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PROMPT COMMUNITY BASED VETERINARY SERVICES DELIVERY SYSTEM AND IT'S IMPACT ON DISEASE BURDEN AND PRODUCTION IN THE DAIRY ANIMALS

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ABSTRACT

The lack of animal health services is a major hindrance in the control of livestock diseases in Pakistan. Consequently decreased production is a major factor in poverty alleviation in a developing country like Pakistan, where small livestock owners are the backbone of agriculture. The present study is therefore designed to evaluate the effectiveness/efficiency of an alternative model of animal health services delivery system through community participation which will ultimately help in reducing disease burden and consequently increase livestock production. For this purpose two concurrently working veterinary services delivery systems i.e. conventional public based system and community based system were compared in terms of services delivery, epidemiological parameters and cost-benefit ratio of an average farmer for a period of one year from July, 2005 through June, 2006 in peri-urban areas of central Punjab. It was recorded that community based system has significant impact ($P < 0.05$) on epidemiological parameters (incidence rate, mortality rate and fertility rate), services delivery (vaccination, deworming, treatment and nutritional support) and cost- benefit ratio of an average farmer as compared to public based system. There was 50% decrease in incidence rate of economically important diseases in community based system as compared to public based system which was 16.75% and 36.43% respectively. Similarly the mortality rate in community based system was 0.65% less than the conventional public based system which was 3.53% and 4.18% respectively. An improvement of 12% in fertility rate was observed in community based system as compared to public based system which was 63% and 51% respectively. The average annual cost-benefit ratio per farmer was almost double than public based system. The delivery of services was much better in community based system as compared to public based system. From the present study it is concluded that community based veterinary services delivery system is helpful in reducing disease burden and will consequently boost the agricultural economy by increasing livestock production if replicated through out the country.

Key words: community based veterinary services, herd health, fertility rate, epidemiological parameters.

INTRODUCTION

Economy of Pakistan is agriculture based where livestock sector plays an important role. In terms of value addition, contribution of livestock is 50% in agriculture sector and 11% in Pakistan GDP which is higher than contribution made by the crop sector. In Pakistan, 30-35 million rural people depend on livestock borne income for their livelihood (Anon., 2006). Pakistan is holding 5th rank among the top milk producing countries. (Nazir, 2006). Within livestock sector the majority of farmers consist of small livestock owners which play a key role in livestock production. Among other problems affecting livestock production, lack of animal health services delivery is a major constraint in marginal areas where large number of livestock population is still deprived off from these services (Raja and Bajwa, 2005). Besides this, many livestock owners cannot afford the services they need and thus suffer the great disadvantages (Anon., 2004). The livestock population in Pakistan is increasing annually and economic losses due to various livestock diseases are enormous (Nazir, 2006). In Pakistan most of livestock owners depend on public sector for delivery of services which cannot provide the required services due to lack of staff and budgetary constraints. In these circumstances an alternative model / system is required for delivery of transparent, cost effective and flexible veterinary services which is only possible through community participation on the basis of self sustained social welfare activities (Anon., 1992). This goal may practically be achieved by local / community veterinary workers selected by the respective community and trained for basic animal health care for timely, quick and prompt provision of veterinary services upon the call of dairy farmers (Leyland and Catley, 2002, De-Haan and Nissen, 1985). This model is practiced in several countries of Africa and Asia with success and significant achievement in livestock production (Mc Corkle, 2002). In Pakistan the model of community based veterinary services was planned and implemented through German agency for technical assistance (GTZ) in peri urban areas of central Punjab in 1986 (Anon, 1986). The two alternate systems of livestock services i.e. public based

system and community based system are being practiced in Pakistan without any data base and conclusive findings for the comparison purposes and in terms of replication if needed in future. The present study was therefore, designed to compare these two systems for said purposes. The comparison was made on the basis of services delivery, epidemiological parameters, and cost benefit ratio of an average farmer for a period of one year from July 2005 through June 2006. As the community based system was launched through GTZ in central Punjab, therefore the public based system was also selected from the areas adjacent to the community based system due to similar geographical, environmental and socio economic conditions.

