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Zoonotic Illness Comprehension among Small-Scale Dairy Producers: An In-depth Analysis

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Abstract

The cross-sectional study, which included 534 dairy producers, looked at the prevalence of cow zoonotic diseases, their risk factors along with the consequences these illnesses have for animal and human populations. Many issues linked to these disorders were included in the survey. According to the survey, (45.88%) of farmers are, male 65.54% and female 34.45% among the ages of 26 and 50, 29.96% are uneducated yet dairy production generates their yearly revenue of Rs. 50,000–Rs. 100,000,000. Of the dairy producers, 53% had less than 25 cows and 57% had less than 5 years of experience. Additionally, the survey found that 74% and 77% of dairy producers are knowledgeable about zoonotic illnesses and de-worming. Mouth disease (62.0%), Rabies (77.3%) and foot are the two most common zoonotic illnesses that affect 77% of dairy producers. The percentages of people who know the way to use disinfection, the approach to use it for hand washing and how to clean cattle sheds are 45, 78 and 64%, respectively. The percentages of money spent on illness treatment each year/animal/person are 44% and 48%, respectively and range from Rs. 751 to Rs. 1,000. The path of transmission of zoonotic illnesses is known to (43.07%) of the responders. Information came from the media, veterinarians and doctors for 33, 30 and 19% of the population, respectively. Signs of zoonotic infections in cattle were observed in 42% of dairy farmers. Following an analysis of specific knowledge of zoonotic illnesses using the Garrett ranking system, it was shown that 86.34% of people knew about the diseases and their symptoms. It was shown that dairy farmers had a low to medium level of awareness of various zoonotic illnesses, but they were alert of foot and mouth disease rabies disease. This research can be utilized to create a well-coordinated, successful one-health strategy for zoonotic preventive measures.

Keywords: Zoonotic illnesses, Disinfection, Rabies, Animals, Awareness

INTRODUCTION

Zoonoses are defined as the people infections and diseases that naturally spread from vertebrate creatures to humans. Microorganisms such as rickettsia, fungus, worms, protozoa and insects can cause congenital illnesses. About 60% of the known human infectious agents are present in other vertebrate species in the natural world (1). Every country in the globe faces a number of animal-related issues that have a detrimental impact on human well-being and economic performance, such as zoological infections illnesses linked to food and environmental contamination from animal (2). The majority of the agents linked to the current epidemics of food-borne illnesses, including salmonellosis and E. coli, a condition known as and listeriosis, are concerning, particularly in poor nations. Moreover, animal- like as Brucellosis at Rabies, Cysticercosis, Bovine Tuberculosis, Hydatidosis, Taeniasis and the condition are not yet recognized as unregulated illnesses that require the care of veterinary medical services (3). Attention around the world has been drawn to zoonotic illnesses due to their potential harm to human health and their resurgence. The rate of newly developing and resurfacing illnesses has grown more than previously as a result of climate change (4). Animal-derived food items can get contaminated during manufacturing, processing, or dealing, which can expose ranchers to zoonotic diseases. Approximately 68% of India's labour force comes into close contact with animals at home. Activities involving creatures and sheds, inappropriate removal of waste from creature sheds, slicing animals with infections, killing sick animals,

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disposing of infectious materials from sick animals and inadequate personal hygiene practices have been identified as significant contributors to risk (5). Zoonotic illnesses affect the health and productivity of animals in direct and indirect ways. The possibility of epidemics of human illness, trade restrictions that negatively affect cattle farmers economically, the expenses of control programs, the higher cost of promoting produce to guarantee its safety for consumption by people and the absence of markets due to dwindling trust among customers are the examples of repercussions that are indirect (6). The biggest factors contributing to the emergence of zoonotic disease in humans is a lack of knowledge about these illnesses (7). Since farming and animal husbandry are the two main industries in towns' residents are susceptible to a variety of serious zoonotic illnesses (8). To ascertain the degree of knowledge, awareness, dangers and possessions of zoonotic illnesses on human being and creature populations among dairy producers, this research was conducted.

