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Participatory Surveillance of Livestock Diseases in Islamabad Capital Territory

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ABSTRACT

Occurrence of various livestock diseases particularly rinderpest, foot and mouth disease (FMD), and peste des petits ruminants was determined in Islamabad Capital Territory. For this purpose, different techniques of participatory disease surveillance e.g. proportional piling, seasonal calendar, mapping, interview with key informants etc were applied in randomly selected 10% of the villages. Analysis of data indicated that haemorrhagic septicaemia was the most important while FMD was the most prevalent diseases in the area. Other significant livestock health hazards recorded during village search program were mastitis, fever syndrome and black quarter. There was no evidence of rinderpest outbreak in the area of investigation during the last 10 years. Data collected from male and female farmers yielded comparable results. Participatory disease surveillance proved to be a useful tool to collect reliable data that can be utilized for the control/eradication of animal diseases in Pakistan.

Key Words: Participatory disease surveillance; Proportional piling; Seasonal calendar; Mapping; Key informants

INTRODUCTION

The failure of formal data-collection methods to produce cost-effective and reliable information for designing rural development projects in developing countries was first recognized in the early 1970s (Chambers, 1983).This problem was related to the behavior and methods of researchers which limited their capacity to understand the problems of the poorest and most marginalized people in rural communities. In response to this situation, alternative systems of inquiry have since been developed. These systems include rapid rural appraisal (RRA) and participatory rural appraisal (PRA) which, to varying degrees, enable local people to play a more active role in defining, analyzing and solving their own problems (Chambers, 1994).

Participatory Epidemiology is an emerging field that is based on the use of participatory techniques for harvesting qualitative epidemiological intelligence contained within community observations, existing veterinary knowledge and traditional oral history. It relies on the widely accepted techniques of participatory rural appraisal, ethno-veterinary surveys and qualitative epidemiology (Schwabe, 1984). This information can be used to design better animal health projects and delivery systems, more successful surveillance and control strategies or as new perspectives for innovative research hypotheses in ecological epidemiology.

The PDS approach was developed in Africa as an accurate and rapid method to understand the distribution and dynamics of Rinderpest (Mariner & Peter, 2003). The development of participatory techniques has been hand-in-hand with the advancement of the concept of community empowerment. Livestock owners are no longer seen as an inert substrate upon which development is to be practices; they are active participants who can and must bring important intellectual contributions to development, if development is to be successful. Lesson has been learnt in various countries that involvement of beneficiaries in designing, implementation, monitoring and review of a project increase its success tremendously.

Recently, a Project has been launched in the country, "Support for Emergency Prevention and Control of Transboundary Animal Diseases in Pakistan (Rinderpest, FMD, PPR)". Under this Project, information will be collected about important animal diseases prevalent in the country but the driving force will be to get accreditation of freedom from Rinderpest. Keeping in view success of participatory approach to collect disease intelligence, this concept was introduced by providing training to the veterinary staff (including female staff where possible) and activating 11 teams throughout the country. The information collected would be utilized to get accreditation of freedom from Rinderpest from OIE during 2006 and for the planning of new projects to control animal diseases.

Population of dairy animals is increasing at high pace and small dairy colonies are being established in the suburb of Islamabad Capital Territory (Table I). Increase in movement may alter pattern of existing diseases and introduce new infections in the area. This paper presents the current situation of animal diseases as determined by PDS work undertaken in Islamabad Capital Territory during 2003.

Table I. Livestock Population in ICT

Species	Population Census 1996	% increase / Annum	Population Estimated2004
Cattle	28460	19.20	115996
Buffalo	45891	29.00	351921
Sheep	447	04.00	611
Goat	43634	41.90	717272
Camel	24	- 06.60	14
Horse	382	- 13.20	123
Ass	2208	18.10	8356
Poultry	120841	09.00	240783
Ducks	443	03.00	561
Total:-	242330		1435637

Reference:-Livestock Census 1996, Vol-I, II(Part-2)

MATERIALS AND METHODS

PDS Team. The team consisted of three veterinarians (2 male and a female member) working together as facilitator, moderator and recorder during field activities.

Selection of villages. A total of 13 villages (10%) were randomly selected in Islamabad Capital Territory.

Arrangement of meetings/interviews. With the assistance of local Veterinary Officer/Veterinary Assistant, meeting was arranged in each village according to the suitability of time, place, local politics, conflicts and weather for the farmers. Efforts were made to include farmers of all age groups. Separate meetings were arranged by the lady veterinarian with female residents of the villages.

The interviews began with identification of the respondents and a general question about day to day life of the farmers leading to health problems of animals in the area. In order to avoid bias, the Participatory Disease Surveillance (PDS) Team did not mention about transboundary animal diseases (TADs) during interview prior to the introduction of the subject by the respondents. Whenever a respondent indicated the occurrence of any TADs (Rinderpest, FMD, Peste des Petits ruminants), he/she was asked to describe the disease as a part of verification process and other probing questions specifically designed to elicit detailed information and to test information for internal consistency. If the respondent could not accurately describe the disease, the report was eliminated.

