

Research Article

Foot and Mouth Disease: Farmers, Knowledge, Attitude and Practice Direction to Pastoral Community in Lower Shabelle, Somalia

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Abstract

Foot-and-mouth disease is a contagious viral disease of livestock that has a significant economic impact. The disease affects cattle, swine, sheep, goats and other cloven-hoofed ruminants. The disease is one of the major problems that lead an economic efficiency in pastoralists farms that is categorized into clinical and subclinical manifesting of animals Sectors. It is a transboundary animal disease (TAD) that deeply affect the production of livestock and disrupting regional and international trade in animals and animal products. The control of the disease depends on knowledge and Practice of the disease towards farmers and the study aims to assess the knowledge, Attitude and practice among pastoralists in lower Shebelle Somalia. The study was cross-sectional design and used structured face to face questionnaire by using interview to animal community and pastoralists aged between twenty (20) to fifty (50) years old and above. The samples were collected purposively by targeting the available farmers in selected area to assess the knowledge and practice of the disease towards herd leaders and other surrounded. One hundred and ten (110) were questioned out of three hundred (300) by using interview procedure which was 85 (70%) were male. In the selected purposive ample the most aged group were below 35-30 aged. And 85 (72%) have had the disease in fire knowledge and practice throughout farmers in this area. Among of those in the selected samples 15(19%) were mentioned the causative agent is viruses while other 38 (44%) were informed through community health problems. Some farmers were mentioned clinical sings of the disease fever about 50 (59%), depression 16 (21%), hyper salivation 20 (27%), loss of appetite 10(15%), weight loss 8*10%, growth retardation 12(18%) and a drop in milk 2(5%). About attitude and practice of the disease 14(19%) recognised the infection and only 9% had health facilities in the areas. means the outbreak had returned back in pastoralists in lowers abele. Therefore, the study indicated that the infection has both economic impacts and public health problems. Moreover, the community knowledge of the disease is fire while Attitude and precipitation of practice in pastoralists is very poor. so that the study suggests further research and both preventing and control strategic plane throughout pastoralism in this area.

Keywords: Knowledge, Attitude, Practice, Pastoralists, Foot and Mouth Disease, Somalia.

1. Introduction

Food and mouth disease is a former list World Organisation for Animal Health (OIE) transmissible disease that has the potential for rapid international spread, resulting in serious socio-economic significances and disruption of international trade. Foot and mouth disease is a highly contagious disease with the potential to cause severe economic loss in susceptible cloven-hoofed animals [1, 2]. Food and mouth disease is a disease of concern regarding production loses throughout the globe and due to its wide host range (Cattle, Buffalo, Sheep, Goat, Pig, Deer and Bison) and rapid spread by aerosol transmission. Direct animal-to-animal contact, fomites, fodder, inanimate objects and transport vehicles are

the source spread of the virus [3]. Foot and mouth disease (FMD) is a highly contagious disease of domestic and wild cloven-hoofed animals including cattle, sheep, goats, deer, and pigs. The disease is endemic in India with outbreaks reported regularly causing great economic loss.

Foot-and-mouth disease (FMD) was originally noticed in Thailand more than 67 years ago. Approximately 20 outbreaks caused by FMD virus (FMDV) serotype A occur in Thailand every year the outbreaks can result in the calculated slaughter of millions of animals, although adult animals generally do not die, in contrast to the high mortality rate of young animals. FMD is a highly infectious and transmissible