The economics of farmers are impacted by their animals. The improper handling of sick and dead cattle increases the expense of city cleanliness, increases the risk of infections spreading from exposed corpses and increases the amount of money spent on preventable health disasters (9). The study (10) examined that lower the zoonotic hazards associated with milk and milk products are those equate to pasteurization; nonetheless, re-infection must be avoided and adequate chilling is necessary. The study (11) examined to comprehend Ethiopian rural populations' knowledge, attitudes and behaviours regarding zoonotic dangers associated with animal birth products. The study (12) carried out in a few urban and peri-urban regions of India to better comprehend the habits and awareness of dairy farmers and veterinary experts about the use of antibiotics and antimicrobial resistance (AMR). The study (13) required due to the growing interconnections between drug use, security of life, welfare of livestock and the slaughterhouse's usage as an epidemic observatory, as well as the health concerns involved. The study (14) investigated the incidence of Cryptosporidium spp. in cattle on the island of Cyprus up to 24 months of age, which has never been done before. The tiny subunit of the ribosomal RNA (18S rRNA) gene was the target of nested-PCR amplification, which was used to screen 242 faecal samples that be taken from 10 milking cow farms in Nicosia for a variety of Cryptosporidium. The study (15) looked at the farm operations that pertain for managing animal wellness and storing milk that put milk quantity and security at risk in Githunguri. Farmer's dairy producers were chosen at lot to participate in a longitudinal study with a pre-tested questionnaire. The research (16) looked at the training requirements for female dairy producers in Iraq's AL Qadisyah Governorate. Random sampling was utilized to choose 125 farm women as a sample. Data has been collected using structured questionnaires and interviews conducted in person. The study (17) evaluated list that explain the possible risks to health as well as the advantages of consuming and producing dairy products. It looked through the electronic databases Medline, Embase, the Co Scopus, Web of Science, PubMed as well as Google Scholar to find published studies on the effects of dairy manufacturing and eating on human wellness. The study (18) evaluated significant indicators and variables associated with the spread of S. aureus along with its resistance genes in Egyptian dairy farms. The knowledge, attitudes and practices (KAPs) of the employees were assessed. The study (19) demonstrated that some of the most significant factors limiting the capacity for production of milk were the calving season, housing circumstances, illness, parasite difficulties and a lack of area for the cultivation of fodder. These factors had concomitant index values of 0.180, 0.154, 0.153 and 0.126. The study (20) examined set out to separate, identify by molecular means including ascertain patterns of antibiotic sensitivity in Pseudomonas identified in raw cow's milk obtained from dairy farms and homes in the districts of Hawassa, Arsi Negele as well as Dale.

METHODS

Examining 534 dairy producers, a cross-sectional study investigated the amount of zoonotic disease in cows, explored the associated risk factors and assessed the impact of these illnesses on animal as well as human populations.

Data Collection

This deliberate scheduling not only made it easier to identify the infection to get information on demographics, farming systems, dairy techniques and husbandry methods, 534 dairy producers were questioned during fieldwork in the local tongue employing a questionnaire that had been validated with closed-ended queries (21).

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The implementation was piloted in the area prior to the conversations and interviewers were trained in a uniform procedure.

Statistical analysis

To completely analyze the data, statistical approaches including percentile analysis and the Garrett ranking strategy were applied to the collected data. By utilizing these analytical methods to highlight trends, patterns and variations in the information, a complete understanding of the value distribution was attained. Percentile analysis was used to help assess whether each data point was positioned in relation to the others, giving important details about how relevant each item was in the overall scheme of things. By identifying and prioritizing significant elements, the Garrett ranking method assisted in assessing the overall significance of the data. The study's robustness was increased and a more sophisticated comprehension of the data gathered from the dataset was made possible by an exhaustive statistical analysis.

RESULT

According to the survey, dairy farmers had a moderate to high degree to be aware of several zoonotic diseases, with rabies and foot and mouth disease that are well-known. These results can offer important new information for creating a cohesive and successful one-health plan to stop zoonotic illnesses.

Demographic distribution details

A study of 534 dairy producers' demographics revealed that 65.54% of them were men and 34.45% of them were between the ages of 26 and 50. Farmer education was completed by 25% of them. The farmers used agricultural cum dairy farming to generate an annual income between Rs. 50,000 to Rs. 1,000,000,00. Seventy percent of the respondents were under 40 years old and 28.65% of them qualified from primary to upper secondary school. According to the study, the majority of respondents were small-scale farmers with monthly incomes under Rs. 10,000 (Table (1), Figure (1) (A) and (B)).