Check list. A check list was designed, which comprised of proportional piling, mapping, seasonal calendar, interview with key informants through open and close ended questions to collect information about Rinderpest, FMD, PPR in the area. Besides this, information about the occurrence of other important diseases of livestock was also recorded.

Mapping. Farmers were encouraged to draw a map of the village on the ground with the help of a stick. This map was used to understand the resources available for animals, possible interaction with animals from outside, follow up questioning with the farmers and visiting the risk areas.

Proportional piling. Proportional piling was used to estimate the relative prevalence of livestock diseases in the area. For this purpose, 100 beans (or pebbles at some places) were given to the farmers and they were asked to make piles according to the relative incidence of five most prevalent diseases. They were encouraged to discuss and agree among themselves. Similar exercise was carried out to determine relative importance of those five diseases.

Seasonal calendar. Seasonal calendar was used to describe the seasonal prevalence/importance of different animal diseases. Local names for seasons were used and each season was represented (on the ground or a white paper) using an object placed along the top 'x-axis' and sketch illustrations of diseases were placed along the 'y-axis' of the diagram.

Interviews with key informants. Interview were conducted, where possible, with key informants including *Sianas* (local experts), livestock traders and veterinary and public health personnel to get secondary data about animal diseases.

RESULTS

Local perceptions of disease recognition. First task of PDS team was to clearly understand local names and their clinical signs of important livestock diseases as mentioned by the farmers. Use of pictures of sick animals showing various symptoms was quite helpful and use of local name of different diseases encouraged the farmers to explain health problems of animals in a better way. For instance, pictures showing salivation and blisters in mouth and foot guided the farmers to share their knowledge and information about the occurrence of FMD in the area.

Proportional piling. Proportional piling proved to be an interesting and useful exercise to determine the prevalence and importance of important livestock diseases. After understanding the procedure, farmers took lot of interest and usually, there was healthy discussion amongst them before reaching at the final conclusion. The team members facilitated the discussion to facilitate the flow of information in the right direction. Results of proportional piling are summarized in Table II. Farmers agreed that hemorrhagic septicemia (HS), FMD, mastitis and fever syndrome were the most serious health problems of animals and need immediate attention. FMD was reported as the most prevalent disease in the area. However, HS was ranked as the most important infection of cattle and buffaloes. Mastitis was also recorded as one of the common problems of animals. Although it was difficult to understand the nature of fever syndrome (*Tako*), most farmers were convinced that it occured quite frequently and sometime killed animals. There was no history of Rinderpest in the area and it was not reported in any of the 13 villages surveyed by the PDS team. However, although low in ranking, farmers did mention PPR in few places.

Table II. Traditional Names, Prevalence and Importance of Main Livestock Diseases in Islamabad Capital Territory as Determined by Proportional Piling

Technical Name	Traditional/ Local Name	Prevalence % age (Male Group)	Prevalence % age (Female Group)	Importance % age (Male Group)	Importance % age (Female Group)
Haemorrhagic Septicaemia	Gul Ghotu	16.2	19.6	25.8	31
Mastitis	Maun Sari	15.8	16.3	20.6	21.2
Foot & Mouth Disease	Maun Khur	25.5	25.4	19.2	17.7
Fever Syndrome	Tako	21.8	19.4	15.6	12.2
Black quarter	Charang	5.1	6.9	8.6	11.1
Peste des petits Ruminants (PPR)	Thadi	2.3	6.9	2.3	2.5
Retention of placenta	Jer Rukna	1.1		1.5	
Prolapse	Phar	1.7		1.4	
Haemoglobin urea	Sari	1.5		1.38	
Edema	Badi	2.6	5.5	1.07	4.3

Seasonal calendar. Farmers divided year into four seasons i.e. winter, spring, summer and fall. Although HS outbreaks occurred throughout the year, cases of the disease increased significantly in summer and fall seasons. According to farmer's conception, frequency of FMD remained almost constant in all four seasons. Farmers informed that mastitis and fever syndrome affected animals more in winter and spring than in summer and fall. Season-wise occurrence of different diseases is shown in Table III.

Gender perception about the occurrence of various diseases. Participatory Disease Surveillance Team in ICT had also female team member and she conducted separate meetings with house hold ladies in 11 villages. A comparison of Male Vs Female data about the prevalence and importance of animal diseases is shown in Fig. 1 and 2, respectively. There was quite a similarity among the information provided by male as well as female farmers. Both agreed that HS is the most important disease and FMD was most prevalent animal health problem in the village.