vesicular disease of cloven-hoofed livestock, which causes significant loss of livestock production. The severe economic impact of FMD in endemic countries can be caused as well by the restriction of trade with FMD-free countries, particularly where a trade barrier is imposed upon livestock and their products. FMD is one of the most serious transboundary diseases of animals [4]. FMDV infects cattle, water buffalo, sheep, goats, pigs, and wildlife. FMDV includes the serotypes O, A, C, Asia1, and Southern African Territories (SAT) 1, 2, and 3 [4]. Infection with one serotype does not confer immunity against other serotypes (World Organization for Animal Health, 2019). In April 2010, an FMD outbreak occurred in Miyazaki prefecture, in the south of Japan. After confirmation of the first case on April 20th, the epidemic continued until July 4th and involved a total of 292 farms and over 200,000 cattle, swine, sheep, and goats, and about 290,000 animals have been culled, including vaccinated animals. During the epidemic, the Japanese eradication plan was implemented, which includes stamping out, movement limitations, and disinfection of contaminants. Finally, the epidemic was suppressed after a total of 76 days in one prefecture. A virus separated from the first case, O/JPN/1/2010 (GenBank accession no. KF112885), was phylogenetically analyzed using lines of the VP1 region and classified into genotype Mya-98 of topotype Southeast Asia [5]. In addition, from the results of experimental infections, this virus isolate was confirmed to be pathogenic in swine, cattle, and goats, and to spread efficiently by direct contact.

1.1. Globally

Foot-and-mouth disease (FMD) was originally noticed in Thailand more than 67 years ago. Approximately 20 outbreaks caused by FMD virus (FMDV) serotype A occur in Thailand every year. The outbreaks can result in the calculated slaughter of millions of animals, although adult animals generally do not die, in contrast to the high mortality rate of young animals. FMD is a highly infectious and transmissible vesicular disease of cloven-hoofed livestock, which causes significant loss of livestock production. The severe economic impact of FMD in endemic countries can be caused as well by the limitation of trade with FMD-free countries, particularly where a trade barrier is imposed upon livestock and their products [6].

1.2. Regionally

Foot and mouth disease is the most important livestock disease which is endemic and known for its wider distribution in Ethiopia. In Ethiopia, where the local economy is heavily dependent on livestock, losses incurred due to foot and mouth disease in reduced production and efficiency of livestock may be severe, and local food security is damaged. In Ethiopia's traditional livestock management with the uncontrolled movement of animals, foot and mouth disease spread is attributed to the moving of infected animals. In general, extensive movement of livestock, and the high rate of contact among animals in collective grazing areas, the watering points, and commercial markets could be considered major transmission and dissemination factors for the virus. In Ethiopia, the outbreak of FMD often occurs in the pastoral herds of the marginal lowland areas of the country. This is mainly

due to lack of vaccination, free livestock movement among different regions in the countries and across international borders, the existence of numerous FMD virus serotypes, and the involvement of wildlife [7].

South Sudan FMD outbreaks have been reported from all the major regional states, but are thought to be more common in the central and southern/south-eastern regions, likely due to trade animal movements and higher prices for meat in urban areas, and extensive animal movements associated with pastoralism and the export/trade of animals, respectively. The disease poses a hazard to the national gross domestic product (GDP) incurring from the livestock sector. The economic losses due to FMD is huge which include a decrease in animal production, mortalities, loss of livestock trade [8].

1.3. Somalia

The Somalia economy is highly dependent on livestock export to the middle east, with over four million livestock (mostly sheep and goats) exported in 2010. Importing nations have at times blocked this trade to prevent the incursion of exotic pathogens [9]. 55% of Somalis are directly dependent upon livestock, with livestock exports accounting for 40% of the GDP. Loss of this export income due to the last trade prohibitions has been fatal for the Somali economy, and the resulting reduction in supply has caused problems for importing countries [9]. The species and diseases considered were selected according to stakeholders' recommendations. Diseases included in the study are foot-and-mouth disease FMD cattle, sheep, and goats.

2. Methodology

Lower shabelle is bordered by the regions of banadir, Middle shabelle Hiran, Bay, Middle Jubba, and the Somali Sea. It is named after the Shebelle River, which passes through it. Until 1984, when the regions were reassigned, it was part of the larger Banadir region and its capital was Mogadishu. Its capital is now Marca and Lower Shabelle regions this study was conducted in two districts Afgooye District and Wanlaweyn District. This study was a descriptive design which means it describes the problem under research. In this type of design, the researcher plans to describe the problem rather than analyze it. The study was also cross-sectional in design this type of design allows the researcher to collect research data at one point in time. The study was also quantitative in design. In quantitative design, the researcher aims to determine the problem numerically. This type of design does not need to go deep into the details of the problem.

