# Comparison of veterinary needs of ruminant livestock owners in livestock and non-livestock-producing areas in Ghana

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ABSTRACT

This study aimed at comparing the needs of ruminant livestock owners in livestock and non-livestock-producing areas in Ghana for veterinary services. Purposive sampling was used in choosing 200 livestock owners in a livestock-producing area (represented by Tamale and Savelugu-Nanton Districts), and 205 in a non-livestock-producing area (represented by Amansie East District) for administering a questionnaire. The response proportions (93 %) for both locations were excellent. Animal diseases, housing, lack of knowledge on management practices, and lack of drugs were identified as the most important problems in the two locations. Significantly higher proportions of respondents in the livestock-producing area identified advice on health, bathing or spraying against ectoparasites, castration, deworming, meat inspection, treatment for skin diseases, vaccinations, and treatment of wounds as activities that they needed. Significantly higher proportions of respondents in the non-livestock-producing area practised self-medication. The proportion that used veterinary staff to meet their needs was significantly higher in the livestock-producing area compared with that in the non-livestock-producing area. The study found that, generally, the veterinary activities needed were similar in the two locations, but the demand in the livestock-producing area was higher.

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RÉSUMÉ

TURKSON, P. K. & AMAKYE-ANSAH, J.: *Comparaison des besoins vétérinaires des propriétaires de bétail ruminant dans les zones d'élevage et de non-élevage de bétail au Ghana.* Une étude était faite visée à comparer les besoins des propriétaires de bétail ruminant dans les zones d'élevage et de non-élevage du bétail au Ghana pour les services vétérinaires. L'échantillonnage intentionnel était adopté en choisissant respectivement 200 et 205 propriétaire de bétail dans une zone d'élevage de bétail (représentée par les Districts de Tamale et de Savelugu - Nanton) et une zone de nonélevage de bétail (représentée par le District d' Amansie East), pour l'administration de questionnaire. Les proportions de réponse (93 %) pour les deux emplacements étaient excellentes. Les maladies des animaux, logement, manque de connaissance sur les pratiques de gestion et manque de médicaments étaient identifiés parmi les plus importants des problèmes dans les deux emplacements. Des proportions considérablement plus élevées des personnes interrogées dans les zones d'élevage de bétail identifiaient les conseils sur la santé, lavage ou pulvérisation contre les ectoparasites, castration, soin contre les vers, inspection de viande, traitement pour les maladies de peau, les vaccinations, soins de plaies comme les activités qu'ils avaient besoins. Des proportions considérablement plus élevées des personnes interrogées dans les zones de non-élevage de bétail pratiquaient automédication. La proportion qui utilisait les techiciens vétérinaires pour satisfaire leur besoins était considérablement plus élevée dans la zone d'élevage de bétail par comparaison avec celle de la zone de non-élevage de bétail. L'étude découvrait que généralement, les activités vétérinaires exigées étaient semblables dans les deux emplacements mais la demande dans la zone d'élevage de bétail était plus élevée.

## Introduction

According to Posavac & Carey (1992), programmes or services can be effective only when they meet real needs and when the target population agrees that it has those needs. Needs analysis is about listening to people's perceptions and investigating their constraints and opportunities to enable a multi-disciplinary approach for analysis and problem-solving suitable to the particular circumstances and acceptable to the community concerned (McCrindle, Stewart & Kiwanuka, 1996). A veterinary needs assessment, defined as a study of a system which includes humans as well as animals and diseases, has been advocated by McCrindle *et al.* (1994, 1996). In veterinary needs assessment, the focus is more on livestock owners as to what their perceptions are with regard to their livestock production systems.

Rearing of ruminants is common in Ghana and it tends to be an adjunct to other enterprises. Several constraints have been identified as hampering the success of livestock production, a major one being lack of veterinary support (Turkson, 1992; Adam *et al.*, 1995). The Ghana government has been trying over the years to provide services, and is now encouraging private delivery of veterinary services. For these services to be effective, they have to meet the needs of the recipients. The hypothesis is that the needs of livestock owners are significantly different from location to location to warrant customised delivery programmes.

