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Assessment of Veterinary Service Delivery in Shebedino District of Sidama Zone, Southern Ethiopia

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Abstract

Inefficient veterinary services remain one of the major challenges to the expansion of livestock sub-sector in Ethiopia. A survey was carried out, from November 2016 to April 2017, in Shebedino district of Sidama zone, south Ethiopia. The core objectives of the research were; to evaluate the delivery of veterinary services in compliance with the OIE recommendations; and to recommend feasible solutions which could help to improve the performance of veterinary services. A multi-stage random sampling technique was employed to select three peasant associations (PAs) for the study. A total of 100 households (livestock owners and community representatives) and 26 veterinary officers and administrative bodies were selected for the survey. Relevant data were collected through structured questionnaire, interviews, focus group discussions, and review of desk documents. The findings of the research revealed that the livestock resource in Shebedino district has been impeded by a wide range of rampant animal diseases. The majority of livestock owners (78%) preferred public veterinary services to combat the deleterious effects of animal health problems, professional skill, fairness of service charges and sustainability of veterinary services being the major determinants for service preference. On the contrary, private veterinary institutions were preferred and commanded due to the availability of relevant drugs and timeliness of veterinary services. Nonetheless, the findings disclosed the high cost of service, poor quality and limited sustainability of services as the major weaknesses of the private sector. Similarly, the public veterinary services were hampered most importantly by persistent limitation of financial resources to carry out routine clinical activities, livestock emergencies and epidemiological surveillance. Furthermore, considerable external influence on technical decisions; weak chain of command; limited interaction among concerned stakeholders; and the absence of public awareness about animal welfare were the identified weaknesses to effective administration of veterinary services in the study area. Based on the present findings, it is recommended that public veterinary services should maintain their technical freedom, acquire sufficient physical and financial resources to assume their responsibilities. Finally, privatization should be encouraged to create competitive environment for effective veterinary services.

Keywords: Private and Public Institutions; Shebedino district; Veterinary services; Privatization

Introduction

In the context of globalization, agricultural development-led industrialization (ADLI) plays a key role in creating employment opportunities, social standings and overall economic well-being of the communities. Essentially, livestock production has been a driving force of the agricultural sub-sector, especially in the countries of sub-Saharan Africa [1]. Furthermore, increased livestock production and higher self-sufficiency reduces the need for foreign aid and increases GDP as a result of the export of livestock and their products [2]. The development and growth of most countries, as well as the prevention and control of major biological disasters, are directly related to the activities and quality of National Veterinary Services (NVS). Whatsoever the nature of the current and future challenges to the National Veterinary Services, the central features of effective Veterinary Services remain the same. In other words, Veterinary Services should be independent and objective in their activities; and all decisions should be based on sound science and immune from all aspects of political pressure [3,4].

Use of the OIE tool for the evaluation of the Performance of Veterinary Services (PVS) is a key element in the assessment of the efficiency and quality of livestock production. Effective veterinary services consist of four fundamental components, namely human and material resources; technical authority and capability; integration with concerned parties; and the ability to access available markets. Following the OIE PVS pathway allows for the establishment of the current level of veterinary services (VS), and for the identification of potential challenges which could impede these services. Hence, OIE tools help to facilitate safe and fair international trade, prevent and control animal diseases and ensure appropriate animal welfare [4,5].

Ethiopia has been reputed to hold one of the greatest opportunities for the expansion of livestock sub-sector. The country has the largest continental livestock population, with about 53.3 million cattle, 33 million sheep and 30 million goats [6]. This resource covers over 45% of agricultural output, excluding the values of draught power, manure and transport of people. It also plays a crucial role in the national economy by contributing 13-16% of the GDP [4,7].

Nonetheless, the national livestock resource has been curtailed by traditional production system, seasonal feed scarcity, poor veterinary infrastructure and high prevalence of animal diseases, and poor investments in veterinary professionals. The situations have been worsened especially by the fiscal challenges which have been successively limiting the effective provision of the veterinary services [8]. As the

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result, the national livestock productivity remained very low and even below the average for most countries in sub-Saharan Africa [9].

For this reason, revitalization of veterinary services (both in public and private sectors) is required to increase the efficiency and effectiveness of animal health care and, consequently, livestock productivity; safeguard public health; and contribute to national development. Over the recent decade, the Ethiopian government made strenuous efforts to strengthen the governance of veterinary services across the country. This has been addressed, first, by re-designing and adjusting livestock policy frameworks with the role to decentralize the provision of veterinary services. Secondly, the nation has paid due emphasis to harmonizing and integrating the efforts of various actors, so as to boost the performance of veterinary services across the nation.

The SNNPRS is renowned for a suitable agro-ecology which favours the diversification and specialization of livestock production. In Shebedino district of Sidama zone, one of the districts in this Regional State, it is realized that progressive efforts have been made by concerned stakeholders to alleviate the challenges which hamper livestock resources.

