

Identifying And Meeting The Veterinary Education Needs In Poor Isolated Communities In Bolivia

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ABSTRACT

Bolivia has some of the poorest and most isolated communities in the Andean region of South America. These communities are dependent on livestock to meet subsistence needs and generate cash for planned and emergency expenditure. An animal health and livestock sector study in a Bolivian valley region identified the need for veterinary education for animal health workers and livestock producers. Brochures, videos, an animal health worker book and a radio soap were developed in Spanish and Quechua. The Quechua material was aimed at meeting the needs of communities with low levels of literacy and a poor knowledge of Spanish. The impact of this material was variable, but of greatest relevance was the lack of demand for material written in Quechua. Further studies in a high Andean plain community found that more effective long-term veterinary education messages could be transmitted through school networks. Initially materials were developed that involved puppet shows, which centred on themes relating to animal health problems identified in participatory workshops. These were supported by animal health classes and practical demonstrations in the schools. Improvements in veterinary knowledge were greatest where a new subject was taught, but with more familiar topics the teaching had little impact on ingrained errors of knowledge. Transfer of knowledge from school children to parents was tested, and all parents examined showed an improved knowledge of the subjects taught to their children.

Keywords: Animal health, information, extension, schools, dissemination, Bolivia

INTRODUCTION

Keeping and raising animals in the high Bolivian Andes is an important activity in meeting family subsistence needs and generating money for expected and emergency expenditure. The animals also represent a method of saving and are an important activity for women. Therefore, animals play an important role in the livelihoods of poor rural families and are a potential means of improving socio-economic status. In turn animal health is an important component of maintaining and increasing the capital invested in livestock.

In many poor isolated communities of the Bolivian high Andes there is market failure in the delivery of animal health inputs and services, indicating a role for the State in the provision of these services. However, the Bolivian government has limited field presence. Bolivian and international NGOs have attempted to fill this gap by training animal health workers and providing support to animal health campaigns. However, this support is irregular and insufficient to meet the animal health input and service needs of such communities. The animal health workers have training in basic techniques such as application of antibiotics and parasite treatments, but their knowledge of basic concepts of epidemiology and disease prevention is either rudimentary or non-existent. Therefore, for poor isolated communities there is a need for knowledge on disease prevention.

In initial attempts to address these demands and needs of poor isolated communities in the Bolivian high Andes the authors were involved in the development of information booklets on priority diseases (Rushton et al, 2001) and a book for animal health workers (Viscarra & Rushton, 2002). The information was provided in Spanish and in the local language Quechua. To support this written material a radio soap was also developed and transmitted in both Spanish and Quechua (Viscarra et al. 2002). The impact of providing this material was not as strong as anticipated, and of greatest relevance was the lack of demand for material written in Quechua. Many of the older generation were illiterate or functionally illiterate, particularly women, and the younger generation were more comfortable reading in Spanish and translating the information to Quechua for their families. In a longer term project carried out at the end of this initial work the focus of information provision was modified. The most stable organisations in poor isolated communities are schools. Methods were developed to encourage teachers to

incorporate animal health messages into the curriculum and also to encourage the children to become disseminators of such information to their families. The paper presents results from this work.

STUDY AREA

The study area was the “canton” of Opoco which is part of the Municipality of Tomave in the Department of Potosi to the South-West of Bolivia. The majority of the area covered by Opoco is above 3,800 metres above sea level, has very limited rainfall of around 400 mm per year and limiting cropping activities. A large proportion of the rainfall comes as hailstone storms, which further limits possibilities of cropping activities. The main activities in the region are livestock keeping, mainly llamas and sheep. To supplement this income source there is a high level of migration, both seasonal and permanent, to the cities of Potosi, Oruro and Santa Cruz. The communities where the study was carried out had very poor transport connections, requiring a 2 hour walk to the nearest bus stop and from here it was between 4 to 6 hours bus journey to the biggest towns of Oruro and Uyuni depending on weather conditions. The Opoco canton has 4 communities and 5 schools that form a school nucleus headed by one director.

