. The district of Toba Tek Singh was established in 1982, having been separated from Faisalabad. The region is notable for its significant poultry industry, boasting the country's second-largest concentration of laying birds after Karachi. As of 2011, the district had a total of 1,351 poultry farms, with 499 dedicated to layers and 852 to broilers (Annual Report Poultry Production Office Toba Tek Singh, 2012). In addition to the commercial poultry sector, the rural areas of Tehsil Toba Tek Singh also have a substantial population of rural poultry birds, which formed the focus of this study.

Target Population and Sampling Strategy: All families in Tehsil Toba Tek Singh's villages that raised chicken in the country made up the study's target group. A preliminary survey was carried out to find communities

with a high prevalence of rural poultry in order to choose a representative sample. This led to the intentional selection of 35 localities for the study.

A sample of five to ten rural poultry producers was picked for interviews from each of the villages that were chosen. To provide a wide representation of the rural poultry farming population, the sample selection comprised farmers with a range of bird counts, usually between 10 and 40. 302 rural poultry producers made up the study's total sample size.

Data Collection: In order to gather primary data from the rural poultry producers in a methodical manner, a semi-structured questionnaire was created. Following a careful analysis of pertinent research on socioeconomic surveys and rural poultry development, the questionnaire was created (Fiessha et al., 2010; Moreki, 2010). This iterative method aided in the identification and development of pertinent and useful questions that effectively captured the unique possibilities and difficulties within the local environment. To capture a wide variety of data, the questionnaire was split up into many important sections, which are described below:

Socio-Economic and General Information: Data on the farmer's personal attributes, such as age, educational attainment, and the size and financial standing of their family, were collected in this section. Broader home information was also addressed, including whether additional animals were owned, who was the main career for the chickens, and how long they had been involved in rural poultry farming.

Data Analysis: All data obtained were manually coded, transferred to a computer, and analysed with SPSS version 19. The results were compiled using descriptive statistical analysis, which included frequency distributions, means, ranges, and percentages. Tables and graphical representations were used to convey these findings. A better comprehension of the elements influencing rural poultry production and its socioeconomic impact was made possible by the application of the Pearson correlation coefficient (Luvhengo et al., 2015) to ascertain the correlations between any two quantitative variables.

RESULTS

This chapter discusses the results derived from the data collected through field surveys conducted with rural poultry farmers in Toba Tek Singh. The findings reflect socio-cultural, economic, and productive aspects of rural poultry farming in the region, highlighting its potential role in economic empowerment. Trends are illustrated through tables and graphical representations to provide a deeper understanding of the factors that shape rural poultry production.

General Information and Socio-Cultural Aspects of Rural Poultry Farmers

Age of the Farmers: The majority of poultry farmers in Toba Tek Singh were aged between 36-40 years (35%), with 18% of farmers in the 31-35 years range and 22% in the 41-45 years category. The data reveals a predominance of middle-aged farmers, likely reflecting both maturity in decision-making and experience in poultry farming, yet no significant correlation was found between age and poultry production practices.

Education Level of Farmers: The educational level of farmers in Toba Tek Singh was largely middle pass (33%), followed by matric pass at 30%, and a smaller percentage with primary-level education. The education level exhibited a negative correlation (-0.159) with age, indicating that older farmers often had lower levels of formal education. It is noteworthy that higher education correlates with better adoption of modern agricultural techniques and technologies, which could improve rural poultry production.

Family Financial Status: A significant majority of farmers (87.1%) were classified as poor, earning between PKR 2000-5000 per month. A smaller proportion (12.9%) earned a medium income range (PKR 5001-10000). This financial status highlights the economic vulnerability of rural poultry farmers in Toba Tek Singh. The findings reveal that education level has a strong positive correlation (0.205) with financial status, suggesting that improvements in education could contribute to higher incomes.

Family Size: Family size varied, but the majority of farmers had between 6-8 family members, which is reflective of the extended family system common in rural areas. A large family size was linked to poorer financial status, suggesting that larger families might contribute to greater resource demands, thereby limiting opportunities for financial improvement.

