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Knowledge of cattle farmers toward foot mouth disease in Bone Regency, South Sulawesi

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Abstract

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Foot and mouth disease (FMD), which affects cattle and other animals with cloven hooves, is one of the greatest economic threats to agriculture and other businesses. This study sought to understand farmers' understanding and attitude toward FMD. The Bone district, South Sulawesi province was chosen as the site where the research is being done. Purposively, a sample of 41 breeders was selected. Data were collected using observation, questionnaire-assisted interviews, and focus group discussions (FGD). Both open-ended and closed-ended questions were asked. Identity, clinical symptom knowledge, knowledge of the FMD vaccination program, the impact to cattle market price and sources of information on the FMD vaccination program are the topics covered in the questions. The data was handled using the SPSS software version 23, the data was quantitatively and descriptively evaluated using averages, frequencies and percentages. The study's findings indicated that farmers' awareness of the clinical symptoms of FMD was in the high category (78.05%), farmers also had good knowledge of the usage of vaccination (95.12%). All farmers desired to immunize their cattle against FMD (100.00%). Cattle prices have fallen due to the FMD outbreak (92.68%), this shows that the percentage of farmers' knowledge of the impact of FMD on the price of cattle was good, because the price of cattle decreased. Buying and selling livestock can spread the FMD virus (80.49%), this shows that the percentage of farmers' knowledge of the impact of FMD on the spread of FMD virus was good. The local regional government and its employees, including extension agents, veterinarians, and technical officers, were the main sources of information regarding the vaccination program. It is advised that beef breeders receive assistance to prevent additional disease outbreaks.

Keywords: cattle farmers; foot mouth disease; knowledge

Introduction

One source of meat for the community is beef cattle. Meat is very nutrient-dense and provides a number of important nutrients that are hard to get in the proper levels from other food sources, according to Geiker et al. (2021). According to Hastang et al. (2019), the demand for cattle products, particularly beef, has grown along with the population and income levels in Indonesian society. It was marked by a rise in Indonesia's meat consumption, as seen

by the country's increased rate of cattle slaughter over the previous five years.

Disease is one of the factors that reduces cattle output. Nearly all of Indonesia's provinces have experienced outbreaks of the FMD in recent months. Foot and mouth disease (FMD) has a negative effect on worker productivity, livestock reproductive, and production, which results in significant economic losses for the society. According to Mohamad & Shaari (2022), this disease is endemic and will reduce the productivity of draught animals in developing countries likewise penalties for the export of animals and animal products. According to Rohma et al. (2022), the impact of FMD has a considerable detrimental influence on livestock output, including decreased milk production, decreased body weight, miscarriage, and death. Jamal & Belsham (2013) stated that FMD is a highly contagious illness that affects animals with cloven hooves, including cattle, pigs, sheep, and several wildlife species. According to Grubman & Baxt (2004), when incursions take place into nations that are typically disease-free, it can result in significant economic losses.

Ardhi (2022) stated that the cow will exhibit hypersalivation (excess salivation), a sad expression, a fever, and decreased appetite as the first indications. Blisters, erosion, and peeling will appear if the symptoms persist for a long time. Foot mouth disease virus (FMDV) is a virus that causes FMD, according to Adjid (2020). The FMD virus multiplies its RNA and produces viral proteins in infected cells. Depending on the circumstance, temperature, and acidity level, the FMD virus can persist in the natural world. The FMD virus survives in the environment/nature depending on the conditions, temperature conditions and acidity. The FMD virus is more stable and infectious when the virus is still in a layer of skin or mucus and protected from sun exposure, or when the environment is relatively cold. The FMD virus in aerosols is unstable, but the virus can survive for long periods in high humidity. According to Mohsin et al. (2022), identifying carrier animals can help reduce disease incidence in livestock.

The Bone district has the highest number of cattle in South Sulawesi. Data from the Bone Regency's Livestock Service Office shows that the beef herd has reached 430 heads. According to Bone's Livestock and Animal Health Service, 711 livestock were confirmed positive for FMD and 15 cattle died. FMD cases are distributed in 11 villages (Pramono, 2022). Therefore, FMD control measures, coordinated by the competent veterinary authority, should be implemented. Addressing viral diseases at the farm level can be done through preventive, contemplative and facilitative veterinary services. Given the circumstances and conditions on the ground, farmers should support efforts to improve animal health and livestock knowledge capacity. The breeder's knowledge, attitude, and application skills can be improved through consultation and discussion during technical guidance. Services provided include FMD vaccination, biosecurity training, vitamin injections, and treatment of sick cattle. This activity is in line with the government's livestock management programme, as set out in Agriculture Minister Notification No. 01/2022 (Sarsana & Merdana, 2022).