The study aimed at comparing the needs of ruminant livestock owners in livestock and non-livestock-producing areas for veterinary services and activities, the acceptability of particular services and activities, and the willingness of people to use services to see whether these needs were markedly different. This was a follow-up to another needs assessment study reported by Turkson & Naandam (2003).

## Materials and methods

The method adopted was that of McCrindle *et al.* (1994, 1996), comprising two components: quantitative analysis and a rapid qualitative appraisal. The latter is a modification of the rapid or participatory rural appraisal (Chambers, 1992) or participatory appraisal (Catley, 2000).

*Study areas*

Three districts were chosen purposively, with two being in a major livestock-producing area and one in an area with very little livestock production. The districts were Tamale and Savelugu-Nanton in the Northern Region, a major livestock-producing area with a Veterinary Livestock Unit (VLU) of 58,000 in 1994; and Amansie East in Ashanti Region, a major crop-producing region with a VLU of 7,000 (Turkson, 1998).

Tamale District lies between latitudes 9° 20' N and 9° 35' N and longitudes 0° 30' E and 1° 00' E, covering about 922 km². Savelugu-Nanton District lies directly north of and borders Tamale District, so that it shares the same longitudes but lies between latitudes 9° 35' N and 10° 15' N, and covers about 1762 km². The two districts are in the Guinea savannah agro-ecological zone characterized by the dry and rainy seasons. The rainy season builds up gradually with little rain in April to a maximum in August, and then declines steeply to no rains from mid-October onwards. The average annual rainfall is about 1000 mm. Communities in these districts have traditionally kept livestock.

Amansie East District is located between latitudes 6° 20' N and 6° 30' N and longitudes 1° 30' W and 1° 45' W, covering about 1900 km². This district lies in the deciduous forest agro-ecological zone and has two main seasons–the rainy season from May to October, and the dry season from November to April. The average annual rainfall is about 1500 mm. Livestock are kept more as a hobby and as an adjunct to crop farming.

*Sampling procedure*

Ruminant livestock owners interviewed were chosen purposively, without lists of livestock owners in the study areas to serve as sampling frames. The study was carried out between April

and December 2000.

The target numbers of respondents were 100, 100 and 200 for Tamale, Savelugu-Nanton and Amansie East, respectively. For agricultural extension operational purposes, 14, 7 and 22 zones were in Amansie East, Savelugu-Nanton and Tamale Districts, respectively. At Savelugu-Nanton and Amansie East, all the zones were covered. In Tamale District, 10 of the 22 zones were randomly selected. Each zone in a district had a target number of respondents to be chosen, and ranged from 13 to 14 in Savelugu-Nanton, 10 in Tamale District, and from 14 to15 in Amansie East. Settlements within zones were chosen randomly. At the settlement level, the farmers were chosen purposively, based on their being known in the locality as keeping ruminants. Not more than two farmers per settlement or village were chosen. Livestock owners in the study areas were chosen with the help of the local veterinary Technical Officers (TOs), or the Agricultural Extension Agents (AEAs).

*Survey instrument*

A questionnaire was developed and pre-tested in Cape Coast on 20 ruminant livestock owners. The questionnaire had 40 questions (23 closed, 17 open-ended), which covered the socio-economic profile of respondents, animal demography and management, and animal health. The questions sought to identify the needs of the respondents as to access to veterinary services and remedies, availability of veterinary care, and constraints to ruminant production. The variables were similar to those used elsewhere (McCrindle *et al.*, 1996). On the average, it took 1 h to administer a questionnaire. The questionnaire was administered with the help of the local TOs and AEAs trained before the administration. The questions were translated into the local dialect for the respondents, and their answers translated back into English. The numbers of questionnaire given out were 100 each in Tamale and Savelugu-Nanton, and 205 in Amansie East.

*Data analysis*

The responses from the questions in closed form were coded and stored, using Microsoft Excel software. The Statistix[R] software (Version 3.5, Analytical Software Inc., St. Paul, MN, USA) was used for descriptive statistics, while tests of significance for differences in proportions were administered with EpiInfo[R] (Version 6.04b, Center for Diseases Control and Prevention, Atlanta, USA and World Health Organization, Geneva, Switzerland). Responses to open-ended questions were collated, tallied manually, and proportions calculated.

