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## A survey of poultry farmers of Udaipur district regarding the farm demographics, production, hygiene and biosecurity measures

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#### Abstract

Poultry farming plays an important role in providing nutritional support, employment opportunities, enhancing rural income besides meeting consumer demands. Apart from its huge contribution to rural livelihood, not much interest has been shown by the farmers to enhance up the production process. A total of 21 poultry farmers were interviewed in the study area. A set of questions were asked from the poultry farm personnel which included farm demographics and description, farm hygiene and biosecurity measures, farm production and marketing channels. Higher education status indicates a better socioeconomic status of the poultry farmers. Majority of the farmers having poultry farming as their main source of income point towards the importance of poultry rearing as a tool for income generation and poverty alleviation. Moreover, the strict implementation of biosecurity measures is essential for preventing the transmission of various exotic poultry diseases. Since, the poultry products are perishable in nature; there is a need to provide adequate storage and transportation facilities to improve the poultry production and marketing.

**Keywords:** Poultry, socioeconomic status, farm hygiene and biosecurity

#### Introduction

Access to adequate quantities of healthy and wholesome food is necessary for sustaining life and promoting good health. Diarrhoeal diseases are the most common diseases caused by the ingestion of infected food, leading to illness in 550 million people and 2,30,000 deaths per year (WHO, 2019) [18]. Food health, food security and nourishment are inextricably related. Unsafe food produces a dangerous cycle of illness and malnutrition, affecting babies, young children, the elderly and the poor in particular. Food-borne diseases hamper socioeconomic development of the nation by damaging health care systems and harming national economies, tourism and trade. Poultry can be reared by the underprivileged section of the society to uplift their socioeconomic status. Both commercial and backyard poultry are popular in the country due its economic and nutritional status.

*Salmonella*, *Campylobacter* and *Enterohaemorrhagic Escherichia coli* are among the most common food-borne pathogens that affect a large number of people globally. The symptoms of the illness include fever, headache, nausea, vomiting, abdominal pain and diarrhoea. Major examples of foods involved in outbreaks of salmonellosis are eggs, poultry and other products of animal origin (WHO, 2020) [17]. The majority of cases are caused by the fecal contamination of foods of animal origin or by the consumption of poultry or its products (Hald *et al.*, 2016) [9]. Nontyphoidal *Salmonella* is one of the most crucial zoonotic bacterial food-borne pathogens, resulting in 93.8 million annual cases among the patients having gastroenteritis, with an estimated 1,55,000 deaths each year globally (Majowicz *et al.*, 2010) [11]. Thus, monitoring on poultry farms is a challenging issue and relies primarily on the implementation of biosecurity measures in the farm setting (Donado-Godoy *et al.*, 2012) [5].

#### Materials and Methods

In the present study, 21 poultry farms located in Udaipur district in Rajasthan were selected

randomly for conducting survey. A set of questions were asked from poultry farmers which included farm ownership details, farm demographics, farm hygiene and biosecurity measures, farm production and marketing channels.

## Results and Discussions

Poultry farming involve the activities of livelihood at one end to the commercial operation at the other end. Data from the poultry farmers were collected by conducting a questionnaire-based survey in the form of interviews.

### 1. Farm demographics and description

In order to describe the poultry farmers on the basis of their age, education, sex and source of income they were grouped into suitable categories. The farms demographics and description details are presented in Table 1.

**Table 1:** Farm demographics and description

S. No.	Variable	Category	Overall respondents (N= 21)	
			F	%
1.	Age of poultry farmers	Young (up to 28 years)	4	19.05
		Adult (29-36 years)	10	47.62
		Old (above 36 years)	7	33.33
2.	Education level of poultry farmers	Illiterate	0	0.00
		Primary School	7	33.33
		Secondary School	5	23.81
		Senior Secondary School	4	19.05
		Graduation	4	19.05
		Post Graduation	1	4.76
3.	Gender of poultry farmers	Male	18	85.71
		Female	3	14.29
4.	Source of income of poultry farmers	Main	19	90.48
		Subsidiary	2	9.52

F = frequency

The findings obtained in our study indicated that the majority (47.62%) of the respondents belonged to adult age group ranging from 29 to 36 years of age, followed by 19.05% respondents who belonged to young age group (< 28 years) and rest of the respondents (33.33%) belonged to old age group (>36 years). Majority (33.33%) of respondents were educated up to primary school level, whereas 23.81%, 19.05%, 19.05% and 4.76% of the respondents were educated up to the secondary school, senior secondary, graduate and post graduation level, respectively. It was further revealed that none of the poultry farmers were illiterate. Majority of the farmers involved in poultry farming were male (85.71%). While, only 14.29% were female. Poultry farming was the main source of income for 90.48% of the farmers, while 9.52% had the poultry farming as the subsidiary source of income.

