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A survey of livestock farmers in rural Punjab on common animal health and hygiene practices

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Abstract

An interview based study comprising 25 different and relevant questions related to information on animal health management and hygiene practices was designed to evaluate the awareness of farmer related to common animal health and hygiene practices. A total of 100 randomly selected respondents were taken for the survey from rural areas of Faridkot district of Punjab, India. A majority of the farmers were illiterate (54%), only 12% of the farmers do farming as main source of income, concrete made floor was found in the majority of the animal shed (59%) followed by earth and brick (30% and 11%). Most of the farmers practice rearing backyard poultry (55%), used milk for self-consumption (42%), animal waste management using dung for manure in farm (74%), as fuel for cooking (21%). Farmers prefer simple feeding practices with 51% giving homemade feed to animals, 98% feed green fodder. Most of the farmers try to treat their cattle by themselves in the primary stage using local herbs as primary medications (46%). Most farmers vaccinate their animals regularly (62%) but do not practice regular deworming (85%). Colostrum feeding to the calves was practised by 100% respondents but majority of them were not so strict about calf movement just after birth (64%). 94% of the farmers maintain a healthy manner of regular animal shed cleaning and hand washing practices with female as the good hygiene performer. Udder cleaning was practised by 100% respondents before milking but 22% practice cleaning after milking. Almost 68% of farmers mentioned about having no different animal shed. To close the knowledge-to-action gap and enhance farmer awareness among small-scale farmers, a variety of training and workshops must be conducted to the establishment of healthy farming policy.

Keywords: animal health, contact survey, dairy, farmer awareness, questionnaire

Introduction

People living in poverty have increased globally in recent decades, with a considerable percentage of them earning a living through basic production activities in rural areas. As majority of individuals are classified as primary producers, earning less than Rs. 353 a day, with most of them being small-scale farmers (The Punjab Minimum Wages Notification 1st Mar 2020.Pdf, n.d.). Small-scale farmers in poor nations benefit from livestock production in a variety of ways, including food, manure, money, savings and insurance, social standing, and social capital. Livestock farming is one of the most prominent household income sources in this region, accounting major share of total household revenue. Apart from the poor and extreme poor, the livestock sector is the most important source of nutrition (milk and meat) for billions of rural and urban households. Because of the world population increase, the relevance of this multipurpose sector is growing day by day to supply food demand. This sector, which provides us with food and security, has a delicate relationship with both human and animals (health and income) as well as the environment.

Several study reports have indicated that livestock is a potential reservoir of various pathogenic organisms that can cause severe health risks in both animals and humans if proper husbandry and cleanliness are not performed. The most concerning issue now is that small-scale farmers in developing countries, who make up the majority of the conventional livestock farming system, are largely uneducated and untrained. They manage their farm in an old-fashioned manner, with no concern for modern or healthy farming practises. These farmers from developing countries' rural-semirural areas sometimes have the facilities but do not practise proper hygiene because they are not well-educated about the consequences of an unhealthy farming system. This is why, with or without knowledge, animal husbandry has always been a sensitive subject. Poor animal husbandry practises in rural and urban areas increase the danger of disease transmission to people of all ages.

The purpose of this questionnaire survey was to learn about common hygiene and animal husbandry practices in the Faridkot district of Punjab, India. Here we are testing basic knowledge and managerial practices of rural farmers. The practices and behaviour of the farmers may vary from farm to farm and may be linked to the knowledge, gender, education, and income of the farmer.

Materials and Methods

In present study, awareness of farmer related to common animal health and hygiene practices was studied through sample survey. A questionnaire/interview schedule comprising 25 different and relevant questions related to information on animal health management and hygiene practices was designed and pre-tested before using it for the study. A total sample size of 100 randomly selected respondents (both male and female) was taken for the survey in rural areas of Faridkot district of Punjab, India (30.67°N 74.76°E). The survey was conducted during January to March, 2020. In order to assess different aspects of animal welfare, farmers were asked about their perception of animal health and how this had been changing. The questionnaire was thoroughly checked after completion of data recording and then analyzed. The answers were entered into a computer spread sheet, Microsoft excel® (Microsoft Corporation, USA). Further descriptive data analysis like frequency, average and percentage were calculated by IBM SPSS_25.