## Results

The response proportions were 93 per cent for both livestock (n = 200) and non-livestock-producing areas (n = 205).

The mean numbers of goats kept by the respondents were 16 for the livestock, and two for the non-livestock-producing areas. For sheep, these were 20 for the former and 9 for the latter. Whereas the average herd size for cattle was 40 in the livestock-producing area, that in the non-livestock-producing area was zero.

In both locations, the respondents were predominantly male household heads who owned the animals they kept (Table 1). The predominant production system was semi-intensive. The difference in the proportions of respondents practising this type of system in the two locations was not significant ($P > 0.05$). When respondents were asked how their animal health needs were met in 1999 (Table 1), a significantly higher proportion ($P = 0.00$, $\chi^2 = 36.05$) in the livestock-producing area reported that they depended on veterinary staff, compared with that in the non-livestock-producing area. In contrast, a significantly higher proportion ($P = 0.00$, $\chi^2 = 31.27$) in the non-livestock-producing area practised self-medication.

*Perceived major problems*

Table 2 shows the proportions of respondents

TABLE 1

*Some Characteristics of Respondents in Livestock and Non-Livestock-Producing Areas in Ghana*

| *Characteristic* | *Livestock-producing area* | | *Non-livestock-producing area* | |
|---|---|---|---|---|
| | n | % | n | % |
| Males | 178 | 94.9 | 190 | 71.8 |
| Household heads | 148 | 81.8 | 187 | 69.5 |
| Owned animals themselves | 176 | 72.7 | 187 | 81.8 |
| *Production system* | 178 | | 181 | |
| Extensive | | 8.7 | | 5.4 |
| Semi-intensive | | 88.4 | | 89.6 |
| Intensive | | 2.9 | | 5.0 |
| *Veterinary provider* | 168 | | 178 | |
| Veterinary staff | | 95.2 | | 70.8 |
| Self medication | | 3.6 | | 24.8 |
| Other livestock farmers | | 0 | | 1.1 |
| Drug sellers | | 0 | | 3.3 |
| Community livestock worker | | 1.2 | | 0.0 |

who identified certain factors as their number one problem in keeping livestock. The proportion of respondents citing housing as a number one problem was significantly higher ($P<0.05$) in the livestock-producing area than in the non-livestock-producing area.

When asked whether they were willing to use the services of a private veterinary provider if one was established in their localities, the proportion answering 'yes' was 75 per cent for both the livestock (n = 180) and non-livestock-producing areas (n = 184), and the difference was significantly higher ($P<0.05$).

Tables 3 and 4 provide information for the locations on the distances travelled and time spent by respondents in getting help or veterinary drugs, a good indicator of accessibility. The mean distances to the nearest veterinary clinic or technician and where to buy veterinary drugs, and the mean time in hours spent in getting drugs were higher in the livestock-producing area. However, the mean time spent in getting veterinary assistance for sick animals (that is, getting a sick animal attended to) in the non-livestock-producing area was about three times that for the livestock-producing area (Table 3), indicating problems with availability of veterinary personnel in the non-livestock-producing area. Significantly higher proportions of respondents in the non-livestock-producing area were less than 10 km away from a clinic or technical officer, and spent less than 2 h in buying drugs, compared with those in the livestock-producing area. However, the mean time spent in getting medical care for sick animals in

TABLE 2

*Proportions of Respondents Identifying Factor as Number One Problem*

| *Factor* | *Livestock-producing area (n=173)* | *Non-livestock-producing area (n=186)* | $\chi^2$ | *P* |
|---|---|---|---|---|
| Diseases | 37.0 | 34.4 | 0.26 | 0.61 |
| Housing | 24.3 | 10.1 | 12.57 | 0.00* |
| Lack of knowledge on management | 19.1 | 17.7 | 0.11 | 0.74 |
| Lack of drugs | 9.2 | 16.1 | 3.80 | 0.05 |
| Feeding | 1.7 | 2.2 | 0.01 | 0.92 |
| Deaths among young ones | 6.4 | 12.4 | 3.77 | 0.05 |
| Animals destroying crops | 1.2 | 2.7 | 0.45 | 0.50 |
| Others (theft) | 1.2 | 0 | - | - |
| No problem | 0 | 4.3 | 5.76 | 0.02* |