During data collection, the researcher's target was pastoralists the study focused on a pastoral community that keeps cattle, camel goats, and sheep in the lower shebelle region, especially Afgoye district, and wanla weyn district. These districts were considered the target population for this type of study is respondents from animal caretakers of each district in lower shebelle region are the most suitable group to be interviewed during data collection.

From the target population of 110 the researcher selected respondents as the sample size 110 the researcher was Slo-

venes" formula for sample size determination.

$$n = N/1+N(e)^2$$

n = required sample size N = Target population/ total population = Allowable margin error.

In this case, we consider 5% (0.05) error margin adequate.

$$(e)^2 = (0.05)^2 = 0.0025$$

$$N = 110$$

This study used non-probability sampling methods because for non-finite and non-registration populations the procedure selected in this study was convenience sampling is a non-probability sampling method where districts are selected because they are the easiest for the researcher to opportunity this can be due to geographical nearness, availability at a given time to participate in the research. Sometimes called accidental sampling, convenience sampling is a type of non-random sampling.

This study used questionnaire instrument collection that works as a quantitative research questionnaire and was self-administered with the open-ended question the sample was carefully selected from the whole population of pastoralism and this technique of questionnaire may be defined as the technique of data collection which each pastoralism is asked to respond to the same set question the collection of this instrument has been guided by nature data collection the time available the objective of the study is to investigate the relationship between the independent variable and dependent variable.

The data was collected through descriptive analysis. The data was collected from the study area, cleansed, collate, and tabulated by using a hand questionnaire. For pastoralists in the lower shabelle region. Data was collected through a questionnaire and analysis through (SPSS 16 Windows) statistical computer software was used to tabulate the data.

3. Results

A total of 110 Respondents were interviewed to assess the Knowledge, Attitude and practice towards Foot and Mouth Disease among pastoralists in lower Shebelle Somalia. The minimum age of the study participants was sixteen to seventy (16-70 years old). About eighty-five 85 (90%) were aged below 40 years. Sixty-one 61 (85%) were male and 72 (91%) were non formal education. Therefore, herd owners were 50% and 38 (32%) were farm assistants from their family by side of animal keeping and taking them day outside and night bringing back to herds. However, sixty-six (70%) of the respondents in the study were married group while forty-four (30%) were single (Table: 2).

In the case of awareness and cause of the disease in pastoralists from the study participants 65(71%) have overheard the disease, 15(17%) mentioned the factors that cause of the disease is virus, 25(30%) does not know what cause the disease. However, some of the respondents were mentioned some other factors that can cause of the disease in animals

caused by bacteria 12 (15%) lack of awareness 10(13%) and clinical signs being the cause of suspicion were mentioned 9(11%) (Table: 3).

According to the disease knowledge toward pastoralists in this study the participants had mentioned in species that have affected the disease and they also mentioned that the disease was pandemic in the area therefore the effected species of the disease: Goats 46(48%), sheep 31(32%), cattle 21(22%) and camel 12(13%). fifty one (56%) respondents mentioned the common species that the disease normally occur is small ruminants in herds and they normally show different clinical and pathological forms in their herds. Moreover, the Disease transmission and spread methods is found in all defecations and discharges from infected animals. Particularly, these animals breathe out a large amount of aerosol virus, which can infect other animals via the respiratory or oral paths. Therefore, the virus can be present in milk 19 (21%) and semen 21(25%) up to 4 days earlier the animal shows clinical signs of infection. So that the disease can spread through or transmit by carrying virus in their saliva 24 (30%), or by contaminated materials 15 (19%), by spread from an infected property via air currents 31(33%). In addition, the respondents mentioned different clinical manifestation and the typical clinical sign from animals in farms such that Fever 21 (23%), Depression 11 (13%), Hyper-salivation 15 (17%), Loss of appetite 19 (21%), Weight loss 13(17%), Growth retardation 17(19%), Drop in milk production 14(18%). Also, the respondents mentioned in dissimilar areas of their animals that affected the FMD infection accoutred such as on the nose, tongue or lips, inside the oral cavity, between the toes, above the hooves, on the teats and at pressure points on the skin (Table: 4).

