

A COMPARATIVE DESCRIPTION OF PRIMARY ANIMAL HEALTH CARE PRACTICES AND BENEFITS IN SELECTED PASTORAL AREAS OF AFAR REGION - ETHIOPIA AND KAPOETA PROVINCE OF SOUTHERN SUDAN

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ABSTRACT: A study was conducted in selected pastoral areas of Afar Region-Ethiopia and Kapoeta Province of southern Sudan, to assess the primary animal health care (PAHC) management practices and benefits such as improvement in disease situations. Active data were collected from a total of 40 groups of pastoralists, 24 community animal health workers (CAHWS) and 16 government veterinary personnel by using structured questionnaires and participatory appraisal (PA) methods. Structured questionnaires were focussing on CAHWS' demographic characteristics, primary animal health care activities and work constraints. PA data collected included disease changes, indicators of benefits obtained from healthy animals, and preferences in animal health care delivery systems. The data were checked by the triangulation method and quantitatively evaluated by using factor change analysis. At the time of conducting the study, a CAHW in Afar Region, on average, treated 9.7 TLU per week, busy with community animal health activities for 4 days and moved within a radius of 9.3 km per week to the camps and villages. The figures for Kapoeta were 18.2 TLU, 4.67 days and 10.47 Km, respectively. After the establishment of PAHC programs, disease situations, generally, have changed. Rinderpest eradication from its endemic Afar region was partly attributed to the active participation of CAHWS in the vaccination campaigns. The incidences of other serious diseases like contagious bovine pleuropneumonia, trypanosomoses and blackleg were also considerably decreased. At present PAHC seems to be the most feasible option for the delivery of animal health services to the study areas as far as infrastructure and livestock production systems in these areas are concerned.

Key words/phrases: Afar-Ethiopia, Kapoeta-southern Sudan, pastoralists, primary animal health care

INTRODUCTION

In arid and semi-arid regions, where inconsistent climatic variability makes crop production very unlikely and risky, nomadic and transhumant pastoralism have proved to be the most efficient forms of land use (Scoones, 1995). However in Ethiopia and southern Sudan, pastoralists lack or have very limited access to public veterinary services and diseases constitute the dominant constraint for livestock production. The lack of accessibility to the animal health services could be explained by the absence of veterinary establishments, poor road and market infrastructures, remoteness from main cities, reluctance of professionals to live and work in these areas,

insecurity and the mobile nature of livestock owners and their animals (Jones *et al.*, 1998). In recognition of the shortcomings of the conventional veterinary service delivery system in these regions, many development agents including NGOs and UN organisations adopted a primary animal health care (PAHC) approach for the delivery of animal health services to these areas of developing countries (Catley, 1999). This approach was introduced in Afar Region-Ethiopia and Kapoeta Province of southern Sudan around the mid 1990s.

The objective of this study was, therefore, to provide a description of the PAHC in Afar Region and Kapoeta Province and to examine if the PAHC approach has produced appreciable animal health improvements.

MATERIALS AND METHODS

Study areas

The study was conducted in selected pastoral areas of Afar Region-Ethiopia and Kapoeta Province of southern Sudan. Afar Region is found in the north-eastern part of Ethiopia, at latitude and longitude of 11.56°N and 41.44°E, respectively. The temperature of the region varies from 25°C during the rainy season (September-March) to 48°C during the dry season (March-September). The annual average rainfall is often less than 500 mm. The livestock population in the region is estimated at 3.6 million cattle, 2 million sheep, 3 million goats, 0.9 million camels and 0.2 million equines (ERIPAE, 2000).

Kapoeta Province is situated at 4.77° North and 33.57° East on the eastern corner of southern Sudan, bordering Ethiopia to the East, Uganda and Kenya to the South. The area has an annual rainfall of 500–800mm. The livestock population is estimated at 779,000 cattle, 500,000 sheep and 400,000 goats. Some camels and donkeys are also kept. Although cattle are highly valued, sheep and goats thrive well and goat milk contributes substantially to the family diet (Mogga, 1986).

