Epidemiology: Open Access

Abou El-Amaiem, Epidemiology (sunnyvale) 2015, 5:2
DOI: 10.4172/2161-1165.1000184

Research Article Open Access

Participatory Disease Surveillance of (2012) Foot and Mouth Disease and Other Disease Conditions in Buffalo in Aga District, Dakahlia Governorate, Egypt

Waleed El-Said Abou El-Amaiem*

Aga District Central Veterinary Authority, Dakahlia Governorate, Egypt

***Corresponding author:** Waleed El-Said Abou El-Amaiem, Department of Central Veterinary Authority, Dakahlia Governorate, Egypt, Tel: +20506432888; E-mail: waleedabouelamaim@gmail.com

Rec date: Jan 24, 2015; **Acc date:** Mar 28, 2015; **Pub date:** Apr 2, 2015

Abstract

Participatory epidemiology based on the usage of participatory techniques for harvesting qualitative epidemiological intelligence contained within community observations, existing veterinary knowledge and traditional oral history. In this study, we applied some techniques of participatory disease surveillance (PDS) such as simple ranking, proportional piling, seasonal calendar, mapping, transect walk and interview with key informants with the use of check list as a guide in order to acquire data in randomly selected 20 villages in Aga District. Analysis of data indicated that the most dominant livestock species in this study area are buffaloes. The various livestock diseases occurring in these communities were identified and Foot and Mouth Disease (FMD) happens to be the most important disease of livestock based on this study. Traditional medicine is very much in practice in the study area. Some of the challenges encountered by these farmers include diseases, poor veterinary services and difficulty in getting access to feed due to their limited income. The use of participatory disease surveillance is a useful tool to collect reliable data that can be utilized for the control/eradication of livestock diseases in Aga district.

Keywords: Aga district; FMD; Participatory disease surveillance

Introduction

Participatory epidemiology (PE) applies participatory approaches and methods to improve our understanding of the patterns of diseases in populations. These approaches and methods are derived from participatory appraisal (ILRI, 2009).

Participatory appraisal (PA) is a group of approaches and methods that enable people to present, share and analyze their knowledge of life and conditions, to plan and to act. It is participatory, flexible, lightly structured, adaptable, exploratory, empowering and inventive. Types of participatory appraisal include rapid rural appraisal, participatory rural appraisal (PRA), farming systems research and participatory impact assessment (ILRI, 2009).

Participatory Disease Surveillance (PDS) is the application of PE to disease surveillance. PDS is a method of disease surveillance where PA approaches and methods are used to combine local veterinary knowledge with conventional methods to establish the presence or absence of a specific disease in a particular area (ILRI).

PE depends upon communication and transfer of knowledge, using a variety of methods. There are three main groups of methods, (a) Informal interviewing which includes semi-structured interviews with key informants, focus-group discussions or individual livestock keepers, (b) ranking and scoring including simple ranking, pair-wise ranking, proportional piling and matrix scoring, (c) visualization which comprises of mapping, timelines, seasonal calendars and transect walks. These are complemented by Secondary information sources obtained before going to the study area and as the study is conducted, direct observation of animals, farms, villages is carried out, while in the study area Laboratory diagnostics if available, field diagnostic tests are used, complemented by sample collection and testing by a regional or national laboratory for confirmation. Data are crosschecked by probing, triangulation and laboratory diagnostics (Abou El-Amaiem) [1] Participatory Epidemiology relies on the widely accepted techniques of participatory rural appraisal, ethno-veterinary surveys and qualitative epidemiology (Schwabe) [2]. This information can be used to plan better animal health projects and delivery systems, more successful surveillance and control strategies or as new perspectives for innovative research hypotheses in ecological epidemiology (Manzoor et al.) [3].

Foot-and-mouth disease (FMD) is one of contagious transboundary animal disease known and therefore one of the most important animal diseases. Economic losses caused by FMD include reduction in production parameters such as decreases in milk production, weight gain, reproductive inefficiencies and death in young ruminants and swine. In addition, affected animals cannot work the land – tilling for instance – or pumping water to irrigate fields, or transport agricultural harvests to market. The costs of prevention and control are high, thereby affecting food security and livelihood along the production and marketing chain (World Organization for Animal Health, 2009) [4].