Animal Ownership: A significant portion of the farmers owned 21-30 animals, with poultry being a primary component. Most farmers (160) kept up to 20 poultry birds. The relatively small number of poultry birds in each household indicates that rural poultry farming remains primarily subsistence-oriented, with limited surplus for commercial sale.

Care of Poultry: Women and children were primarily responsible for poultry care, with women contributing 25% and children 5%. This emphasizes the pivotal role of women and children in poultry farming, which could be further supported by educational initiatives to increase productivity and improve gender equality in farming practices.

Table 4.2: Pearson's Correlations between Different Variables

Sr. No.	Variables	Pearson's R Value
1	Age and Education Level of the Farmer	-0.159
2	Age and Family Financial Status of the Farmer	-0.057
3	Education and Financial Status of the Farmer	0.205
4	Education and Family Size of the Farmer	0.071
5	Family Size and Financial Status of the Farmer	0.032

Poultry Breeds and Male/Female Ratio: The study found that Desi and Aseel breeds dominated the region, with a male-to-female ratio of 1:7 for Desi birds and 1:6 for Aseel birds. This skewed ratio indicates a limited breeding potential, which may affect the overall productivity of rural poultry farming in the region.

Table: Average Number of Male/Female Ratio of Rural Poultry Breeds in the Study Area

Poultry	Total No. of Birds	Mean	Std. Error	Male to Female Ratio
Desi Male	1048	3.47	0.216	1:7
Desi Female	7215	23.89	1.461	
Aseel Male	37	0.12	0.036	1:6
Aseel Female	217	0.72	0.253	
Total Male	1082	3.58	0.213	1:7
Total Female	7432	24.61	1.445	

Replacement Stock: Farmers primarily acquired their replacement stock through local markets (95.4%), highlighting a reliance on external sources for poultry management. Only a few farmers (4.6%) bred their own replacement birds, indicating a missed opportunity for sustainable poultry production.

Productive and Reproductive Performance: The productive performance of rural poultry birds in Toba Tek Singh was found to be below that of commercial breeds. The average age at first egg was 6.75 months, significantly higher than the commercial breeds (4-5 months). The annual egg production per bird averaged 39 eggs, which is substantially lower than commercial egg-laying breeds. The egg weight of rural poultry averaged 39 grams, while commercial eggs typically weigh 50-70 grams. Despite these lower productivity metrics, the hatchability rate for rural poultry was 69%, comparable to commercial poultry.

Economic Aspects

Housing and Feeding Management: A majority of the farmers (91.7%) used an extensive housing system, with birds kept in small, rudimentary houses (20-30 birds). This low-investment system may contribute to lower productivity. Additionally, most birds (94%) were allowed to scavenge for food, with minimal supplementary feeding. Only 6% of farmers provided stall feeding, further emphasizing the subsistence nature of poultry farming in Toba Tek Singh.

Expenditures and Income from Poultry: The average annual expenditure on poultry farming amounted to PKR 3790. Major expenditures included feeding (29.3%), housing (25.1%), and purchasing birds (21.6%).

Table: Average Annual Expenditure and Income from Rural Poultry Production

Expenditures	Mean (PKR)	Std. Error	Percent Share
Purchase of Birds	819.19	59.80	21.61
Housing	952.48	92.93	25.13
Litter	4.92	1.04	0.13
Feed	1111.59	142.43	29.33
Vaccination	168.48	15.42	4.45
Treatment	508.28	31.81	13.41
Death Loss	173.38	12.21	4.57
Predation	49.93	5.27	1.32
Diseases	1.82	0.95	0.05
Total Exp.	3790.07	328.18	
Source of Income			
Eggs	9742.22	674.17	95.25
Meat	0.00	0.00	0.00
Sale of Birds	486.23	131.02	4.75
Avg. Income	10228.45	671.93	
Profit per Year	6438.38	389.23	

The average annual income from poultry was PKR 10228, with egg sales accounting for 95.25% of total income. This indicates that while rural poultry farming generates a profit, it remains modest, with a net profit of PKR 6438 annually.

