

A community based intervention to control SAT2 virus producing Foot and Mouth disease in animals in Egypt in 2012

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ABSTRACT

A study in Egypt during June 2012-August 2013 revealed that there were a disastrous out break of foot and mouth disease where SAT2 strain have been identified as the main reason for its occurrence. Trained and untrained persons routinely perform uncontrolled treatments leading to sever economic losses. The present paper represents an intervention that was developed to empower the community to combat foot and mouth disease in Egypt. In a rural district of Egypt (Aja) with a livestock population of approximately 41000 a multipronged approach was used in 2012 to improve combating foot and mouth disease in Egypt. The focus of the intervention was the community. The organization of interventions was also carefully planned. A base line assessment (n=300) was conducted prior to intervention. The intervention comprised large scale gathering of the community (males and females) across the district. Smaller gatherings included teachers, sheikh of mosques and the training untrained persons. The Egyptian Television channels were used to broadcast messages recorded by prominent figures in the local language. The local FM channel and everyday newspaper were also used to disseminate messages on foot and mouth disease control. The interventions resulted in improving the ways of treatment and control of foot and mouth disease in Egypt.

Key words: Foot and mouth disease; Egypt; Community based Intervention.

INTRODUCTION

Dakahlia governorate where Aja district located is present in the east of the Delta of the Nile and covers about 3.459 km². it locates in a very strategic location overlooking Damietta branch of the River Nile and the Mediterranean sea coast and boarded with El- Sharkia governorate from the east, El-Kharbeya governorate from the west and Damietta governorate to the north west [1].

After 25th January Egyptian revolution, the quality and availability of governmental veterinary services were deteriorated hence, livestock keepers preferred private clinics. About 80% of veterinary services in Egypt is carried out by private doctors, general Practitioners and paravets.

Foot and mouth disease (FMD) is endemic in almost all developing countries. The seven different FMD serotypes circulate within regional viral pools with periodic incursions into virus free developed countries. FMD causes high morbidity and low mortality although high mortality of young stock does occur. Clinical signs are generally more severe in temperate

breeds associated with intensive farming particularly in immunological native populations. The disease affects all the major non-avian livestock species, with cattle being the most susceptible and pigs the best amplifier of virus. Infection in wildlife can further complicate control efforts. It takes only 3 to 5 days before a newly infected animal can spread the infection to other animals, with each case being able to infect many other animals. It is the most infectious human or animal disease agent known, infected cows have been estimated to be able to infect over 70 other cattle in a susceptible herd these properties allow the disease to spread with great speed [4].

SAT serotypes of FMD were prevalent in southern and eastern Africa and are endemic to African buffalo populations in sub-Saharan Africa. The FMDV serotypes SAT are normally confined to sub-Saharan Africa. The natural host for the SAT viruses is the African buffalo which is persistently infected with multiple serotypes. There are three SAT serotypes: SAT1, SAT2 and SAT3. Several studies in Southern Africa have confirmed the African buffalo can sustain

FMD virus in their body as a carrier for serotypes SAT-1, SAT-2 and SAT-3. Egypt has reported 20 outbreaks of Foot and Mouth Disease (FMD) serotype SAT-2 in cattle and buffaloes in several regions and Libya reported 23 outbreaks of FMD O, A and SAT-2 during 2012 [2]. Our object in this study was to assess a community based animal health intervention to combat FMD SAT2 virus in Egypt.

METHODS

Demography

Aja is a rural district of Dakahlia governorate, Egypt with an approximately livestock population of 41,000 head. Aja has a great agricultural wealth and the main products include berseem, corn and rice on a large scale. Education level is poor. Economic level varied from very rich people into very poor one. Most peoples are Muslims and Arabic is the main spoken language. Aja district is divided into 69 village where 8 governmental veterinary units

are present moreover health status is moderate. Prevalence of FMD was 80% with 20% deaths.

Interventions

Multifaceted approach was used in designing and operating interventions. The main focus of the interventions was the community. The course of interventions was carefully organized. Primarily, after consulting the community, large scale meetings for (50-60) people were conducted in suitable place and time where, messages about combating FMD were sent to all participants. In the second place, small group meetings of (5-7) persons were conducted targeting teachers and religious leaders. Both groups are respected in the rural communities. Educational materials such as Data show, videos and posters, with illustrations in Arabic was widely distributed.

Livestock experts in the area were involved where special groups were carried out focusing on the different ways to combat FMD. Table 1. shows the details of the community based events.

Table 1 Activities conducted in Aja district (April- may 2012).

Date	Activity/Targeted population	Venue	Number of participant
2 nd April	Large community gathering	Wehda Mahalia	40-45
4 th April	Teachers	Secondary school	5-6
11 th April	Teachers	Primary school	3-4
13 th April	Sheikh	Nady reyadee	1-2
20 th April	Livestock experts	Gamiia zeraeia	20-25
29 th April	Livestock experts	Gamiia zeraeia	5-6
5 th May	Teachers	Primary school	10-15
19 th May	Large community gathering	Wehda Egtemaiaa	10-15
29 th May	Livestock experts	Omda house	4-5

In the same time, both television and FM channel was also used to tell advices about combating FMD SAT2 strain.