MATERIALS AND METHODS

The study area of central Punjab was divided into two clusters. One cluster from each system was selected i.e. community based system and public based system. Fifty villages from each cluster were selected as sampling frame with sampling unit of "A dairy farmer". The 10% villages (5 villages from each cluster) were randomly selected for requisite information. The information about total number of dairy animals kept by a farmer, delivery of services, e morbidity and mortality due to all diseases of economic importance explain parameters and cost-benefit ratio of a farmer was collected from each house hold of selected villages through active surveillance system and recorded in questionnaire. The parameters of cost were green fodder, feed supplement, animal health service charges, maintenance cost and benefit parameters were milk production, animals sold, other income sources and land ownership. Each house hold was visited on monthly basis and one questionnaire was used for each house hold. The information was finally pooled and analyzed by applying chi square test for proportion using SPSS version 16 software which test was used for analysis of data? Trained interviewers were involved in collection of information from July 2005 to June 2006. The area of central Punjab was selected for study because, it is native area of Nili Ravi buffalo which produces good quality milk and is considered as the main dependent animal of the region and the community based system was launched through the German agency for technical assistance (GTZ) in this area.

RESULTS

The study population of five randomly selected villages of community based system comprised of 1724 cattle and buffaloes where as five selected villages from public based system were having 1699 cattle and buffaloes. The vaccination facilities were availed by the farmers of community based and public based system @ 76% and 38% respectively. Similarly the treatment facility was available in community based and public based system @ 68% and 31% respectively. The services about deworming were provided @ 68% and 13% in community and public based system respectively. The incidence rate due to all diseases of economic importance in community based and public based system was 16.75% and 36.43% respectively. Similarly the mortality rate due to all diseases was 3.53% and 4.18% in community based system and public based system respectively. A fertility rate in buffaloes was recorded as 63% and 51% in community based and government based system respectively. In cattle 67% and 54% fertility rate in community based and public based system was recorded. The average annual cost-benefit ratio per farmer was almost double in community based system as compared to public based system.

Table 1: Comparative efficiency of community based and public based veterinary services delivery system in central Punjab, Pakistan during the year 2005 – 2006

Parameters	Community based system	Public based system	P value
Total villages	5	5	-
Total cattle and buffaloes	1724	1699	-
Vaccination coverage	76%	38%	0.000
Treatment coverage	68%	31%	0.000
Deworming coverage	68%	13%	0.000
Morbidity (incidence rate) due t to all diseases of economic importance (disease load/burden)	16.5%	36.42%	0.000
Mortality rate due to all disease of economic importance	3.53%	4.18%	0.000
Fertility rate in cattle	67%	54%	0.000
Fertility rate in buffaloes	63%	51%	0.000

DISCUSSION

Significantly (P<0.05) increased vaccination, treatment and deworming coverage at farmer's doorstep in community based system decreased the disease burden/incidence rate and increased fertility rate. Consequently livestock owners in community based system produced more milk and earned more profit due to these effective preventive services. Because in community based system, the animal health delivery services were provided at the farmer's doorstep promptly and whenever needed. The cost of services was not charged at the time of treatment but deducted from the cost of milk purchased from the farmer whereas public based system was facing lack of staff and budgetary constraints. Efficiency of public based system may be improved by allocation of appropriate resources for these services and employment of required staff to deliver said services at farmer's doorstep. Please explain failure of govt organization and proposed way and means for improvement. All the previous reports including Schreuder *et al.* (1995); Odeyemi (1996); Holden (1997); Odhiambo *et al.* (1998); Jones *et al.* (1998); Leyland and Catley (2002) and Mariner *et al.* (2002) support the results of present study with respect to incidence rate, mortality rate, vaccination coverage, delivery of prompt and cost effective animal health services and cost-benefit ratio.

The population of livestock is increasing at an annual estimated rate of 2.3% in Pakistan (Nazir, 2006). The availability of milk per capita per day is 50ml.That is why we have to import dry milk to fulfill our requirements. More than 60% marketed milk is produced by small livestock owners in rural areas of Pakistan. However, the losses faced by dairy producers in the form of treatment of diseases, death of animals and low production have been estimated to be 75 billion rupees in Punjab (Nazir, 2006). This loss can be prevented through community based services delivery system which has been introduced in many areas of the world where there is lack of veterinary services. Besides provision of affordable veterinary services, community based system is also helpful for necessary disease surveillance. It is concluded that community based system has significant impact in reducing disease burden and increasing livestock production. It will boost agriculture economy if replicated through out the country.

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