Risk Factors and Health Challenges: Farmers reported significant challenges related to diseases, with Newcastle Disease (ND) and Enteritis being the most prevalent. Vaccination efforts were inconsistent, with only 73% of farmers vaccinating against ND.

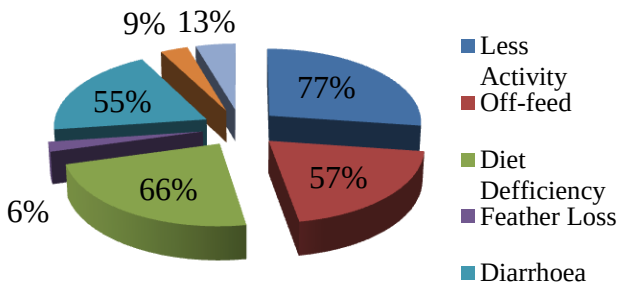

Figure 1.Common Poultry Health Issues

DISCUSSION

The Tehsil Toba Tek Singh research gives important information on the socioeconomic aspects, productivity, and risk factors of rural chicken farming. It also highlights how rural chicken, especially in the rural areas can be exploited as a mode towards economic empowerment and poverty alleviation. When comparing the findings of this research study with the broader work of earlier researchers, several vital points which help contextualize the challenges and potentials to develop the rural poultry farming in the region come to mind.

Socio-Economic profile of rural Poultry Farmers: It also demonstrated that most of the farmers were low-income and illiterate families, as showed in the survey which is in tandem with a bigger global trend observed in other studies. Also, De Zoysa and Silva-Fletcher (2025) argued that socioeconomic status and education are socio-cultural elements that play a key role in the success of chicken farming even in rural places. The research in Toba Tek Singh showed that lesser educated farmers also had a lesser financial means as there was a significant relationship between financial position and level of education. Mohamed (2024) has highlighted that farmers who are well-educated had more chances to adopt better techniques and technology, which puts one significant importance on education in increasing the economic potential of rural chicken farming. The age range of the farmers is also predominant about 36-40 years old and in accordance with the study by Hussain et al. (2022), they have found that older farmers with more experience tended to farm poultry in the rural setting due to being more familiar with the techniques. However, the older age might not be keen on adopting new technology as Sadef et al. (2015) pointed out and this might hinder the progress of the industry.

Productive and Reproductive Performance: As compared to the commercial chicken species, which yield 250 300 eggs in a year, the reproductive capacity of rural fowl in Toba Tek Singh is significantly lower and the average number of eggs laid per bird in one year is 39 eggs per bird. This finding corresponds with previous literatures that revealed the low production of indigenous poultry breeds like Singh et al. (2023). Similar to the 6.75 months observed in this paper Mohamed (2024) also includes the delayed age at first egg among rural chicken. Based on the study, failure to use modern management skills such as controlled breeding and feed supplements is one of the factors that contribute to this ineffective production. Sadef et al. (2015) assert that to increase the reproductive capacity of rural poultry, proper nutrition and management of health may help immensely. Besides, the 69% hatching rate is lower than it is in the commercial poultry farms. This could be caused by poor husbandry procedures, inadequate access to superior breeding animals, lack of proper healthcare, which is the case according to the study. Fiessha et al. (2010) identified the said elements as significant impediments to an increase in the level of poultry production in rural areas, which implies that the areas targeted by interventions could unfold significant levels of gains.

Health and Disease Control: The health of the birds is one of the greatest risk factors of producing poultry products in a rural set up. Most of the farmers in Toba Tek Singh had such conditions as Newcastle disease (ND) and enteritis. According to De Zoysa and Silva-Fletcher (2025), the same findings can be outlined, as they mention that disease outbreaks are of great concern to the backyard poultry systems of a certain place, especially those that lack access to veterinary services and immunisation schemes. The survey revealed that 73 percent of farmers had their birds vaccinated against ND as compared to 90 percent that is recommended on effective prevention of the disease. Abadula et al. (2022) are of the opinion that to minimise the health risks that are present in rural poultry production, boosting the availability of veterinary health services and vaccinations is vital. This immunisation-deficiency and reliance on traditional, non-veterinary methods of treating sick birds are telling. Poor sanitation was also found in Toba Tek Singh; only 42.2 percent of the farmers always cleaned their chicken houses. Fiessha et al. (2010) explain that this filth helps to exchange diseases. With enhanced biosecurity measures which includes regular cleaning, putting sick birds in isolation and waste management, the transmission of disease could significantly decrease and improve the overall health of poultry as well (Faroque et