Results

In response to the interview about educational level of farmers it was observed that majority of the farmers were illiterate (54%), followed by primary, matriculation and graduate with 25%, 12% and 9% respectively (table 1). Farmers, who raise only cattle, were kept for the survey and the minimum number of cattle was 2. All of the farmers reported having farming experience of more than 2 years at least. Only 12% of the farmers do farming as main source of income and rest of the farmers do farming for a mixed reason

(side business and family nutrition). Their actual professions were like daily labour, shop keeper etc. Concrete made floor was found in the majority of the animal shed (59%) followed by earth and brick (30% and 11%, respectively). Apart from rearing dairy animals most of the farmers also practices rearing backyard poultry (55%), followed by sheep/goat and swine with 39% and 6% respectively. Most of the farmers used milk for self consumption (42%), followed by marketing through middle man (28%) and cooperative dairy (22%). Animal waste management especially dung is done as using it for manure in farm (74%), with some of them (21%) using cow dung cake as fuel for cooking.

The farmers mostly prefer simple feeding practices with 51% giving homemade feed to animals as well as 98% of them feed green fodder (chopped/unchopped). Animal check-up was done at different intervals, or without regularity, farmers consult with a vet or local pharmacist only when an animal fell sick. Table 1 is organized with a detail of animal health check-up interval, consultancy level of farmers with vet/pharmacist etc. With a very few response for fixed check-up budget, most of the farmers try to treat their cattle by themselves in the primary stage. Some of them use local herbs as primary medications (46%). Most of the farmers do vaccinate their animals regularly (62%) but do not practice regular deworming (85%). All of the farmers responded positively about colostrum feeding to the calves although majority of them were not so strict about calf movement just after birth (64%). Investigation upon different questions about good hygiene practice revealed that 94% of the farmers maintain a healthy manner of regular animal shed cleaning and hand washing practices. A majority of farmers follow the practice of udder cleaning with 100% cleaning before milking but only 22% of them practice cleaning after milking. The response about animal shed location for animals left this survey with a great concern. Almost 68% of farmers mentioned about having no distant animal shed. Upon further analysis of the data, we found female as the good hygiene performer than male farmer.

Table 1: Awareness of farmer related to common animal health and hygiene practices (n=100)

S. No.	Question	Response
1	Education level of farmer	
	a) Illiterate	54%
	b) Primary	25%
	c) Matriculation	12%
2	d) Graduate	9%
	Land possession of farmer	
	a) Landless	11%
	b) Small (<5)	55%
3	c) Medium (5-10)	18%
	d) Large (>10)	16%
	Herd size (no. of animals)	
4	a) 1-5	65%
	b) 5-10	25%
	c) >10	10%
5	Any other animal kept	
	a) Poultry	55%
	b) Swine	6%
6	c) Sheep/Goat	39%
	Marketing channel adopted for milk	
	a) Self consumption	42%
	b) Cooperative dairy	22%
7	c) Middle man	28%
	d) Direct to consumer	8%
8	Routine Vaccination	
	a) Yes	62%
9	b) No	38%
	Routine deworming	
10	a) Yes	15%
	b) No	85%

8	Floor type a) Kacha b) Brick c) Concrete	30% 11% 59%
9	Dumping of dung/ animal waste a) Manure b) Composting c) Cow dung cake	74% 5% 21%
10	Heat stress management a) Tree cover b) Modern shed c) Water sprinkler	68% 21% 11%
11	Access to water a) Once a day b) Twice a day c) Thrice a day d) 24 hours	2% 53% 35% 10%
12	Training related to dairy farming attended a) Yes b) No	18% 82%
13	Disease diagnosis a) Self b) Local pharmacist c) Veterinarian	51% 10% 39%
14	Primary treatment type a) Local herbal b) Local pharmacist c) Veterinarian	46% 29% 25%
15	Response to sick animal a) Immediate b) Wait for few days	59% 41%
16	Behaviour to sick animal a) Try to cure b) Sell	88% 12%
17	Animal shed cleaning a) Regular/Daily b) When required	94% 6%
18	Cleaning udder before milking a) Yes b) No	100% 0
19	Cleaning of udder after milking a) Yes b) No	22% 78%
19	Colostrum feeding to calf within 2 hours of birth a) Yes b) No	36% 64%
20	Supplement feeding a) Commercial feed b) Home made c) None	29% 51% 20%
21	Method of mating a) Natural b) Artificial insemination	12% 88%
22	Availability of green fodder to animals a) Free grazing b) Chopped/unchopped fodder	2% 98%
23	Bedding material a) Straw b) Sack c) Rubber mat	21% 52% 27%
24	Hand washing habit of farmer while handling animal a) Yes b) No	65% 35%
25	Dairy farming business a) Main source of income b) Side business c) For family consumption	12% 45% 43%

Discussion

In this study an assessment of general animal health and hygiene practices followed in rural areas of faridkot district of Punjab was surveyed. The dairy production is mainly a small-

scale, family-run industry and the milk production is mainly carried out by small, rural based farmers and laborers with no own land (Doughrate *et al.*, 2013) [2]. In this survey most of the farmers had small land holdings (<5 acre).