Sample size

Post-hoc power calculation estimated that sample sizes of 300 in pre and after intervention detect a difference between the group proportions of 10%. The proportion in control group was assumed to be 10%. The significance level was 5%. The purpose of the baseline survey was to determine the type of messages and how to apply in the community in Aja about combating FMD SAT2. After finishing the project an evaluation was done to assess the effect of intervention.

Both studies were conducted by trained community based animal health outreach experts. It was decided to conduct 100 interviews in each

unit to select respondents from all social categories in order to get a wide cross section of responses.

Estimated human population covered by the intervention

When applying multipronged approach we were able to include 5% of the human population in Aja district of about 50,000 to 100,000 persons.

Ethical review

The study was ethically reviewed. Verbal agreement was obtained from all respondents and the questionnaires were implanted in the Aja district. Participants were reluctant to provide written consent and were more comfortable with oral consent. The conducted questionnaire had very few personal questions such as about age or education. Other questions were related to FMD SAT2.

RESULTS

The majority of participants (80%) were females. The average age was 42 year. They were categorized in the following table.

Table 2. Details of participants in the baseline assessment

Category	Percentages (n=300)
Land owners	10%
School teachers	40%
Sheikh	20%
Livestock experts	20%
Social workers	10%

About 90% (n=270) participant stated that the main reason for occurrence of FMD SAT2 outbreak in Egypt was due to the illegal importation of infected sheep from Libya and absence of robust surveillance systems to detect and respond effectively to exotic infections.

About 80% Participants reported different clinical signs of FMD SAT2 such as fever 100% (n=300), high mortality in calves 100% (n=300), ruby salivation 100% (n=300), lameness 70% (n=210), nasal and oral discharge 100% (n=300), decreased appetite 100% (n=300), decreased productivity 100% (n=300), abortion of pregnant animals 30% (n=90) and surviving animals start to improve in 5-7 days, requiring up to 6 months to recover. 85% (n=255) reported that television is the main community source for veterinary information, followed by community gatherings; newspapers, posters and radio.

About 80% (n=240) reported a failure in vaccination program in Egypt due to poor education of vaccinators, poor vaccines, poor hygiene, absence of overseas on vaccination processes, less interaction between general organization of veterinary services and farmers and only 5% (n=15) reported unreality between veterinary doctors and farmers.

Final results

After concluding all intervention activities and giving a period of one month's grace, an end of the project was conducted between 19th June 2012 and 2nd July 2012. the sample size was set at 300. The questionnaire for the end of the project was a combination of baseline and some additional variables.

A total of 200 (66.67%) interviews were conducted in the community and 100 (33.33%) were outside. Male and female respondents were 80% (n= 240), and 20% (n= 60)

respectively. The mean age of participants was 35.2± 5 years. Compared to the baseline study where 90% (n=270) of participant stated that the main reason for occurrence of FMD SAT2 outbreak in Egypt was due to the illegal importation of infected sheep from Libya and absence of robust surveillance systems to detect and respond effectively to exotic infections, after interventions 95% (n= 285) confirmed the previous reason while 5% (n= 15) reported a trick from the authority to import frozen meat.

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DISCUSSION

To have a good result of community based intervention the duration of the study should be long. As short as the duration of our intervention, the long term impact of it is hard to be assessed but there were some positive indicators. There was a significant increase in the knowledge about the epidemiology of FMD SAT2 virus.

Also, there were a significant increase in the awareness about the methods by which we can combat FMD SAT2 virus. Community based interventions applied some strategies that include behaviour change communication, education change communication, engineering/technology, and legislation/enforcement [3].

Educational strategies increased the awareness about FMD SAT2 virus where they included media, public service announcements, classroom instruction, or written materials. Usage of behaviour change communication may enhance the community to question the need of an applied technique to overcome FMD SAT2 virus. In many areas of the world, Community based interventions had proven a positive impact. Between April 1997 and May 1998, a study was carried out in Guatemala to evaluate the efficacy of a set of information, education, and information education communication strategies designed to increase the awareness about pregnancy danger signs in human. After the intervention, in 1999, the awareness level was tripled. In this study, there were multiple positive impacts. There were an increase in the knowledge about FMD SAT2 virus. In addition, there were an increase in the awareness about combating FMD SAT2 virus.

The duration for such intervention was very short. In our thoughts, if our intervention

continued for 2 years, the level of knowledge will be good.

CONCLUSION

As a developing country, Community-based interventions has a significant role in increasing both the educational and awareness level about both FMD SAT2 virus and methods by which combating the disease spread can be combated in Egypt.

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