Mishra *et al.*, 2020 [12], Billah *et al.*, 2013 [3], Fasina *et al.*, 2007 [6] and Awogbemi *et al.*, 2018 [2] have reported similar findings which revealed 44.38%, 44%, 43% and 43.3% of the poultry farmers having age between 29-36 years, respectively. Similarly, higher percentages were revealed by Van Asselt *et al.*, 2018 [16] and Nayak *et al.*, 2020 [13] as 73% and 66% respectively. For the poultry farmers aged less than 28 years higher percentage were reported by Mishra *et al.*, 2020 [12], Billah *et al.*, 2013 [3] and Fasina *et al.*, 2007 [6] as 30.63%, 38% and 30%, respectively. While lower percentage were reported by Van Asselt *et al.*, 2018 [16], Nayak *et al.*, 2020 [13] and Awogbemi *et al.*, 2018 [2] as 11%, 12.5% and 13.3%, respectively.

In our study, none of the poultry farmers surveyed were found to be illiterate. While, contrasting findings were revealed by Sankhyan *et al.*, 2013 [15], Adoligbe *et al.*, 2020 [1], Mishra *et al.*, 2020 [12], Billah *et al.*, 2013 [3] and Nayak *et al.*, 2020 [13], who reported 8.4%, 26.77%, 35.63%, 38% and 9.5% poultry farmers as illiterate, respectively. This points towards the better education status of poultry farmers in the study area. Similarly, it was also found that 19.05% of the poultry farmers in the study area were educated up to senior secondary school level. Comparatively lower percentage were reported by Sankhyan *et al.*, 2013 [15], Mishra *et al.*, 2020 [12] and Billah *et al.*, 2013 [3] as 16.1%, 9.38% and 10%, respectively.

Out of the 21 poultry farmers surveyed, 18 and 3 farmers were male and female, respectively. Similar findings were revealed by Van Asselt *et al.*, 2018 [16] and Awogbemi *et al.*, 2018 [2], who reported 88% and 81.7% as male, while 12% and 18.3% as female poultry farmers, respectively. Nayak *et al.*, 2020 [13] revealed that 85.5% of the poultry farmers (n=200) had poultry farming as their main source of income which was similar to the findings observed in our study. This emphasizes the significance of poultry production as a source of employment at household level. Poultry meat is a good supply of quality protein and household income to the poor rural and peri urban families. More participation of adults between 29-36 years of age indicates that poultry farming provides a good support to the household income.

### 2. Farm hygiene and biosecurity measures

The application of hygienic methods in poultry farming involves regular and timely cleaning of poultry farms, availability of clean drinking water, frequent change of the litter, regular fumigation of the farm along with efficient solid waste management and disposal. If the hygienic protocols are not followed in poultry farms, it may lead to transmission of pathogens within the poultry farm ecosystem (Table 2).

In the present study, it was found that 80.95% of the poultry farms used water along with disinfectant for the regular cleaning of the farm. Carron *et al.*, 2018 [4] and Goualie *et al.*, 2020 [7] have also reported the use of disinfectant as a mode of cleaning operation. While, the remaining 19.05% of the farmers used detergent in place of disinfectant for this purpose. The cleaning of poultry farm was mainly done once in a month (66.67%) and fortnightly (23.81%). Nicholson *et al.*, 2020 [14] and Greening *et al.*, 2020 [8] have also reported that the majority of farmers performed the cleaning of farms monthly and fortnightly. While, contrasting findings were mentioned by Goualie *et al.*, 2020 [7] in their studies which reported that 98.5% poultry farmers performed cleaning of the farms at weekly intervals. Provision of clean and safe drinking water is essential for maintaining hygienic status in the poultry farms. All the 21 poultry farms surveyed in our study used tubewell water as the source of water supply. Greening *et al.*, 2020 [8] have mentioned that 42.4% of the farmers used untreated water at their poultry farms. While, Kumaresan *et al.*, 2008 [10] have reported that 85.4% farmers used pipe line or rain water for their poultry.

