Original Article

The Fate and Management of Sick and Dying Cattle – Consequences on Small-Scale Dairy Farmers of Peri-Urban Areas in India

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Abstract

Background: The livestock plays an important role in the economy of farmers. The mismanagement of sick and dying cattle leads to an increase in sanitation cost of municipalities, incidences of diseases by exposed carcasses, and hence more expenditure on avoidable health catastrophes. **Objective:** The objective is to study the fate of sick and failing cattle and their detailed management regarding disposal of dead cattle. **Materials and Methods:** The qualitative research approach was used. The dual strategies of purposive sampling and snowballing were employed to identify potential respondents. The study was conducted 15 in-depth interviews among smallholder dairy farmers, scientists, officials of National Dairy Research Institute (NDRI), municipality officials, and veterinarians in peri-urban areas of Karnal, Haryana, located in North India. Data were analyzed based on the contents of these audio-recorded interviews. The recordings have transcribed and translated. After translation completion, a content analysis was performed manually to identify emerging themes and interconnections. **Results:** This article highlighted three core themes such as impact of low literacy and awareness levels, role of informal forms of disposal, and preference of informal channels over municipality. **Conclusions:** There is a gap in current practices and management of sick and dying cattle. Small-scale farmers prefer to dispose their cattle in an informal way. It needs to improve animal welfare by modeling guidelines for disposal of dead cattle and its consequences pertaining to zoonoses.

Keywords: Cattle disease, dairy industry, sick and dying cattle, small-scale dairy farmers, zoonotic infection

Introduction

Domestic cattle have played a central role in human society for centuries. This role continues to be vital in the lives of the most economically challenged people as cattle are one of the most important sources of food security and revenue.[1] Four countries (India, Nigeria, Ethiopia, and Bangladesh) have 44% of the worlds' poor livestock keepers. Many zoonotic pathogens are excreted in feces of animals. Poor hygienic standards and lack of proper measures for excreta disposal allow the pathogen cycle to continue in humans and animals.[2] The usual vehicles of infection for man also comprise viscera, bone marrow, and lymph nodes in muscle tissue from infected carcasses.[3] Human pathogens from all taxa contain zoonotic species. Roughly 80% of viruses, 50% of bacteria, 40% of fungi, 70% of protozoa, and 95% of helminths that infect human beings are zoonotic.[4] Prevention of infection should focus on special care and supervision in the handling of carcasses of infected animals, adequate personal hygiene, and environmental sanitation.[3] Control of vector-borne zoonotic diseases needs combined efforts by clinicians and public health officials to treat patients and promote behavior likely to minimize the risk of infection, restoration of ecological communities, and vector control to reverse the ecological drivers of transmission.[5] There is evidence that extreme temperature increased causes the risk of calf and cow death. Inadequate facilities and hygiene at slaughterhouses can result in contamination of meat and occupational hazards to workers.[6] This article endeavors to develop an understanding

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among individuals about the consequences of sick and failing cattle on small-scale dairy farmers and disposal of dead cattle in India.

Materials and Methods

The study was used a qualitative research approach. It was conducted among smallholding dairy farmers in peri-urban areas of Karnal district of Haryana located in North India. The background review of literature and a formal consultation with the experts of the field enabled to identify relevant stakeholders as well as refine topic guide that were used for data collection. The main phase of data collection was preceded by the formative phase which allowed conducting scoping interviews with key informants in the site as well as piloting the instrument. This study was approved by the institutional ethics committee. Fieldwork was completed from March 1, 2017, to May 1, 2017, at the site. The dual strategies of purposive sampling and snowballing were employed to identify potential respondents with the help of the local partners in each of the field sites. Informed consent had obtained from study participants during fieldwork. Fifteen in-depth interviews were conducted among various stakeholders such as smallholder dairy farmers and large-scale dairy farmers (8), government officials from public health or agriculture sector (2), scientists from Dairy Research Institute (3), and municipality officials (2). This particular research approach has been selected to make it possible to explore small dairy farmers' perspective on the effects, burden of sick and failing cattle, and their management. Interview guide was used for interviewing all relevant stakeholders regarding previous, perceived, future management of sick and failing cattle, disposal of dead cattle and removal of the dead carcasses. The data collection also includes attitudes, feelings, vocal and facial expressions, and other behaviors of respondents. Data collection was stopped on reaching saturation point across the various key themes of inquiry.