This study was conducted in order to establish the presence or absence of FMD in Dakahlia Governorate, Egypt.

Methods and Materials

PDS team

The PDS team for this study was composed of two veterinarians.

Methodology

Based on location some in the southern part Aga, some in the northern part and some in the central region for dispersion of

coverage. Before each exercise outing was carried out, pre-advocacy visits were conducted to find a suitable meeting arena in each village according to the suitability of time, place, local politics and convenience for the farmers. Efforts were made to include farmers of all age groups. Materials such as Geographical Positioning System (GPS, GARMIN's eTrex Legend personal navigator), cardboards, counters, permanent markers, digital camera and others were used for the study. Each person was assigned a role before moving out. We always have our note taker, observer, tool applicator and the facilitator. In order to avoid bias, the Participatory Disease Surveillance (PDS) Team did not mention about FMD during the interview process.

The following tools were used during the course of the participatory disease surveillance: (a) Check list consisting of the following items: mutual introduction, identification of respondents, sources of livestock, livestock species kept, husbandry systems, problems/challenges, current infectious and non-infectious diseases, common infectious and non-infectious diseases ,time line and seasonal calendar for disease occurrence, questions and advice, (b) Scoring and Ranking: simple ranking, proportional piling and matrix scoring, (c) Visualization which includes mapping, seasonal calendar and transect walk.

Data analysis

Data was analysed as indicated in "A Manual for Participatory Disease Surveillance Practitioners: Introduction to participatory epidemiology and its application to highly pathogenic avian influenza participatory disease surveillance" [5].

Simple ranking and scoring methods

Ranking and scoring methods require informants to assess the relative importance of different items. Ranking usually involves placing items in order of importance (1st, 2nd, 3rd etc.) whereas scoring methods assign a value or a score to a specific item. This is usually done by using counters such as seeds or stones, nuts or beans to attribute a specific score to each item or indicator.

Seasonal calendar

A seasonal calendar is a visual method of showing the distribution of seasonally varying phenomena (for example, economic activities, production activities, problems such as debt, illness/disease, migration, and natural events/phenomena etc) over time.

Matrix scoring

Scoring is done using seeds or other counters to give value for the items being ranked. Scoring can be open (value decided by each participant) or can be based on a fixed number. For example, an item that ranks high might receive ten points out of a possible ten given. A low rank would be one or zero points out of ten given. 20 villages in Aga District were participatory disease surveillance and they were listed in the Table 1.

Results

Number	Village name
1	Nawasa El-Bahr
2	Nawasa El-Kheit
3	Sonbokht
4	Menyat Samanood
5	Garah
6	El-Deeres
7	Kafr Awad
8	Aga
9	Kafr El-Sharaquah
10	Shanash
11	Kafr El-Arab
12	Sabakha
13	El-gharaaah
14	Meet Abou el-Hussein
15	Darawaah
16	Abou daood el-enab
17	Meet fadalah
18	Meet El-Amel
19	El-deer
20	Ezbat Abou- Egeezah

Table 1: Shows the list of 20 villages in Aga District that were participatory disease surveillance.

Species	Total score	Ranking
Buffalo	70	1
Cattle	65	2
Sheep	55	3
Goat	45	4
Dogs	5	5

Table 2: Ranking of livestock species based on their population in Aga district.

Based on simple ranking, the most prevalent species kept in 20 village of Aga district was buffalo (Table 2).

	Local names of diseases	Total score	Ranking
Diseases			
FMD	Reyalah	100	1
Viral pneumonia	Neh	70	2
Bacterial Diarrhea	Ishal	55	3
Hoof affections	Arag	10	4

Coccidiosis	Dam in gella	5	5

Table 3: Diseases of buffalo and cattle, local names and ranking in Aga District.

Table 3 indicates the various diseases of buffalo and cattle encountered by the farmers in the 20 villages/communities where this study was done where FMD was the most important disease followed by viral pneumonia, bacterial diarrhea, hoof affections and coccidiosis.