The change of the litter was done at monthly interval by 80.96% of the poultry farmers. The farm fumigation operations were either done at monthly intervals (57.14%) or not done at all (42.86%). Solid waste disposal was done by using them as manure as revealed by all the poultry farmers. Adoligbe *et al.*, 2020 [1] found dissimilar result in which it was reported that 13.04% farmers used the farm waste as fertilizers. Zheng *et al.*, 2010 [19] mentioned that 94% poultry

farmers used the farm waste as manure. Regarding the awareness about the biosecurity measures it was observed that only 33.33% of the poultry farmers were having basic knowledge about the biosecurity practices. The emergence and spread of infectious diseases have destructive impact on

poultry rearing. This risk of the transmission of diseases can be reduced by following the biosecurity practices. Thus, the strict implementation of biosecurity measures is essential for preventing the transmission of various exotic poultry diseases.

**Table 2:** Farm hygiene and biosecurity measures

S. No.	Variable	Category	Overall respondents (N= 21)	
			F	%
1.	Mode of cleaning	Water + Disinfectant	17	80.95
		Water + Detergent	4	19.05
2.	Cleaning frequency	Never	0	0
		Weekly	2	9.52
		Fortnightly	5	23.81
		Monthly	14	66.67
3.	Source of water supply	Tubewell	21	100.00
		Storage	0	0.00
		Pond	0	0.00
		Pipeline connection	0	0.00
4.	Frequency of the change of litter	Never	0	0
		Weekly	2	9.52
		Fortnightly	2	9.52
		Monthly	17	80.96
5.	Farm Fumigation	Never	9	42.86
		Weekly	0	0.00
		Fortnightly	0	0.00
		Monthly	12	57.14
6.	Waste disposal	Yes (Use as manure)	21	100
		No	0	0
7.	Awareness about the biosecurity measures	Yes	7	33.33
		No	14	66.67

### 3. Farm production and marketing channels

In the present study it was revealed that most of the poultry products were sold in the retail market (61.90%), followed by whole sale market (23.81%) and 14.29% were sold on the farm (Table 3). Sankhyan *et al.*, 2013 <sup>[15]</sup> reported that 78.6% and 21.4% of the farm produce were sold at the farm and in nearby market, respectively. On the other hand, Fasina *et al.*, 2007 <sup>[6]</sup> reported that 27% and 73% of the poultry farm

products were sold directly to the consumer and in available nearby market, respectively. Similarly, Kumaresan *et al.*, 2008 <sup>[10]</sup> observed that 70.7% and 24.4% of the poultry farmers sold the poultry products in a local market and nearby available markets, respectively. Further, it was found that 85.7% of the farmers did not maintain any kind of poultry farm records.

**Table 3:** Farm production and marketing channels

S. No.	Variable	Category	Overall respondents (N= 21)	
			F	%
1.	Place of the sale of poultry products	On the Farm	3	14.29
		Retail Market	13	61.90
		Whole Sale Market	5	23.81
2.	Maintenance of farm production records	Yes	3	14.29
		No	18	85.71
3.	Frequency of transportation of the farm products	Daily	5	23.81
		Weekly	5	23.81
		Fortnightly	0	0.00
		Monthly	11	52.38
4.	Quantity of farm produce marketed (Kg live weight per month)	1-100	9	42.86
		101-200	1	4.76
		201-300	1	4.76
		301-400	1	4.76
		401- above	9	42.86
5.	Location of market	Within the Udaipur district	10	47.62
		Out of the Udaipur district	11	52.38

This study points towards the lack of awareness about the importance of maintaining proper records. Moreover, the poultry produce was transported to the market at monthly intervals (52.38%), daily and weekly (23.81% each) intervals. The quantity of the farm produce marketed varied from lower quantities (1-100 kg live weight per month) to higher

quantities (401 and above kg live weight per month) by the 42.86% of the poultry farmers each. Out of the 21 poultry farmers, 10 and 11 poultry farmers sold their market produce within the district jurisdiction and outside the district, respectively.

There are many challenges faced by the poultry industry which comprise lack of awareness among the poultry farmers, poor transportation and storage facilities, limited availability of markets and lack of financial assistance. Although, the poultry rearing enhances the rural economy by providing a source for income generation, there is still a need of creating awareness among the farmers and improving infrastructure for poultry production. Since, the poultry products are perishable in nature, there is a need to provide adequate storage and transportation facilities to improve the poultry production and marketing.

### Conclusion

A survey of poultry farm personnel which included farm demographics and description, farm hygiene and biosecurity measures, farm production and marketing channels, reveals that the poultry farming plays a significant role in providing nutritional support, employment opportunities, enhancing rural income besides meeting consumer demands. Regardless of its enormous contribution to rural livelihood not much interest has been shown by the farmers to scale up the production process.

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