Table (1). Details about the distribution of demographics
(Source: Author)

Details	**Organization**	**No. of respondents**	**%**
Age	< 25	120	22.48
	26-50	245	45.88
	51-100	169	31.64
	Total	534	100
Sex	Male	350	65.55
	Female	184	34.45
	Total	534	100
Educational status	Post graduate	34	6.37
	Graduate	40	7.49
	HSC	60	11.24
	SSLC	87	16.29
	Primary	153	28.65
	Nil	160	29.96
	Total	534	100
Occupation	Agricultural cum dairy farmer	334	62.55
	Dairy farmer	200	37.45
	Total	534	100
Socio economic status	Upper (>10,0000)	120	22.47
	Lower (< 50,000)	184	34.46
	Middle (50,000-1,00,000)	230	43.07
	Total	534	100

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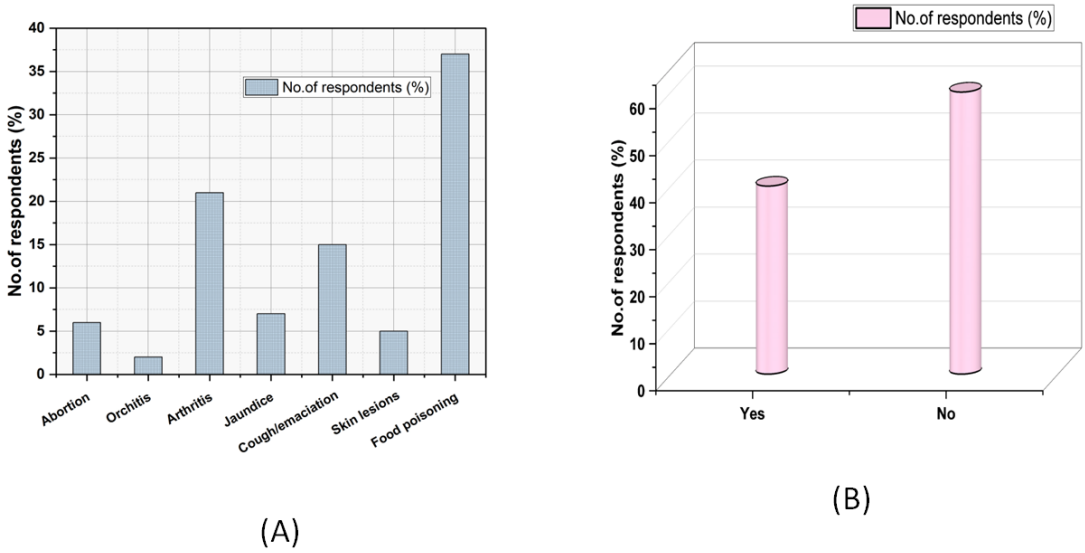

Figure (1). (A) Number of Respondents (B) Signs of zoonotic diseases in cattle
(Source: Author)

Cattle zoonotic diseases and the de-worming status awareness

According to the current study, 74% of dairy farmers and 77% of landowners knew about zoonotic illnesses and de-worming, respectively. Approximately 77% of farmers had knowledge of zoonotic illnesses, counting those connected to mouth disease and foot (71%), anthrax (16.8%), rabies (77.3%), typhoid (18.1%) and Brucellosis (11.6%). Farmer awareness of the diseases Brucellosis (20.9%), Anthrax (71.5%) and Rabies (86.7%) was recognized. According to the most prevalent zoonotic illnesses to be identified were Taeniasis (83.4%), rabies (97.1%), bovine TB (29.1%), hidroidosis (4%) and anthrax (55.4%). Among the zoonotic illnesses that were stated by the majority of respondents, rabies accounted for 384 (100%) and ensued by anthrax 362 (94.27%), TB 340 (88.54 %), teniasis 342 (89.06 %), brucellosis 190 (49.48 %) and 120 (31.25 %) (Figure (2) (A) and (B)).