	FMD	Viral Pneumonia	Bacterial Diarrhea	Hoof affections	Coccidiosis
Summer	May-August July*	-	June-August June*	-	May-August August*
Autumn	-	November-December December*	September-December October*	-	-
Winter	January-April April*	January-April March*	January-April	January-April	January-April April*
*Indicates the peak season of disease occurrence					

Table 4: Using seasonal calendar to determine the time of disease occurrence buffalo and cattle in Aga district.

Table 4 showed that the year is classified only into three seasons including summer, autumn and winter according to the existing veterinary knowledge of livestock keepers. Based on the study results, the most important diseases occurring in summer time were FMD, bacterial Diarrhea and Coccidiosis. The most important diseases occurring in autumn was viral pneumonia and bacterial diarrhea while all diseases occur in winter.

	Salivation (n=30)	Cough (n=30)	Fever (n=30)	Off food (n=30)	Lacrimation (n=30)
FMD	20	8	10	19	15
Viral Pneumonia	9	21	12	5	7
Bacterial Diarrhea	1	1	2	4	6
Hoof affections	0	0	1	1	1
Coccidiosis	0	0	5	4	1
n: Indicates the number of positive clinical signs					

Table 5: Using matrix scoring to differentiate clinical signs of different diseases in the area of study (n=30).

Table 5 shows the most prevalent clinical signs of FMD in the area of study where the most prevalent clinical signs was salivation (n=20/30), fever (n=10/20), off food (n=19/30) and lacrimation (n=15/30).

The challenges faced by the farmers include livestock diseases, difficulty in gaining access to livestock feed due to the low income, lack of good livestock housing, insufficient knowledge on how to improve livestock production and no access to veterinary services.

Ethno-veterinary practice in the treatment of livestock diseases is still in practice in the 20 villages\communities where this exercise was performed. Traditional remedies involves the use of mesh, shabah, asal asmer and taheenah in treating FMD. Mapping revealed that people from close villages come on market days to buy or sell livestock in meet el-Amel, distance ranging from 1-25 km apart.

Discussion

Among the livestock species kept in the 20 villages/communities where this study was conducted, buffalo was the most abundant. FMD was the most prevalent disease in this area resulting in high morbidity, mortality, case fatality rate and great economic impact.

From the results of the previous study, FMD usually occur both in summer and winter especially in July and April so trivalent vaccine should be administered before these months.

From the previous study, different factors enhance the occurrence of FMD in Aga district such as, (1) Poor housing conditions, (2) poor biosecurity, (3) mixing of different ages and different species, (4) lack of definite central lab in the area of study, (5) dependence on para-veterinarians in treatment of diseased animals, (6) costive remedies, (7) absence of governmental veterinary services and (8) absence of good vaccination regime.

Presence of central market in Meet El-Amel, at which animals from different villages, close districts and governorates is considered as the main source of infection and enhances the spread of the disease from one area to another.

Lack of access to veterinary services is also a problem to these farmers because they don't know where to report to in the face of disease outbreak. Provision of cheaper veterinary services and access to these services will go a long way in improving livestock farming in the study area.

Finally, there is need for improvement of veterinary services in the rural areas for improved livestock productivity. There is also need for community enlightenment programmes for the farmers on livestock production which will also aid in better livestock production.

Conclusion

This participatory disease surveillance (PDS) has really provided us with insight on difficulties the rural communities are facing in terms of livestock production.

References

1. Abou El-Amaiem WE (2012) Some Studies On Illthriftness in Buffalo Calves with Special Reference to Participatory Epidemiology. Master Thesis. Mansoura University, Egypt.
2. Schwabe CW (1984) Veterinary Medicine and Human Health. Williams & Wilkins, Baltimore.
3. Manzoor HM, Malik A, Fatima Z, Yousuf MR (2005) Participatory Surveillance of Livestock Diseases in Islamabad Capital Territory. Int J Agri Biol 7(4): 567-570.
4. World Organization for Animal Health (2009) Terrestrial Animal Health Code. OIE, Paris.
5. International Livestock Research Institute (ILRI) (2009) A Manual for participatory disease surveillance practitioners: Introduction to participatory epidemiology and its application to highly pathogenic avian influenza participatory disease surveillance. 1-56.