Data analysis

Data analysis was based on the contents of these audio-recorded interviews. The recordings were transcribed, translated, and retranslated into local languages to maintain the quality of translation. After translation, a content analysis was performed manually to identify emerging themes, issues, and interconnections. In addition to the recordings of the interviews, each researcher maintained detailed field notes in field diaries. This enabled capturing of details related to key issues that emerged in each location, concerns regarding fieldwork as well as any potential trends that were emerging in the responses of the participants. In addition to the interviews, other information also cited such as comments from the other family members and neighbors. All of the taped interviews, memoranda, and field notes were entered into a computer file. Data confidentiality and data protection have been strictly followed.

Quality assurance

Interviews had conducted by author, trained investigators, and supervisors. The team had monitored daily for completeness, correctness, and comprehensive transcription and transition of responses and recording. Thirty percent of the interviews from every site were randomly rechecked for transcription and translations.

Ethical considerations

The study was reviewed and approved by the ethics committee of the International Institute of Health Management Research, Delhi. Confidentiality, voluntary participation, benefits, right to leave anytime during the study and importance of the responses were conveyed to the participants. Written consent form was assigned before start of the study.

Results

The results are presented in the following core themes from the inductive data analysis:

Impact of low literacy and awareness levels

Access to information has been cited to be an important factor in promoting equity in health care. Knowledge about zoonotic diseases, disposal procedures, and removal of dead carcass is very low among dairy farmers. The traditional method was used to remove dead carcass by peri-urban smallholder dairy farmers because of the low levels of literacy and awareness in the studied communities. This implies that the farmers might be unable to interpret complex medical information even if they have access to it. This assertion receives inputs from veterinarian that they have access to veterinary dispensaries and clinics in their vicinity but are often unable to comprehend why their traditional method is inappropriate for the cattle.

"Health education is an important role in a student life. A chapter on zoonoses should be incorporated in the school textbooks so that the new generation is well aware of the diseases well in advance."

"There is no awareness about the brucellosis or any disease in the village. In the village nobody discovers that the cattle are infected till the time she is carrying and eventually aborts." "Our farmers are not well educated. Their awareness regarding zoonotic diseases is poor. If they are given proper advice, they follow religiously. We need to inform the farmer."

Role of informal forms of disposal

The peer groups are sharing information about selling of cattle. Small farmers have contacted directly to sales representatives for selling their cattle. The dairy farmers preferred this informal chain since it provided direct access to vendor and perceived to be effective both in terms of money and time. Consequently, the farmers often contacted these representatives directly when they needed to explore options for selling their other cattle. Slaughtering is the most common informal channel for disposal of cattle and selling of cattle. There is a de-link between scientific and traditional methods. Mostly, farmers in villages practice the traditional method of burial in the dumping ground.

"*During slaughtering, they see the weight of the buffalo. Anybody can call and sell. Cow is a problem. There are so many bans. When the cow is dead, according to Hindu religion-we practice burial method. In the dumping ground, we bury the cattle. Animal's life span is maximum 20 years one should save, from infection*."

Preference of informal channels over Municipal Corporation (Municipality)

Economics play a major role. The average price realized for field crossbreed animals by the farmers was noticed to be with minimum 2000 (INR) and maximum 150,000 (INR). The reasons for disposal as ascribed by animal owners were better price, fodder shortage, household needs, surplus animal, animal trading as livelihood, unsatisfactory milk production, old age, and problems in breeding. The study of different factors affecting disposal revealed a significant effect of season of sale such as age of animal, lactation stage, type of buyer, and class of animal. MCD has guidelines for disposal but not implemented religiously. The municipality has limited administrative jurisdictions that cover just its region, and there is no mechanism to cover in remote areas and villages.

"Income is good in large scale; we are not dependent on government for any schemes. I have won 11 lakhs price. October to March is our peak season and we earn upto Rs. 20,000 per day during that time. I have 75 cow and buffalo and I am involved in cattle selling business as well which give me lot of profit. I can vaccinate my cattle, also involved in artificial breeding. From Government side, there is no screening."