Studies have been conducted on farmers' knowledge of FMD in many countries, including Osmani et al. (2021) in Afghanistan, Nyaguthii et al. (2019) in Kenya, Muralidhar & Krishnam (2019) in India, Talabi et al. (2013), Nigeria and Jemberu et al. (2015) in Ethiopia, however, in Sulawesi there were no studies on farmers' knowledge of FMD. Therefore, the purpose of this study was to determine the knowledge of beef cattle farmers on FMD in the Bone Regency, South Sulawesi.

Materials and Methods

The survey was conducted in the Bone Regency in 2023. The population consists exclusively of beef cattle breeders. A random sample was set specifically for its 41 breeders. Data were collected through observation, questionnaire interviews, and FGD (focus group discussion). Observations were carried out through visits to the cow breeder's barn and observing the condition of the cows. Interviews with breeders were conducted face to face at their homes. The FGD was carried out in the courtyard of the village hall involving cattle breeders, livestock service officers and the neighbourhood chairpersons. Through the FGD it was possible to find the problems of farmers in raising their cattle. Data were processed in SPSS version 23 and quantitatively analyzed in the form of mean, frequency and percentage. Data requested were respondents' identities, respondents' knowledge of FMD, impact on cattle prices, benefits of vaccination, willingness to vaccinate cattle, and source of information on FMD vaccination.

Knowledge of FMD was measured using simple questions. Knowledge can be measured through interviews or questionnaires asking survey subjects or respondents about the content of the material being measured (Notoatmodjo, 2010). Arikunto (2010) added a measure of knowledge by asking questions and assigning 1 point for correct answers and 0 points for incorrect answers. Knowledge values range from 0 to 100 based on the ratio data scale. Knowledge measures can be grouped into three categories: good (76–100%), fair (56–75%), bad (<5 5%).

Results and Discussion

Sample and husbandry characteristics of the study

From Table 1, we can see that the respondents are all men, because raising cattle requires a lot of energy. Bathing the cows, foraging, cleaning the stables, and providing food and drink. Based on the age of the respondents, most of the respondents belonged to the productive category and only 21.95% of the respondents belonged to the elderly category. In terms of education level, most respondents have completed elementary school (63.41%). Regarding farming experience, most cattle farmers have 20 to 25 years of farming experience (58.54%). This indicates that the farmers have extensive experience in raising cattle. The average number of dependents for peasant families was 3.44, and there are no differences in the number of respondents among small, medium and large families. The average herd of cattle was 7.05 heads. Respondents were dominated by 6-10 medium breeders, i.e. 18 breeders (43.90%). Most of the respondents are farmers and breeders, 40 (97.56%). Agriculture is the main business, while cattle breeding is a side business. Only 1 person (2.44%), who was not a farmer. He works as a honorary staff and he was the only respondent with an undergraduate education. Aside from being an honorary staff member, he also raises cattle as a side business.

Knowledge about FMD

Knowledge of cattle farmers toward FMD can be seen in Table 2. We can see from Table 2 that the majority of respondents, 32 (78.05%), were aware of the clinical signs of FMD. This puts FMD's knowledge level into a good category. This was supported by Arikunto (2010), who found that scores between 76% and 100% were considered good knowledge. Thirty-nine farmers (95.12%) said that farmers' knowledge of vaccination was good. This was evidenced by the responses of respondents that vaccination can prevent the