Data collection

Active data were collected in 2001 by way of a questionnaire survey and using participatory appraisal (PA) methods. In addition, retrospective data were also gathered from reports and records of primary animal health care programs of government and non-governmental organizations (NGO) veterinary establishments. Participants of both structured questionnaire interviews and PA were conveniently selected on the basis of their acceptance to be interviewed. The sampling unit of interest for PA was a group of pastoralists composed of 4 to 8 persons, and for the questionnaire survey, individual community animal health workers (CAHWS) and government veterinary personnel. Overall, 40 groups of pastoralists, 24 CAHWS and 16 government veterinary personnel (14 groups of pastoralists, 9 CAHWS and 11 government veterinary personnel from Afar and the rest from Kapoeta) participated in the PA and questionnaire survey.

The questionnaire survey was conducted by way of personal interviews, after thoroughly explaining the purpose of the exercise to the interviewees. The questionnaires, pre-tested and

adjusted, were focussing on demographic characteristics, work load and area coverage of CAHWS as well as disease history and constraints in the delivery of PAHC.

The PA method used the "before" and "after" proportional piling tool (Catley, 1999). A sample checklist, serving as a guide and consisting of the main points for the PA interviews were prepared, pre-tested and adjusted accordingly, both in Afar Region and Kapoeta Province, prior to full implementation. Prior to the scoring exercises, the time-series approach was used to define the "before and after time frame" (Kirsopp-Reed, 1994; Catley, 1999). Informants were asked to identify not more than six local indicators per parameter. All indicators for a particular parameter were written in the local language on pieces of papers, each paper bearing one indicator. The papers were then placed separately on the ground or tagged on different objects like a piece of wood, a stone or tree leaves. The informants were arranged to sit in a way that all participants see the objects/papers clearly. Then the informants were asked to divide a pile of 100 "lalop" seeds (*Banaites aegyptiaca*) among the indicators according to their prioritization, to score the "before" situation. Throughout the interviews "lalop" seeds were used for scoring, as these were common in the study areas in both Ethiopia and southern Sudan, and "visible" to the informants and easy to handle. A literate informant in the group or an assistant was asked to read out these indicators from time to time to recall as they discuss and score. During the scoring of the "after" situation the informants were free to increase, decrease or leave the "before" pile of lalop seed of an indicator, according to their perception for the "after" situation. The informants were also allowed to rearrange the piles until they all arrived at an agreeable result. Generally, an interview with one group lasted 1 to 2 hours to discuss on 2 to 3 parameters depending on the willingness of the informants to continue with the interview. At field level, information gathered by PA method was crosschecked with secondary data (records and reports) by applying the triangulation process. Any pronounced differences were investigated and hypotheses for the differences made and tested (Mariner, 1996; Catley, 1999).

Preference proportional piling as described by Kirsopp-Reed (1994) was used to measure the most preferred animal health services in the area, following the same procedures as in the "before" and "after" proportional piling by using "lalop" seeds.

Data storage and analysis

Data were entered into the database management software ACCESS 97. Descriptive analysis of the questionnaire data was done using Statgraphics Plus 2.1. Computation of ratios and percentages were performed in Microsoft Excel 97.

Factor change (FC) analysis was made to quantify the magnitude and direction of changes of indicators (variables) of parameters. This was done by dividing the difference between the "before" and "after" scores of an indicator by its "before" value [$FC = (after - before)/before$]. A positive FC for milk and other benefits indicated an increased quantity of milk and benefits compared to the "before" situation. However, a positive FC for diseases indicated an increase in disease and, thus, no improvement. The t-test procedure was used to determine significances of differences between CAHWs of Afar Region and Kapoeta Province PAHC activities.