In the current study, the most of the respondents aware the economic importance and financials problems of Food and Mouth Disease (FMD) in animal owners and other contents for pastoralists in the selected area of the study. A total of one hundred and ten (110) respondents were interview to this study out of 43(51%) thoughts that the disease is serious in animals and they normally saw yearly but the disease is very rarer in their farms, the disease prevention was 20(25%) it is essential for livestock owners and producers to maintain biosecurity practices to prevent the spread of the virus. 11(13%) introductions of new animals into existing herds; 9(11%) suspected based on clinical signs. However, FMD cannot be differentiated clinically from other vesicular diseases, 7(10%) monitoring and reporting of illness of FMD the responds were prospected easily, 5(8%) differentiated clinically from such as swine vesicular disease, vesicular stomatitis and vesicular exanthema. 8(11%) the disease was not gladly transmissible to humans and is not a public health risk. 7(9%) thorough disinfection of premises and all infected materials in the study (table: 5).

In regards for FMD Virus practice to pastoralists were very poor for heard management sanitation and animal par active in relents through the different species of animal in farms. 18(21%) farmers were not Monitoring animals closely for protecting FMD, 23(27%) if there was frequently for any

developing illness or signs of disease the farmers were not making any practice to the disease/. 13(17%) to Isolate sick animals from the herd to minimize disease spread, and Isolation should be at a minimum 28-30 days (which equals two incubation periods for FMD). 25(31%) to Contact fir the herd veterinarian mime- daintily while 31(37%) to examine sick animals was also very poor in practice side of the study.

mild, blister-like lesions and not causing serious illness. People can be infected through open skin wounds by handling diseased animals, or through the mouth lining by drinking infected milk also Contact with droplets that contain the virus made when a person sick with FMD coughs, sneezes, or talks. Touching an infected person or making other close contact with them, such as kissing, hugging, or sharing cups or eating utensils (Figure: 2).

3.1. Transmission of Fmd in Human

The disease in humans is extremely rare, usually resulting in

Table 1: Demographic Characteristics of the Disease from Study Respondents to Assess the Knowledge, Attitude and Practice in Pastoralists.

Variable	Responses	Frequency	Percentage	Cumulative Percent
Gender	Male	61	47.9	47.9
	Female	49	21.1	21.0
	Total	110	110.0	
Age	18-24	60	26.0	26.0
	25-31	99	23.2	49.2
	32-38	20	31.3	80.5
	39-45	60	25.6	96.1
	More than 45	15	3.9	110.0
	Total	242	110	
Educational Level	Primary	40	10.4	10.4
	Secondary	50	23.0	23.4
	University	90	23.4	46.9
	Literacy	104	53.1	100.0
	Total	242	110	

Table 2: Etiology and Awareness of the disease in Pastoralist from the respondents in the Lower abele Somalia.

Etiology and Awareness	Frequency	Percentage (n)	Cumulative (n)
Cause by Virus	65(70)	70.1	70.0
Cause by bacteria	15(16)	16.2	16.2
lack of awareness	12 (14)	14.1	14.1
clinical signs being the cause of suspicion	10(12)	12.1	12.1
Have Heard of the Disease	8(10)	10.0	10.0
Total:	110	110	110

Table 3: Knowledge of the disease in different species of animals From the Study Participants at the study area.