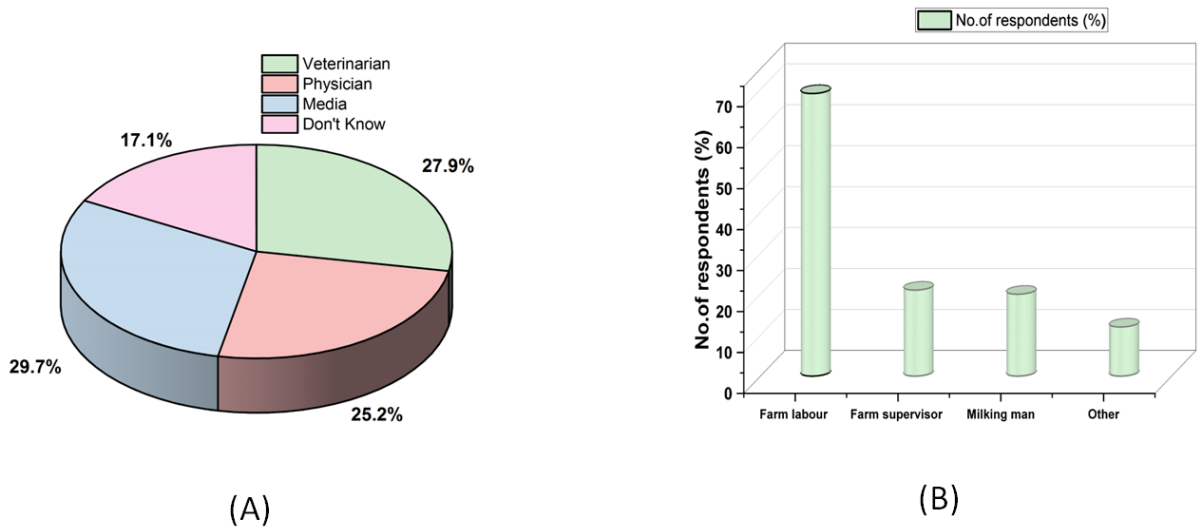

Figure (2). (A) Awareness about zoonotic diseases (B) Number of respondents
(Source: Author)

Increasing awareness of hygienic practices and disinfection to prevent zoonotic diseases in cattle

Among the 534 dairy farmers surveyed, 250 demonstrated knowledge regarding disinfection practices, 284 was acquainted with the frequency of hand washing disinfection and 60.86% were aware of the routine sanitization of cattle sheds. The majority of farmers (40%) disinfected the shed properly and cleaned it twice a day. Among

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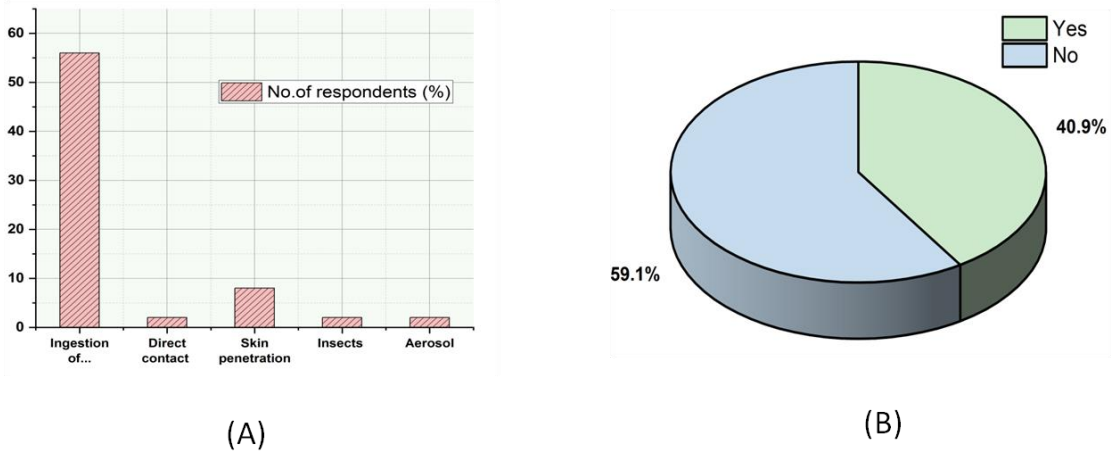
of all farms, 53.18% and 71% have not employed any personnel protection measures or disinfecting techniques to stop the spread of zoonotic illnesses. Overall, it was thought that the farmers' hygiene procedures throughout the milking process and shed cleaning were insignificant. Seventy-three percent of farmers routinely help animals in labour and delivery without wearing gloves. Most responders did not wear protective gear when working with items that had been aborted or dealing with cows that were having abortions (Table (2), Figure (3)-(A) and (B)).

Table (2). Promoting awareness of zoonotic diseases through hygiene and disinfection practices (Source: Author)

Group	**Attentiveness Rank**	**No. of respondents**	%
No. of procedure disinfection	**Yes**	250	46.81
	No	284	53.18
Sum		534	100
Protective measures for personnel	**No**	**374**	29.96
	Face mask	90	24.06
	Gumboot	69	18.44
	Head cap	74	19.78
	Apron	50	13.36
	Gloves	91	24.33
	Yes	**160**	71
Sum		534	100
Incidence of Purifier custom for hand wash	**Yes**	**396**	74.15
	Weekly	196	49.49
	Daily	125	33.87
	Whenever	50	12.63
	Weekly	25	6.31
	No	**138**	25.84
Sum		534	100
Incidence of stock shed organization	**Yes**	**325**	60.86
	<1 time	60	18.46
	2 times	130	40
	3 times	115	35.38
	4 times	20	6.153
	No	**209**	39.13
Sum		534	100



(A) (B)

Figure (3). (A) The transmission of zoonotic diseases (B) Number of respondents (Source: Author**)**

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The farm activity participation status of an individual with immunosuppressant

A significant portion of the 25.84% immunosuppressive dairy farmers reported smoking on their farms, according to the survey.