RESULTS

Among the interviewed CAHWs, 78% for Afar but only 40% for Kapoeta were aged less than 35 years. Seventy eight percent of CAHWs in Afar and 87% in Kapoeta were married. A substantial number of CAHWs in Afar (67%) but only a small number in Kapoeta (27%) did not go to formal school at all. Almost all CAHWs (100% for Afar and 96% for Kapoeta) owned at least small ruminants. The means of transport used for PAHC activities in Afar (89%) and in Kapoeta (100%) was on foot. Twenty two percent of CAHWs in Afar and 77% in Kapoeta were engaged in other income generating activities other than livestock keeping and PAHC works.

The summary statistics given in Table 1 quantify the actual weekly activities of a CAHW. At the time of conducting the study, on average, a CAHW treated 9.7 TLU per week in Afar Region and 18.2 in Kapoeta Province. The difference between the two means was statistically significant ($P < 0.05$). In Afar region, a CAHW was busy with community animal health activities for 4 days and moved within a radius of 9.3 km per week to the camps and villages. The figures for Kapoeta were slightly higher, 4.67 days and 10.47 Km, respectively. During the study period, the Sudan People's Liberation Army (SPLA) held part of the Kapoeta Province. CAHWs, however, had access to the SPLA areas too.

Table 2 shows list of animal health problems (in decreasing order of importance) that were mentioned by CAHWs and government veterinary personnel in the study sites. In general, perceptions of government veterinary personnel and CAHWs, with regard to important diseases affecting livestock in their areas, were found more converging in Afar Region than in Kapoeta Province. CAHWs and government veterinary personnel of Afar Region considered contagious bovine pleuropneumonia (CBPP) as the most important disease. In Kapoeta Province, east coast fever (ECF) was considered as the most important disease by CAHWs while government veterinary personnel judged this disease as less important and indicated rinderpest as problem number one.

Work constraints as experienced by CAHWs in the delivery of primary animal health care services were presented in Table 2. Lack of drugs, vaccines and transport facilities were indicated as dominant constraints both in Afar and Kapoeta. These were followed by lack of incentive or small profit margin. Only Kapoeta CAHWs mentioned lack of recognition as a work constraint.

Table 1. Community animal health workers work load in Afar Region-Ethiopia and Kapoeta Province of southern Sudan, 2001.

Variable	Afar Region (n=9)				Kapoeta Province (n=15)			
	Min.	Max.	Mean	S.D.	Min.	Max.	Mean	S.D.
Treatment/Week/CAHW								
Camels	2	10	3.4	2.51	-	-	-	-
Cattle	2	10	6.1	2.15	2	50	22.2	15.34
Sheep and goats	10	40	19.4	8.97	4	70	26.8	18.91
Total number of animals (in TLU)	4.4	21	9.7	4.7	1.8	42	18.2	12
Visits								
No. Herds	4	15	8.8	3.86	5	30	11.4	7.07
No Villages	1	7	3.9	2.03	1	15	6.47	4.16
No Camps	3	5	4.8	0.67	2	10	5.67	2.72
No Days busy	3	5	4.0	0.71	2	7	4.67	1.45
Distance covered (in km)	2	20	9.3	5.41	1	25	10.47	6.88

TLU, Tropical Livestock Unit (1 TLU = 250 kg live weight or 1 TLU = Camels 1.0; Cattle 0.7; Sheep/Goats: 0.1); Min., Minimum; Max, Maximum, S.D., Standard deviation

Table 2. Animal health problems and work constraints in the delivery of primary animal health care services as mentioned by CAHW and government veterinary personnel in Afar Region-Ethiopia and Kapoeta Province of southern Sudan, 2001.

Rank	Afar		Kapoeta	
	CAHW (n=9)	Gve-Vet.Pers (n=11)	CAHW (n=15)	Gve-Vet.Pers (n=5)
Health problems				
1.	CBPP	CBPP	ECF, HS	RP
2.	Anthrax	Internal parasites External parasites	CBPP	CBPP, Blood Par.
3.	Camel disease	Anthrax	RP	Anthrax
4.	Mange	Foot rot	CCPP	ECF
5.	FMD		BL	
Work constraints				
1.	Lack of transport	Lack of drugs and vaccines	Lack of transport	Lack of drugs and vaccines/ Lack of transport facilities
2.	Erratic supply of drugs and vaccines	Lack of transport facility	Lack of drugs and vaccines	Lack of co-operation from livestock owners
3.	Lack of enough profit	Lack of incentive	Lack of recognition	Lack of incentive
4.	High drug prices	Bad roads	Lack of co-operation	Bad roads

(Range for rating: 1, most important; 5, least important).