METHOD

Two schools were selected in the canton and work was focussed on students between pre-primary and fifth grade with a total of 69 students. The school nucleus director was visited and the purpose of the collaboration on animal health education was explained, as were the incentives for the teachers who would be involved in the study. Each teacher was trained on selected animal health subjects by the veterinarian responsible for working in the canton. The teachers taught each subject for a month, testing the students knowledge of the animal health subject before beginning the classes, and then again when the month’s course was completed. Results from the tests were distributed within and between schools, and prizes were given to the three best students. To support these animal health courses, students were given an information booklet in Spanish on the subject, and the project established a small library within the school to encourage students to read. Parents were also involved in the work, being tested on their knowledge of the subjects using the same test as used for their children. The five of the parents who scored the highest marks on this test were also given prizes.

The subjects covered were identified as being important in the area by participatory disease prioritisation supported by scientific investigation (Rushton & Viscarra, 2003; 2005). They included what is a healthy animal?; sheep scab; liver fluke and sarcocystiosis. The subjects were taught with a mixture of theory classes supported in all cases, except sarcocystiosis, with practical demonstrations. The latter involved allowing students to listen to heart beats using a stethoscope, examining healthy muscosal membranes, looking for snails and identifying parasites by using a microscope. The practical sessions were greatly enjoyed by the students and helped to reinforce the theoretical classes.

The methodology was also applied to the subject of animal reproduction and nutrition, subjects selected by the children themselves as being important to the region and their families.

RESULTS

Of the subjects that were taught that were already known by the students there was little change in levels of knowledge. Perhaps of concern is that errors in knowledge were not corrected by the classes. For unknown animal health subjects there was an important and significant improvement in knowledge (see Table 1).

Table 1. Results from initial and final tests for students given courses on known and unknown animal health courses.

School	Known Subjects								Unknown subjects							
	Sheep scab				Sarcocystiosis				Health animal				Liver Fluke			
	Initial		Final		Initial		Final		Initial		Final		Initial		Final	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Opoco	69	9.4	68	12.5	80	8.9	78	15.7	39	7.7	86**	3.3	63	14.6	88*	4.0
Carlos Machicado	66	8.5	75	11.5	79	19.2	71	15.3	38	8.6	77**	11.5	48	18.3	77*	10.6
Overall	67	8.9	71	9.3	80	14.7	74	15.7	38	8.1	82**	9.3	56	17.8	83*	9.5

* Significantly different at 95% level ** Significantly different at 99% level

The results from the tests for the parents showed an improvement in animal health knowledge. Before the classes results ranged from 1.5 to 3.5 with averages of 2.0 and 2.6 in the communities of Opoco and Carlos Machicado respectively. After the classes results ranged from 3.0 to 4.5 with averages of 4.1 and 4.3. Therefore, there was a clear indication of a transfer of knowledge to the families from their school children.

DISCUSSION

A number of important conclusions were produced by the study. In the area of knowledge dissemination there was a clear transfer from children to parents, but this was strongest for new subjects. The incentives provided to teachers, students and parents were important in maintaining interest throughout the study. Whilst it may be argued that such incentives bias a study, their importance in stimulating interest within the community was enormous. One father proudly explained that his son corrected him on an animal health problem and that his child's knowledge was now better than his. This spirit of cooperation and interest has also created a favourable atmosphere for animal health interventions and campaigns. Finally, the animal health activities within the schools have strengthening this organisation within the community. The material provided was relevant to local needs and demands, making the school not just an organisation for teaching children, but also a source of important information and a dissemination channel.

The methodology of teaching school children to address gaps in the level of animal health knowledge in poor isolated areas of the Bolivian high Andes appears to be successful. The children not only absorb and improve their own knowledge of these subjects, but also acted as dissemination agents within their families and communities. The methodology was very successful in improving knowledge on new subjects, but requires some improvement to correct ingrained errors. An important background issue for this work was the original prioritisation of animal health issues using participatory and scientific methods. This ensured that subjects taught were of relevance to the local area and knowledge imparted of immediate use to children and parents alike. For widespread use of the methodology it would need to include an initial animal health problem prioritisation followed by the development of teaching material for the identified priority issues. The success of the teaching methodology was demonstrated by knowledge improvements in areas outside animal health and would indicate that the methodology could be used for other subjects that relate to local families livelihood strategies.

On a very general note, worldwide campaigns to eradicate transboundary diseases are weak in poor isolated areas where it is difficult to provide adequate animal health service coverage. The use of schools as an information source for animal in such areas could strengthen animal health services, and help reduce school absenteeism, hence resolving some of the difficult rural illiteracy problems in countries such as Bolivia. To achieve such benefits requires Ministries of Agriculture and Education to work closely in setting and supporting rural curriculum that meets the needs of rural communities.

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