* Significant at $\alpha = 0.05$

TABLE 3

*Distances Travelled and Time Spent for Veterinary Assistance and Drugs*

| | | *Livestock-producing area* | *Non-livestock-producing area* |
|---|---|---|---|
| Distance to nearest veterinary clinic | Mean (km) | 14.0 | 6.4 |
| | SD | 11.8 | 5.3 |
| | Range | 0.5-80 | 0.5-25 |
| | n | 180 | 171 |
| | Median | 11 | 5.0 |
| Distance to nearest veterinary technical officer | Mean (km) | 9.5 | 4.5 |
| | SD | 8.9 | 4.8 |
| | Range | 0.1-70 | 0.5-25 |
| | n | 178 | 172 |
| | Median | 8 | 3.2 |
| Distance to nearest place to buy veterinary drugs | Mean (km) | 15.7 | 1.8 |
| | SD | 12.2 | 1.8 |
| | Range | 0.5-60 | 0.3-13 |
| | n | 184 | 172 |
| | Median | 12 | 1 |
| Time spent in getting veterinary assistance for sick animals | Mean (h) | 5.3 | 14.6 |
| | SD | 7.7 | 10.9 |
| | Range | 0-24 | 0.3-36 |
| | n | 182 | 172 |
| | Median | 2 | 13 |
| Time spent to obtain drugs for treatment of animals | Mean (h) | 5.7 | 1.8 |
| | SD | 7.6 | 1.8 |
| | Range | 0.1-48 | 0.3-12 |
| | n | 183 | 172 |
| | Median | 2 | 1.0 |

the non-livestock-producing area was about 15 h, compared with 5 h in the livestock-producing area.

Table 5 gives the proportions of respondents categorized by their perceptions of ease of getting their sick animals attended to. Higher proportions of respondents in both areas found it easy getting help for sick animals. However, the proportions experiencing various degrees of difficulty were higher in the livestock-producing area (~37 %) than in the non-livestock-producing area (22 %). The differences were significantly different ($P<0.05$). In a contingency table (prepared from Table 5), the ease of getting help (easy/very easy vs. difficult/very difficult) was significantly associated ($P=0.00$, $\chi^2=8.70$) with location of the respondent (livestock vs non-livestock-producing areas).

Table 6 gives the proportions of respondents indicating that they needed a particular veterinary activity. Consistently, apart from treatment involving injectables and sale of medicine or drugs, significantly higher proportions in the livestock-producing area needed the activities listed, compared with those in the non-livestock-producing area (Table 6).

## Discussion

The overall response proportions were excellent. Several respondents were unable to answer some questions, thereby reducing the response rates for specific questions, which explains the differences in 'n' seen in the tables.

TABLE 4

*Proportions of Respondents at Certain Distances or Needing Certain Amount of Time to Obtain Veterinary Assistance*

| | | *Livestock-producing area* | *Non-livestock-producing area* | $\chi^2$ | *P* |
|---|---|---|---|---|---|
| % of owners at | n | 180 | 171 | | |
| distance from clinic | 5 km or less | 20.6 | 66.6 | 76.06 | 0.00* |
| | 10 km or less | 48.3 | 81.2 | 41.53 | 0.00* |
| | Over 10 km | 51.7 | 18.8 | | |
| % of owners at | n | 178 | 172 | | |
| distance from | 5 km or less | 38.8 | 80.8 | 63.50 | 0.00* |
| technical officer | 10 km or less | 70.2 | 93.6 | 32.28 | 0.00* |
| | Over 10 km | 29.8 | 6.4 | | |
| % of owners at | n | 184 | 172 | | |
| distance from | 5 km or less | 16.8 | 34.9 | 15.61 | 0.00* |
| drug market | 10 km or less | 46.2 | 43.6 | 0.18 | 0.67 |
| | Over 10 km | 53.8 | 57.4 | | |
| % of owners | n | 183 | 172 | | |
| spending *x* h to | 2 h or less | 53.5 | 79.1 | 25.57 | 0.00* |
| buy drugs | Over 2 h | 46.5 | 20.9 | | |