Discussion

The veterinary official has a vital role to play in providing proper guidance to care-seeking farmers. It is essential to incorporate the smallholder farmers with the right guidelines and efforts to reduce the mismanagement and other ill-handling practices with sick and dying cattle. It is imperative that knowledge, awareness, and good practice habits should be reinforced constantly to prevent injuries, illnesses, and fatalities.

Investigations have shown that the carcasses of sheep, cattle, and pigs may contain brucellae. And also its presence is revealed by clinical symptoms such as abortion. Some of the major circumstances of death in dairy cows were as follows: euthanasia, emergency slaughter, or unassisted death.[7]

On-farm mortality indicates suboptimal herd health or welfare and causes financial loss for the dairy producer. The study was identified cow-level risk factors associated with on-farm cow mortality.[8] This study offered a practical and economical way of interrupting disease transmission, reducing risk, and delivering messages about overall cattle management, health, and welfare.[9]

Welfare assessments based on herd visits are time-consuming and thus costly and only measure welfare at specific points in time. This makes the use of routinely recorded indicators of animal welfare interesting.[10] The field of climate change research represents broader effects of environmental health on human health and animal welfare.[11]

Cattle have a dual position of appreciation in India. It is being important in the food industry as providers of dairy products and culturally, being considered as holy creatures that must not be harmed, killed, or eaten. This status means that cattle have a paradoxical existence in India; as they are worshipped and protected, they are able to roam freely among humans, but they are also often left to fend for themselves.[12] Training programs should target by workers and inspectors to improve awareness of the risks among common people. In addition, education of health-care workers should highlight the increased risks of injury and disease in slaughterhouse workers.[3] These problems are evident in many developing countries.

There are a large number of landless or marginal farmers involved in this sector. Most of the time, they are dependent on state government. No farmers were aware regarding guidelines and policies for disposal of dead carcass. When enquired, the scientists directed to the common people that the state animal husbandry department website has all the data and farmers can always contact veterinary dispensary for government schemes and subsidiaries.

We need to educate about the proper disposal of carcasses, disinfection, decontamination and disposal of contaminated materials, and vaccination. The long-term management of carcass disposal sites is essential irrespective of the cause of mortality. Critically, this ensures eradication of disease and environmental protection from a range of biological and chemical hazards.[13]

Disposal after confirmation, a carcass should not be opened and should be disposed of by incineration or rendering. Personnel should be well protected against the risk of infection by wearing gloves and should be kept under medical surveillance. Health education of abattoir personnel is important.[14]

Effective control strategies require controlling infections in animal populations, liaising veterinary and medical efforts, active involvement of the populations at risk, and good health systems. Controlling zoonoses could substantially reduce the human disease burden and support the livelihoods of poor farmers.[15]

Conclusions

The small-scale dairy farmers are preferred to dispose or sell their cattle in informal ways. The reasons for selling their animals for better price, fodder shortage, household need, surplus animal, animal trading as a business, unsatisfactory milk performance, old age, and breeder problem. Apart from that, the household needs including daughter's marriage, purchase of land, construction of house and animal shed, repaying of loans, paying of children higher education fee, and paying of hospital bills are the reasons for animal sell.

Dairy entrepreneurs may be empowered by providing timely information and knowledge about scientific dairy farming practices. To improve the individual animal's productivity, it would need interventions at genetic, nutritional, and management levels. Due to poor communication and inadequate local laboratory facilities, there is long delay in the diagnosis of diseased animals that causes mortality and morbidity. Local authority has failed to implement policies on disposal of carcasses and subsequent disinfection and decontamination. This needs a coordination effort between people and local self-government. The economic empowerment of small and marginal farmers will help to improve the health and hygienic conditions of animals. There is a great need to create awareness and information, education and communication materials (IEC) activities among farmers and animal producers about zoonotic diseases and safe disposal of dead carcass. There should be a coordinated effort between public health officials, veterinary officials, and PRI members with common people for the management of zoonotic diseases at the local level.

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Conflicts of interest

There are no conflicts of interest.

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