CBPP, Contagious bovine pleuropneumonia; CCPP, Contagious caprine pleuropneumonia; HS, Haemorrhagic septicaemia; FMD, Foot-and-mouth disease; ECF, East coast fever; RP, Rinderpest; Blood Par., Blood parasites

Animal health delivery systems-preferences as scored by the groups of pastoralists using the proportional piling method are given in Table 3. From a total of five animal health delivery systems identified by pastoralists themselves, the scores of preference attributed to CAHWs services and government services were comparable in Afar Region. In Kapoeta Province, CAHWs services were scored among the less preferred ones and highest rank was attributed to government veterinary services. Traditional treatment was scored low in Afar and relatively high (in second position) in Kapoeta. "Prayer", however, basically did not play much role in both Afar and Kapoeta.

Table 3. Animal health delivery systems preference as scored by groups of livestock owners using proportional piling method in Afar Region-Ethiopia and Kapoeta Province of southern Sudan, 2001.

Animal health delivery system	Afar Score (n=14)	%	Kapoeta Score (n=26)	%
Government	173	28.8	119	41.5
CAHW	178	29.6	42	14.6
Traditional treatments	74	12.3	45	15.7
Drugs from private sources	105	17.5	73	25.4
Prayer	71	11.8	8	2.8
Total score	601	100	287	100

The scores for livestock disease changes given by groups of pastoralists in Afar Region and Kapoeta Province are summarised in Table 4. CBPP, anthrax, pasteurellosis, FMD and trypanosomoses were highly scored "before" the establishment of PAHC. The scores show that "after" the establishment of PAHC, rinderpest was totally absent and CBPP substantially decreased in Afar Region. Generally, all the identified diseases except FMD, were given lower scores for the "after" period by the Afar pastoralist groups. In Kapoeta also, except for rinderpest, there was improvement in the disease situation at various degrees. Rinderpest was, however, considered to have increased drastically "after" the establishment of PAHC.

Using proportional piling method, groups of pastoralists both in Afar and Kapoeta, identified seven indicators, namely dowry payment, animals for sale, milk for children, bank /reserve, payment for loans, ritual performance and ghee making to measure changes in benefits obtained from healthy animals "after" the establishment of PAHC. No further investigation was made regarding the indicators. A number of other factors like climate, tribal conflicts limiting use of grazing lands, etc.. could also cause variation of the stated indicators.

Table 4. Scoring of livestock disease changes by groups of livestock owners using proportional piling method in Afar Region-Ethiopia and Kapoeta Province of southern Sudan, 2001.

Disease	Afar (n=8)			Kapoeta (n=4)		
	Local name	Before/After	FC	Local name	Before/After	FC
CBPP	Masangale/gublo	169/94	-0,44	Louko	72/40	-0,44
Anthrax	Gano/Abasanga	76/60	-0,21	Nyekalokan	47/41	-0,13
Rinderpest	Gano/Abasanga	14/0	-1	Nyechoke	13/130	9
FMD	Abeb	80/124	0,55			-
Blackleg	Haraite/Abagroba	16/10	-0,38	Lowath	14/7	-0,5
Pasteurolosis	Andero	73/62	-0,15	-	-	-
Stiff neck/back	Ginni	39/96	-0,08	-	-	-
Camel abscess	Galidale	41/31	-0,24	-	-	-
Trypanosomoses (cattle)	Sole	62/40	-0,35	-	-	-
Helminths	Indahe	24/18	-0,25	-	-	-
Trypanosomoses (camel)	Geramole	76/51	-0,33	-	-	-
**	Intifue	33/18	-0,45	-	-	-
Mange	-	-	-	Nyemitina	7/7	0
**	Bashet	29/18	-0,38	-	-	-
Pneumonia in camel	Kahoo	40/38	-0,05	-	-	-
CCPP	-	-	-	Naiidid	52/51	-0,02
Anaplasmosis	-	-	-	Lopid	25/22	-0,12
Emaciation syndrome	-	-	-	Lokoit	27/19	-0,3
HS ??	-	-	-	Nyetula	20/17	-0,15