TABLE 5

*Proportions of Respondents Stating Ease of Getting Help for Sick Animals*

| | *Livestock-producing area % (n = 185)* | *Non-livestock-producing area % (n = 181)* |
|---|---|---|
| Very easy | 8.6 | 19.9 |
| Easy | 54.6 | 57.5 |
| Difficult | 30.3 | 19.9 |
| Very difficult | 6.5 | 2.7 |

The mean numbers of ruminants kept by the respondents in the two locations justified the classification of the locations in this study into livestock and non-livestock-producing areas. Male household heads were predominant in the study (Table 1). This finding is important, because they make decisions in most homes that can influence livestock production, either directly or indirectly. In most traditional societies in Ghana, even though small ruminants are owned and reared by women and children, decisions on disposal, acquisition, building of shelter and others are made with the approval of a male (husband, father, or household head). However, who owns the animals in a herd or flock is important, as it influences decision-making. In this study, higher proportions of respondents in both locations owned the animals themselves. This, hopefully, could help them to identify their needs and allow them to make decisions.

In this study, the semi-intensive system of production, defined as a system in which animals are confined during the night and part of the day, and are released later to be herded or to graze on their own, was significantly predominant (Table 1). The World Bank (1992) noted that Ghana has no nomadic population totally dependent on extensive livestock production for its livelihood. The extensive system in this study was defined as a system which allowed animals to range freely or graze on their own, fending for themselves with

TABLE 6

*Comparison of Proportions of Respondents Identifying a Veterinary Activity as Needed by Them*

| *Activity* | *Livestock-producing area % (n = 185)* | *Non-livestock-producing area % (n = 184)* | $\chi^2$ | *P* |
|---|---|---|---|---|
| Advice on health | 75.7 | 60.9 | 9.34 | 0.00* |
| Bathing against ectoparasites | 76.2 | 65.8 | 4.90 | 0.03* |
| Castration | 77.3 | 46.7 | 34.36 | 0.00* |
| Disease diagnosis | 66.5 | 51.6 | 8.40 | 0.00* |
| Deworming | 94.1 | 85.9 | 6.85 | 0.01* |
| Treatment involving injectables | 78.4 | 78.8 | 0.01 | 0.92 |
| Meat inspection | 53.0 | 30.4 | 19.27 | 0.00* |
| Sale of medicine/drugs | 71.3 | 64.7 | 1.89 | 0.17 |
| Treatment for skin diseases | 70.8 | 55.4 | 9.37 | 0.00* |
| Spraying against ectoparasites | 80.0 | 67.4 | 7.57 | 0.01* |
| Vaccinations | 93.5 | 74.5 | 24.94 | 0.00* |
| Wound treatment | 90.8 | 65.2 | 35.27 | 0.00* |

* Significant at $\alpha = 0.05$

hardly any input from the owners. The extensive system may be more popular during the dry season when the threat of crop destruction by animals is minimal or nil, and animals have to go longer distances from home to graze. The intensive system is not popular because it demands much labour and inputs, and is at variance with the "low-input" philosophy of the traditional subsistence farmer who usually keeps livestock as an adjunct to crop farming.

*Veterinary providers*

The respondents in both locations noted that veterinary staff were the providers most used in meeting their animal health needs in 1999 (Table 1). According to Turkson (1998), although Veterinary Services Directorate was charged with treatment of animals, many animal owners opted for self-medication due to perceived difficulties in accessing services, and as cost-saving measures. The treatments administered by the owners were deworming, ectoparasite control through dipping, spraying, dusting and bathing, and castration. A high proportion of veterinarians (65 %) interviewed in Ghana (n = 121) in 1996 identified the low value placed on animals as detrimental to the provision of veterinary services, because it resulted in the reluctance of the owners to consult veterinary staff (Turkson, 1998). These may explain why most owners opted for self-medication in the non-livestock-producing area in this study.