Table 1. Socio-demographic and husbandry characteristics of the study

Characteristics	Average	Min	Max	Frequency	%
Sex					
Male				41	100.0
Female				0	0.0
Age (years)	49.88	26	73		
26–33				3	7.32
34–41				3	7.32
42–49				9	21.95
50–57				11	26.83
58–65				6	14.63
66–73				9	21.95
Education level					
No schooling				1	2.44
Elementary school				26	63.41
Intermediate school				6	14.63
Senior high school				7	17.08
University				1	2.44
Farm experience (year)	16.51	2	33		
2–7				10	24.39
8–13				6	14.63
14–19				1	2.44
20–25				24	58.54
Number of dependents (person)	3.44	0	8		
0–2 (small family)				13	31.70
3–5 (medium family)				14	34.15
6–8 (big family)				14	34.15
Number of cattle (head)	7.05	3	21		
3–5 (small scale)				17	41.46
6–10 (medium scale)				18	43.90
> 10 (Large scale)				6	14.64
Job					
Honorary staff and breeder				1	2.44
Farmers and breeder				40	97.56

Source: Primary data (2023)

spread of FMD. As many as 41 farmers (100%) wanted their livestock vaccinated against FMD free of charge by local livestock authorities. This agrees with Hopker et al. (2021) who said that the majority of respondents in all three regions (Kanha, Bandhavgarh and Kaziranga) were aware of FMD. The majority of respondents expressed a positive attitude towards vaccination. Realized that vaccination protects their animals from certain diseases they wanted to immunize their livestock. The results of this study were complemented by those reported by Nyaguthii et al. (2019) who found that the majority of respondents (94.1%) knew about FMD, of which (80.2%) were able to correctly identify the disease based on their knowledge of clinical signs. Osmani et al. (2021) found that the majority of farmers were able to identify clinical signs of FMD in livestock.

Most of the 38 respondents (92.68) indicated that FMD had an impact on cattle prices, as FMD reduced cattle prices by 50%. This study was supported by Baluka (2016), who found that all actors along the cattle marketing chain suffered losses in foot-and-mouth disease outbreaks. Small farmers were the hardest hit. Mohamad et al. (2020) added that frequent outbreaks of FMD have a significant impact on meat prices in Malaysia. Most of the price drops occurred in a short period of time. A majority of respondents, 33 (80.49%), said that the cattle trade could transmit FMD during an outbreak. Therefore, the government prohibits breeders from buying and selling livestock outside the region. This was consistent with Jemberu et al. (2015) who argued that more than 80% of farmers in market-oriented systems intended to use animal movement restrictions and herd isolation strategies both continuously and during an epidemic. According to Gunarathne et al. (2016), a high proportion (63%) of farmers have little knowledge of the transmission routes of FMD in Sri Lanka.

Source of information

Source of information about FMD can be seen in Table 3. According to Fiaz et al. (2018), the role of diffusion agents is essential for promoting innovative technologies. Mardikanto (2009) proposes in one word the different roles/tasks of advisors: teaching, disseminating information/innovation, advising, monitoring and evaluating. Table 3 showed that for the majority of farmers (97.56%), the main source of information on FMD vaccination came from local governments (veterinarians, advisory staff, neighbourhood chairpersons), whereas the remaining 2.44% of farmers indicated that the information was obtained from the media.

This study follows the findings of Bayantassova et al. (2023) who stated that sources of information on FMD come from health care workers (56%) and the media (13.2%). This percentage indicates that the source of information about FMD was mainly extension workers rather than the media. Breeders prefer to receive information orally and face to face rather than having to read.

Conclusions

Based on this research, it can be concluded that cattle farmers are positioned in the knowledgeable category of FMD. The main source of information on FMD vaccination came from local governments (veterinarians, advisory staff, neighbourhood chairpersons) rather than the media. Therefore, to prevent additional disease outbreaks, it is advised that beef breeders receive assistance from local governments.

Table 2. Knowledge about FMD and its impact to the market

Statement	Frequency (person)		%	
	Yes	No	Yes	No
Cattle farmers know the symptom of FMD	32	9	78.05	21.95
Knowledge about vaccination	39	2	95.12	4.88
Willingness to be vaccinated their cattle	41	0	100.00	0.00
FMD decreased cattle selling/price	38	3	92.68	7.32
Buying and selling livestock can spread FMD	33	8	80.49	19.51

Source: Primary data (2023)

Table 3. Source of information about FMD

Source of information about FMD	Frequency (person)	%
Local government (Veterinarian, Extension staff, Chairman of the neighborhood)	40	97.56
Media (TV)	1	2.44
Total	41	100.00

Source: Primary data (2023)

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