Fig. 1. Male Vs Female prevalence of different animal diseases

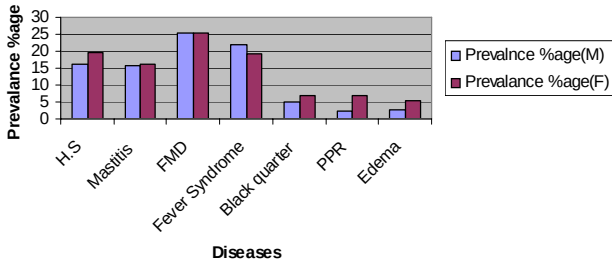
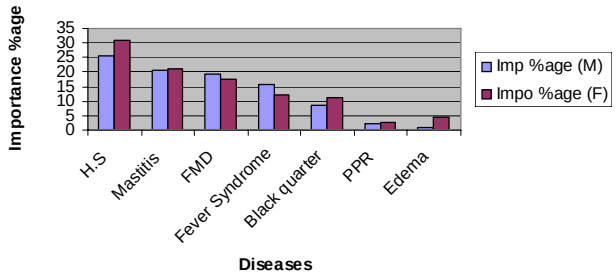


Fig. 2. Male Vs Female importance of different animal diseases



DISCUSSION

Results of PDS activity performed in Islamabad Capital Territory during 2003 disclosed that there is no history of Rinderpest. Haemorrhagic Septicaemia (HS), FMD and Mastitis are the most Important and Prevalent health problems of animals in the area.

Islamabad, the Capital of Pakistan is a cosmopolitan city with restriction to keep milch animals in the urban area. Increase in human population during the last 10 years has resulted in high demand of milk and milk products. To meet local demand, milk is being brought from other cities and recently, new dairy colonies are being established in the outskirt of the city. This movement of animals from various parts of the country may introduce new disease in comparatively susceptible local animals.

HS has been reported as the most important bacterial disease of cattle and buffaloes in Pakistan (Munir *et al.*, 1994). Data collected during PDS elaborates further that although FMD was the most prevalent disease, farmers still ranked HS as the most important animal health hazard due to the reason that it kills animals within a very short period. Participatory disease surveillance also determined that farmers have sufficient knowledge to diagnose the disease and explained all cordial clinical signs. Findings demonstrated much overlap between the farmer's

Table III. Seasonal Prevalence of Livestock Diseases in Islamabad Capital Territory

Name of Disease	Winter	Spring	Summer	Fall
H.S	21.7%	17.5%	34.9%	37.5%
Mastitis	29.1%	27.5%	22.5%	18.9%
FMD	22.6%	20.5%	21%	23.9%
Fever Syndrome	20.6%	27.5%	13.6%	13.4%
Black quarter		0.3%	3.4%	
PPR	0.8%	0.5%		1.5%
Edema	5.2%	6.2%	4.6%	4.8%

knowledge and scientific perception of the disease. However, it was difficult to conceive 'fever syndrome' which could have multiple etiology e.g. infectious, nutritional, managemental etc.

In addition to the data that emerged during Participatory research, the process of sitting and listening to the people had value in itself. This exercise took the form of providing people an opportunity to express their views and helped to improve the community's relationship with the researchers.

Participatory approach to collect disease information using proportional piling, seasonal calendar, interviews with key informants etc. enabled to compare the results with different sources and when levels of agreement were moderate to high, data were compiled accordingly. Therefore, although the methods used were described as 'participatory', some quantification was also possible. We observed that the methods applied in the field were valuable for understanding local characterization of animal diseases, estimating disease prevalence, importance and analyzing seasonal disease pattern.

Collection of disease information by applying participatory techniques was a new approach. In the beginning of the meeting, farmers in most villages were reluctant to share their information and hesitated to take active part in group discussion. However, once they realized the purpose of the meeting and importance of their indigenous knowledge, it was very convenient to extract information prevailing in the area.

In Pakistan, mostly, female farmers mostly feed, milk and look after their animals. This was the idea that female veterinarian was included in the PDS team. Although it was not possible to conduct female meetings in all 13 villages due to commitment of female farmers in other house hold activities, the data provided was quite consistent with that provided by the male farmers.

Peste des petits Ruminants was observed as a new disease in the area. Since most farmers have not seen it before, they were confusing it with PPLO and enterotoxaemia. But after comparing the data from different sources (including key informants) it was easy to reach at the conclusion. Pictures illustrating different signs of the disease were quite helpful in this regard.

Through PDS, the management of veterinary services became aware that HS was of great concern to farmer's livelihoods than the three target diseases of international concern. The PDS program has greatly enhanced the sensitivity of active clinical Rinderpest surveillance and directly contributed to Pakistan's confidence in the decision to declare provisional freedom from Rinderpest to the OIE in January of 2003. The valuable data accrued by PDS work has been appreciated by the Project Management and all livestock departments in the country. This priority of disease prevalence and importance set by PDS work would help better plan and execute measures for the control/eradication of livestock diseases in different parts of the country.

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