It is a common practice to produce small-scale livestock in the households of different developing regions (urban, peri-urban/suburban) of world (McKague & Oliver, 2012; Pica-Ciamarra *et al.*, 2011) [4, 8]. Although this practice is increasing for various reasons, the ultimate issue is to meet the increased food demand and demand for nutritious food by the middle class households (Lowenstein *et al.*, 2016; Peeling & Holden, 2004; Singh, 2001) [3, 7].

Evaluating hygiene in dairy cows is a method to assess welfare of the animals as it is an indicator on the life quality of the animals as well as the quality of the farm facilities.

Hygiene is an integral aspect of the food business, particularly in the milk sector, where any neglect can have serious consequences for the health of both animals and humans. The individual who is involved in this work and is in regular contact with animals and milk throughout the milk production process should be taught in the best practices. By providing adequate cow housing and avoiding contamination from unclean udders and teats, one can keep the animals in good health. This study shows the knowledge gap and common managemental practices being followed by the small household based rural dairy farmers of Punjab. It has been determined that raising awareness of the importance of hygiene among dairy cow keepers is critical in order to improve their knowledge, build a positive attitude, and develop good behavior among milk handlers at all levels.

While conducting the survey, it was found that majority (65%) of the rural household farmers kept only 1-5 milking cows which is in consonance with the finding of (Doughrate *et al.*, 2013) [2], which states that there are 38.5 million dairy cows across the country, which are mostly kept in small herds (Renukaradhya *et al.*, 2002) [10] with the average herd size being around two milking cows (Doughrate *et al.*, 2013) [2].

The small-scale farmers (55% having small land holdings) maintain their farm with a very little cash, more of the farmers (51%) were dependent on homemade feed supplements for the animal in milk and very few (15%) farmers maintain routine deworming of their livestock.

Dairy production is largely carried out for the consumption of small-scale farmers' families, but it also serves as a valuable source of supplemental income (Rajendran & Mohanty, 2004) [9]. The majority of farmers (42%) in our survey also rear dairy cattle as a reason to fulfill the family nutrition demand besides source of extra income (12%). Milk is consumed or utilized on-farm to a considerable extent, but for many farmers, selling a portion of the milk provides a chance to generate a market-based income (NDDDB, 2014) [5].

The farm environment can serve as an important reservoir of microorganisms that could contaminate milk directly through contact with contaminated surfaces, equipment or tools, or indirectly through poor udder and milking hygiene, which can cause udder infection or mastitis leading to excretion of bacteria in the milk (Oliver *et al.*, 2005) [6]. According to our findings, rural dairy farmers have adequate understanding of a few areas of Clean Milk Production, including as the necessity of hand washing after handling of animals (65%) and both pre- (100%) and post-washing (22%) of udder before and after milking respectively. According to a survey done in the state of Rajasthan, 55.84 percent of dairy farmers had a medium level of understanding in different elements of Clean Milk Production, with 33 percent having a low level of knowledge and 20 percent having a high level of expertise, respectively.

Most of the cattle dung disposed in the running drain (41.6%),

while (24.6%) few used it for household and other purposes (Ahmed I, *et al.* 2020) [1]. In this survey, 21% of farmers use cow dung for making dung cakes to be used in their house.

It has been found that Illiteracy (54%) or a lack of information and training (82%), has been identified as a severe risk factor in the practice of animal rearing in the present survey. This limitation of productive knowledge lead to most of the responses as a result of quick action, based on self-diagnosis of diseased animal (51%) by the farmer, with a large number of farmers treating their animals mostly with the assistance of a local pharmacy (29%) and by providing local herbal made medications (45%). It is a matter of great concern that an alarming amount of farmers (82%) with no training attended related to dairy farming are coming up with their knowledge-to-action gap like attitudes could lead serious health issues to their productive animals.

A hygiene training program should be conducted in the rural areas of the state of Punjab, in order to improve the health and hygiene of the animals throughout the process of producing, self consuming and selling milk.

Conclusion

According to this study, education, awareness or training programs has an influence on understanding about the importance of cleanliness in keeping the animal and its surroundings healthy and disease-free. In addition, there is a need to raise hygiene related awareness among small household rural farmers in terms of personal, animal, milk and health and hygiene of the milking animals on rural household basis. However, it is critical to develop minimal rules that will reach farmers on the ground level who rear a small herd for milk purpose to meet the nutritional demand of their family. To close the knowledge-to-action gap and enhance farmer awareness among small-scale farmers, a variety of training and workshops must be conducted to the establishment of healthy farming policy.

Conflict of Interest

On behalf of all authors, the corresponding author states that there is no conflict of interest.

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