Significantly higher proportions of the respondents in both locations were willing to use the services of private veterinary providers if clinics were established in their localities. One reason given was the anticipated closeness of the service, expressed as "My distance to travel for help will be shorter" and "No money will be spent on transport". Other reasons given were the envisaged promptness of services and the availability of personnel for regular consultation. However, there were fears of exploitation by private providers if fees were not regulated.

*Perceived major problems*

Diseases were identified as the major problem in both locations (Table 2). The difference in proportions in the two locations was not significant. Knichel & Gyening (1989) noted that

diseases pose a constant threat, and the inability of the veterinary services to effectively provide health care to most livestock in the rural areas is a major constraint to livestock production in Ghana. Other authors have reported disease as a major constraint to livestock production in the tropics (Hanssen & Autreve, 1989; Turkson, 1992; Winrock International, 1992).

The difference in the proportions citing housing as a problem was significant ($P<0.05$) (Table 2). The problem of housing was more pronounced in the livestock-producing area than in the non-livestock-producing area. Animal shelters are commonly built with tree off-cuts, stems or branches that are more available in the forest area, compared with the drier savannah agro-ecological zone.

*Distances travelled, time spent, and ease of getting veterinary assistance*

Accessibility to veterinary services has been cited as one major constraint to livestock production in Ghana (Gyening, 1986; Turkson, 1992; Apori, 1992; Adam *et al.*, 1995). This study showed that, generally, accessibility to veterinary services, indicated by distances travelled and time spent on getting veterinary assistance or drugs, was relatively more difficult in the livestock-producing area than in the non-livestock-producing area (Tables 3 and 4). Generally, road infrastructure is better in the south than in the north, and coupled with the longer distances to travel, accessibility in the north may be relatively more difficult. This may account for the differences. The poor nature of roads and absence of reliable public transport in most places make travelling to obtain help or get medicines even more difficult.

Significantly higher proportion of respondents in the livestock-producing area travelled over 10 km to reach a clinic or a TO, compared with the proportion in non-livestock-producing area. The proportion in the livestock-producing area that spent over 2 h to buy drugs was significantly higher ($P < 0.05$). These could contribute to frustrating the owners, and could discourage livestock production. Interestingly, even though the mean time spent in getting veterinary assistance in the non-livestock-producing areas was about 15 h (Table 3), a high proportion (77 %) said getting help for sick animals was easy or very easy (Table 5). This seeming contradiction is difficult to explain.

From the results, those in the difficult or very difficult group were more likely to be associated with the livestock-producing area. It is necessary to improve services here, as this location has a higher potential and is best suited for increased livestock production.

*Veterinary activities needed by owners*

A comparison of the proportions needing the veterinary activities (Table 6) showed that apart from treatments involving injectables and sale of medicines or drugs, the proportions demanding specific activities such as advice on health, deworming, castration, bathing or spraying against ectoparasites, vaccinations, and treatments for skin diseases and wound were significantly higher in the livestock-producing area than in the non-livestock-producing area, implying a higher demand. However, the types of veterinary services needed by ruminant owners in the two locations (apart possibly from meat inspection) were similar. The null hypothesis that the needs of ruminant livestock owners are similar and, therefore, do not warrant customized delivery programmes has to be accepted.

Various reports have pointed to the inability of government veterinary services to provide adequate services to small-holder farmers in sub-Saharan Africa (Anteneh;,1984; de Haan & Bekure, 1991; Umali, Feder & de Haan, 1992). Gyening (1986) attributed the lack of performance in administering veterinary services to lack of mobility and inadequate supply of veterinary inputs. Turkson & Brownie (1999) provided evidence of underfinancing delivery of veterinary services in Ghana. The FAO (1990) noted that underfinancing resulted in inadequate operating

budgets which, together with inadequate field personnel, normally caused reduction in field services first, so that services aimed at controlling diseases or improving animal productivity were neglected. A consequence of the inability to deliver essential services translated to being unable to meet the demands of all animal owners. In the light of this, efforts should be made at concentrating services in areas with higher demand and better potential of giving the highest returns on investment.

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