CBPP, contagious bovine pleuropneumonia; HS, haemorrhagic septicaemia; CCPP, contagious caprine pleuropneumonia; FMD, foot-and-mouth disease; FC= factor change; ??, symptoms similar to the scientific name; **, only local name given; blank space means the disease was not mentioned

DISCUSSIONS

The majority of CAHWS in Afar being young (less than 35 years of age) means they were not having much difficulty in accessing the livestock even if livestock owners move with their livestock for grazing and watering during the different seasons. In the pastoral systems, younger men move with livestock to better grazing areas leaving the elderly and children with a small stock behind and therefore giving the opportunity to the younger CAHWS to attend to the sick animals.

The weekly workload of 4 days in Afar and 4.67 days in Kapoeta is comparatively high considering the part time nature of the job but similar to results from Northern Malawi (Hüttner *et al.*, 2000). The present study also showed that comparatively high number of livestock and a large area are now covered by the CAHWS and provided substantial animal health services compared to the time when services were erratic or not existing at all. Moorhouse and Ayalew Tollosa (1997) reported that the Ethiopian government veterinary services were functioning on fixed-point service delivery system and the latter was restricted to the public institutions working hours. The government

veterinary service coverage level was estimated at 30% of the total livestock population.

In general, there was agreement between CAHWS and government veterinary personnel in the ranking of major diseases in the study areas, although some disparities were recorded for Kapoeta. Regarding the latter, government workers were confined to areas under government control while the CAHWS were moving both to the Government as well as "SPLA" (Sudan People's Liberation Army) held areas. ECF was highly prevalent in "SPLA" held areas, the probable cause for some disparities seen in disease ranking.

Both Afar and Kapoeta CAHWS ranked lack of drugs and vaccines as major constraint hindering the delivery of community animal health services. During our study visit a good number of CAHWS were also not having any drug with them in the field.

In Afar Region the livestock owners preferred PAHC to the level slightly higher than the government veterinary services; reflecting obviously the satisfaction of the livestock owners with PAHC services. However in Kapoeta, more effort seems needed to win the confidence and full collaboration of pastoralists towards CAHWS.

The disease changes "after" the establishment of PAHC were prominent in Afar Region and acknowledged by the Pan-African Rinderpest Campaign (PARC) Ethiopia (Catley *et al.*, 1998). According to the latter conventional vaccination campaigns against rinderpest before 1994 did not exceed 60% immunity in the cattle population. After the year 1994, with the participation of CAHWS, the immunity level, including the areas previously inaccessible, attained 83% (Catley *et al.*, 1998). PARC Ethiopia, today, highly acknowledges the contribution of CAHWS for the eradication of rinderpest from Ethiopia in general and from its endemic area (Afar region) in particular. In southern Sudan, the vaccination coverage was relatively low, estimated at 31% of which 23% was carried out by CAHWS (Martin, 2001).

Indicators, including dowry payment, animals for sale, milk for children, bank /reserve, payment for loans, ritual performance and ghee making were more often commonly mentioned by pastoralist groups and proved to be useful indicators which could be adopted in future assessments of PAHC impact on livestock production performance.

The situation regarding government animal health services, production conditions and infrastructure in the study areas will not change in the foreseeable future. PAHC, therefore, remains the only viable possible option for animal health care delivery in the study areas in Afar-Ethiopia and Kapoeta-southern Sudan. The livestock owners' acceptance of and the satisfaction with PAHC services is also an indicator of the successfulness of the system to bring about appreciable animal health improvements. Moreover, CAHWS can be used as entry points for any other livestock development initiatives.

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