Knowledge	Species	Frequencies	Percentage (n)
	Goats	46(50)	n= (48.1)
	Sheep	31(37)	n= (32.0)
	Cattle	21(27)	n= (22.2)
	Camel	12(17)	n= (13.1)
Total:	110	110	110

Table 4: Mode of Transmission, Spread and Clinical Signs of FMD in the direction of Pastoralists Knowledge.

Variables	Frequencies	Percentage (n %)
via air currents	31(33)	33.0
Contaminated materials	15(19)	19.0
Spread From side of Milk	19(21)	21.0
Through Semen	21(25)	25.0
Saliva	24(30)	30.1
Total:	110	110
Clinical Signs		
Fever	21(23)	23.0
Depression	11(13)	13.1
Hyper-salivation	15(17)	17.0
Loss of appetite	19(21)	21.3
Weight loss	13(17)	17.1
Growth retardation	17(19)	19.0
Drop in milk production	14(18)	18.1
Total	110	110

Table 5: Fmd Disease Attitude Precipitations Towards Pastoralists in Lowers Shable Farmers Somali.

Variables	Farms	Frequency	Percentage (n %)
Attitude pastoralists	Afgoi Farm	43(51)	51.0
Disease Prevention	Kuntiwari Farm	20(25)	25.1
new animals into existing herds	Marko Herd	11(13)	13.2
Suspected of the FMD	Jilib	9(11)	11.3
monitoring and reporting of illness	Ali adawe farm	7(10)	10.1
Differential Diagnosis of the FMD	Qoryoley Farm	5(8)	8.9
Public health Risks	Walaweyn Herd	8(11)	11.2
FMD transmissible to humans	Awdheegle Herd	7(9)	9.0
Total:	Eight Farms (8)	110	110

Table 6: Respondents Precipitation on Fmd Practice to Increase Awareness of Pastoralist in Farmers of the Study Area.

Practice	Frequencies	Percentage (n %)
Monitor animals closely	18(21)	21.1
any developing illness	23(27)	27.8
Isolate sick animals from the herd	13(17)	17.3
Contact herd veterinarian	25(31)	31.0
To examine sick animals.	31(37)	37.1
Total:	110	110

Figures: Some selected Photos in the study areas from sick animals due to the FMD

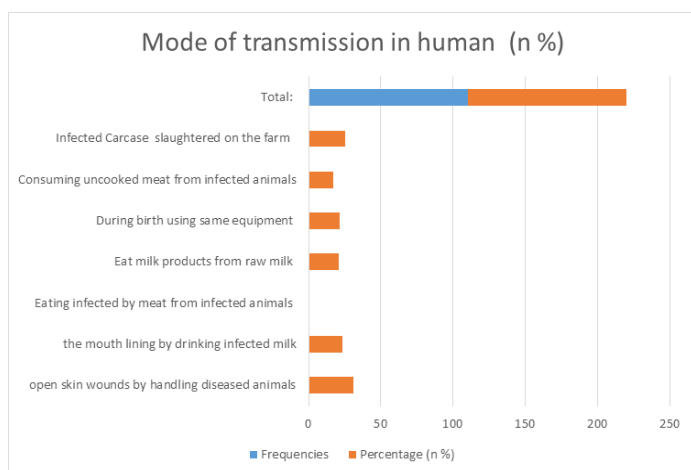


Figure 1: Ulcer Between Toes



Figure 2: Excessive Drooling in the Mouth and Nose

Figure 2 Precipitation of the Respondents on Sources of More Information About Disease Transmission in Human.



4. Discussion

The study was based on cross sectional and it has shown that the disease is well known in the areas by pastoralists. This was similar study that has been found different countries like Kenya, Ethiopia, Uganda, Egypt and some other area in Somalia rather than the selected area of the study [10].

This section provided background information on the respondents assisted in the collection of primary data for this

study. The goal of the background information was to learn about the respondents' characteristics and to show the distribution of respondents in the study, however, that most of the respondents 94(94%) of pastoralists were male and also respondents of this study 60(60%) were aged above 50 years, respondents of this study 93(93%) were marriage, the awareness of the study participants in the study area were higher compered our study [11].