Awareness of vaccination status for zoonotic diseases

Farmers who had received vaccinations against specific zoonotic diseases like FMD were 19% and 81% aware of vaccinations overall and their significance. Dogs are vaccinated against rabies every year (78%) yet 47.2% of livestock owners are aware that brucellosis might cause abortions. The preventative vaccine against a condition called is available (67.6%) as a preventative strategy. Comparing those who exercised preventative actions with those who had sufficient awareness, a greater percentage of respondents (75.7%) had the latter.

Checking the zoonotic disease status of dairy cattle

A total of 29% of farmers had their dairy cow examined for zoonotic illnesses. It's possible that the majority of dairy producers didn't check their cattle for zoonotic illnesses because they were uneducated and did not know of them.

Knowledge of the pathways via which zoonotic illnesses are transmitted

According to the current study, 43.07% of respondents understood that eating was the primary method of transmission of zoonotic illnesses and 43.07% of respondents were aware of this information. The respondents expressed their opinions that, respectively, 55.6%, 67.2%, 52.0%, 64.0% and 51.2% were aware that zoonotic illnesses can spread to humans through contaminated meat, milk, feed, air, or contact with affected nature. Only 16.4% of respondents were aware that illnesses in animals can spread to people through any number of channels, according to the findings. They discovered that eating meat (18.58%) and milk (14.10%), respectively, might spread zoonotic illnesses (Figure (4)-(A) and (B)).

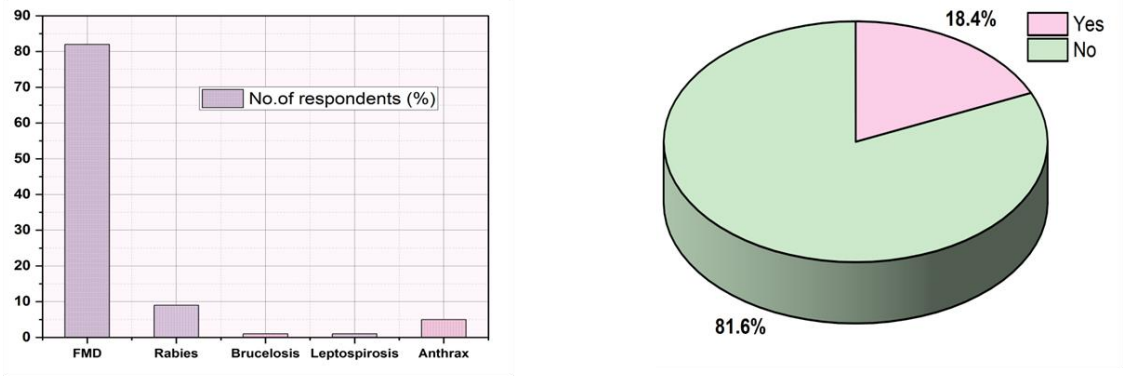

Figure (4). Awareness status regarding vaccination for zoonotic diseases
(Source: Author)

Engagement in activities related to animal husbandry

The sample of respondents' participation in agricultural operations was divided into four categories: farm supervisor (21%), farm labour (68%), milking man (19%) and others (11%) such as ground workers and guests. The research region included individuals with rabies, taeniasis, anthrax, hydatidosis and bovine TB.

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Involves acquiring information about diseases that can be transmitted from animals to humans

The media, veterinarians and physicians account for 33, 30 and 19% of the information sources on public knowledge of zoonotic illnesses, respectively. Through the services of agricultural extension, homeowners (40%) were informed about zoonoses.

CONCLUSION

According to the study, livestock producers had a low to medium level of awareness of other zoonotic illnesses, but they were well-versed in rabies and FMD. Not even the farmers were aware of the existence of some parasite or food-borne zoonosis. Training and teaching can make a variety of healthcare providers more knowledgeable and proficient by encouraging cross-disciplinary study and data exchange among veterinary, public health, agricultural and policy officials. The findings from this research can be utilized to develop a comprehensive and effective strategy that integrates one-health principles for identifying, managing and preventing zoonotic illnesses. Animal reservoirs for many zoonotic illnesses are either unknown or insufficiently understood. Finding these reservoirs is essential to putting control mechanisms in place that work. To find and comprehend the function of animal reservoirs in the spread of zoonotic illnesses, more investigation is required. This involves looking at household animals and wildlife species as possible sources of newly developing illnesses.

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