al., 2023). Furthermore, prevalent diseases like Newcastle disease continue to pose significant threats to rural poultry populations, as evidenced by their high morbidity and mortality rates in various regions, including Ghana and Tanzania, largely due to challenges in implementing robust biosecurity measures and widespread vaccination programs in smallholder systems (Ouma et al., 2023).

Predation and Marketing Barriers: To 75.8 percent of farmers in Toba Tek Singh, predation (particularly by dogs) was a central challenge that led to loss of life by chicken. This conforms to a study by MuñozGómez et al. (2023) which found out that predation is among the primary issues challenging poultry producers in rural markets. To reduce these losses, the role of improved housing and prevention measures was outlined in the study. Mohamed (2024) also highlighted the fact that socio-cultural factors, like the notion that chickens are an easy prey of predators, often make farmers fail to take adequate preventative action.

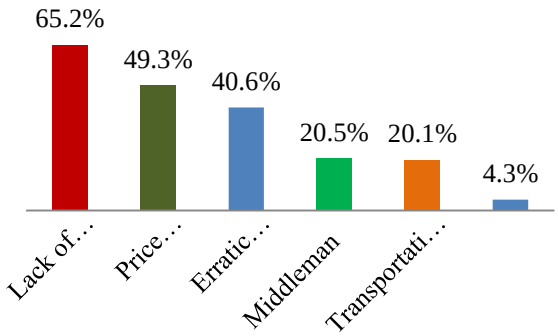

Figure 2. Rural Poultry Marketing Issues

To the rural poultry farmers in the region, a major predicament was the market restraints like pricing and intermediary nature. Hussain et al. (2022) further note that the chicken price is often determined by the intermediaries in the countryside, so farmers are not profitable. This conclusion can be validated by their findings. These are compounded by the unpredictable demand of the chicken products and not having a systematic marketing system in operation. Sadef et al. (2015) state that eliminating middlemen and having more access to the market may multiply the profitability of farmers. To aid in poultry farming, the findings of Toba Tek Singh indicate that there exists the need to establish formal marketing outlets and upgrade the infrastructure.

Economic Potential of Rural Poultry Farming: The paper shows that despite such challenges, rural poultry farming has a huge economic potential. The fact that the average annual profit of poultry farming is PKR 6438 reflects that it could be a nice income generating activity, particularly to poor families. This aligns with the results by Abadula et al. (2022), who found that rural chicken farming, when the enabling barriers are present, could significantly alleviate poverty among poor rural areas. The study suggests that the quantity of chickens, the accessibility of the market, and improved health and disease control are some of the factors that may all result in an improved financial benefit of raising chickens.

Conclusion: In conclusion, the research on rural poultry farming in Toba Tek Singh provides valuable insights into the socio-economic and productive challenges faced by farmers in the region. Potential economic empowerment of rural poultry is apparent, and it is necessary to consider important topics to overcome in the health and disease management, predation and marketing constraints towards further profitability and sustainability of rural poultry farms. The results of the study are in line with international research which has also highlighted that challenges of rural poultry farming can only be solved through integrated interventions which may include education, healthcare, enhanced biosecurity and access to markets so as to unearth the potential of rural poultry farming as a means of economic empowerment in Toba Tek Singh.

Author Contributions: Rana Usman and Zia-Ur Rehman were responsible for the overall study design, data collection, and initial data analysis. They also played a lead role in drafting the manuscript. Muhammad Tariq provided critical guidance on the methodology and contributed significantly to the interpretation of the results. He also revised the manuscript for intellectual content. Muhammad Ashraf assisted with the data collection and performed the statistical analysis. He also contributed to drafting the results and discussion sections. Khadija Rabbani provided expert consultation on the research framework and helped in a comprehensive review of the final manuscript. She also contributed to the background and literature review sections.

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