Despite of the higher proportion of the study participants had heard about Food and mouth Disease, majorly had little or no knowledge about the couse of the disease. Less than ten (10) participants were mentioned the exact aetiology of FMD Virus so that poor knowledge of the disease could lead to the respondents their way of controlling and preventing towards the Virus [12]. However, most of the respondents of this study 99(99%) answered (Yes) which means foot and mouth disease is a zoonotic disease. Similarly, study was done by [13].

Based on the study result, the respondent's knowledge of FMD virus in both species of animals were different so that the clinical manifestations/signs also were differed from the side of infection. This regards about tow third domestic animals were higher the wild animals and they were not swearing disease sites of infection and clinically different from others. 72% knew that domestic animals were highly effected, similar fangs were found [14]. More than two third of the respondents of 76(76%) learned about foot and mouth disease were answered livestock keeper and 63(63%) clinical signs of foot and mouth disease animals answered loss of appetite. Therefore, most of the respondents of this study 84(84%) people who get infected with foot and mouth disease answered consumption of production-infected animals. However, most of the respondents of this study 86(86%) how do you manage sick animals that affect foot and mouth disease were answered Treat with antibiotics usage in over dose both domestic and wild animals in herds of the area. similar results were found in Sub-Saharan Africa and east Africa [15].

In the current study the majority of the respondents identified that the mostly signs of the disease was included fever and salivary from nose and mouth. therefore, mode of transmission from animals to human can easily be participated especially livestock farmer and other surrounded animals both direct and indirect contacts with infected animal has been found that prospective effects through pastoralists. As well as similar study made in Nigeria and some western Africa [16]. Therefore, the current study is suggesting to increase and infusive the diagnosis and treatment of the as we all know diagnosis in zoonotic disease is mainly easily on needed to proceed the study follow up of the animals meanwhile our farmers normally have an issue when its camas this disease towards livestock, they usually give over dose drugs and miss use of diagnosis strategy. Finally, the present study showed that attitude and practice and towards pastoralists was very poor and mainly practice were risky that could expose with FMD. The researchers suggested further research study to conform the disease effects in both human and animals [17-33].

5. Conclusions

Finally, foot and mouth disease has not been reported among pastoralists in the lower shebelle region of somalia many infectious agents have been associated as causes foot and mouth diseases however virus infections are understood to be the most common causes of foot and mouth diseases transmission mechanisms are determined by the majority of the infection in the environment. Which includes contact infect animal, consumption of production infected animals, infected animals died that affect healthy animals due to its high contagious level foot and mouth diseases may be identified concluded medical consideration according to some article therapeutics approach in treatment acute foot and mouth diseases is through antibiotic and inflammatory drugs with the consistent lesion of mouth.

Chronic foot and mouth disease is very difficult to treat because that condition often loss of appetite, loss of weight, and loss economics due to lesions of the mouth so that foot and mouth have an economic impact because it causes decrease animal production and quality all these problems it's due to the lack of understanding of the pastoralists or herdsmen with lack of antibiotics treatment and veterinary careless this diseases, foot and mouth disease one the major problem that lead economic inefficiency in pastoralists it is categorized into clinical and subclinical foot and mouth disease and viral disease food and mouth disease is one of the major problem and the top list of illnesses and this is described as a result among pastoralists who raised camel, sheep, cattle, and goat in the lower Shebelle region Somalia.

Therefore, this study was launched to assess the prevalence of foot and mouth disease among pastoralists in the lower shebelle region especially wanla wein district and afgoye district as well as identify the risk factors that are associated with foot and mouth disease existence pastoralists should improve controlling the disease when affecting animals or seen the clinical sign to reduce mortality and morbidity and keep production animals. However effective control of the disease in the present study area will be suggested by pastoralism and community animal health workers in the area.

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