However, scientific information has not been recorded regarding the status of veterinary services and major challenges impeding the effectiveness of these services in public as well as private veterinary institutions. Thus, it was necessary to conduct baseline survey to generate benchmark information, which could be valuable as part of setouts to improve the livelihoods of the community in the district.

Therefore, the objectives of this study were:

- To evaluate the delivery of veterinary services (both strengths and limitations);
- To assess the major livestock diseases this can hamper livestock production in Shebedino district, Southern Ethiopia.

Literature Review

The development of veterinary services in Ethiopia

Traditional veterinary service is believed to have been in practice in Ethiopia long ago however, it is difficult to indicate the exact date of its beginning. Traditional healers (Wegeshas) used to treat both human and animal patients through drenching of herbal drugs, incising and cauterizing of abscesses and wounds using sharp objects and hot metals, mending fractures and rehabilitating dislocations. Such practices still exist in some parts of the country [10].

Modern veterinary services started relatively recently in Ethiopia. A French Veterinary Mission began providing veterinary services in 1908. During its occupation of Eritrea, and later other parts of the country from 1936-41, the Italian army was treating equines used in its cavalry unit. Moreover, it established a laboratory around Kechene Medhanealem, in Addis Ababa, where some vaccines were produced [10]. The progress of veterinary services was slowed down for a while after the Italians were forced out of the country. However, it was later decided that the Ministry of Agriculture should take over the laboratory [11].

Thus, the first Ethiopian veterinarians took the responsibility for providing animal health services. British experts were invited to the country and Ethiopians professionals were trained at home and some were sent to East Africa to get training in laboratory techniques and vaccine production. In addition, 250 vaccinators were trained by the Point 4-aid organization of the USA and were later assigned to serve in the various provinces of the country. A considerable leap in vaccine production, research and disease investigation has been manifested after the 1950s [12].

The reasons for these developments include the gradual return back of Ethiopians after acquiring high-level veterinary training abroad and the establishment and functioning of the National Veterinary Institute and the Animal Health Assistants School through financial and technical cooperation of the American and French governments and the FAO. The National Veterinary Institute has been fully engaged in the production of vaccines and provided most of the diagnostic services in the country until the first regional laboratories were constructed in the 1970s and developed in the 1980s [12].

The Institute of Animal Health Assistants also gradually increased the number of sub-professional graduates to a maximum of 80 per year after a two years' program of studies. The Faculty of Veterinary Medicine of the University of Addis Ababa has been operating since 1979 and 25-30 students graduate each year following a 6-year training cycle. Thus, the modern veterinary service that started in the 1900s showed slow progress in the first fifty years. Following this it has shown progressive improvement and at present fast change is observed in areas of manpower, infrastructure, material and financial build up [12].

General animal health services in Ethiopia

Even though Ethiopia has huge livestock population and the prevalence of animal diseases is high, the animal health service is steadily deteriorating similar to other many African countries. The national animal health service delivery in Ethiopia covers only 40-45% of the country's population [13]. This low service coverage is attributed to lack of personnel, shortage of drugs and equipment, poor mobility, and highland oriented animal health service delivery [14].

The current delivery of animal health services is inadequate both in terms of coverage and quality. There are very few private veterinary service providers other than veterinary drug importers and distributors, few private veterinary pharmacies and very few community animal health workers (CAHWs) often supported by NGOs. The government, instead of providing incentives to the private sector, has been expanding the number of public clinics, which does not necessarily increase the provision of clinical service delivery in these areas. The woreda, zonal and regional bureaus currently face problems in retaining their veterinary field personnel, especially in the more remote pastoral areas [15].

Ethiopia has established animal health services by both the national and regional governments, and private service providers, some of which are supported by non-government organizations. The numbers of veterinarians seem large, there is evidence of professional capacity, and the country was a leader in the national and international program of eradication of bovine rinderpest [16]. The animal health service in the rural areas is structured with regional laboratories for diagnostic and surveillance services, woreda clinics at woreda towns, rural health posts each serving three to five peasant associations (PA), though this ratio varied between the four regions (Oromiya, Tigray, Amhara and SNNPR). There are also private clinics/drug shops and community animal health workers (CAHWs) supporting the services as per NEPAD, 2005.

Rural clinics are manned by one clinician, sometimes two. The woreda offices and clinics are manned usually by veterinary graduates supported by diploma holders. The clinicians work basically comprises individual treatments, vaccinations, spraying and assisting births. The treatments are usually basic injections, drenching and castrations [17].

Organizational set up of the veterinary services in Ethiopia mainly consist of federal and regional entities [12].

Federal veterinary services: The major duties of the federal veterinary services include formulation of polices and strategies; serves as center for animal health information, conduct disease surveys and investigations; involve in formulation of national projects; control major diseases; enforce regulations and certifications; prepare work plan and budget; and provide technical inputs [15,18].

Regional veterinary services: The duties of the regional Veterinary services consist of provision of preventive and clinical services; annual vaccinations, meat inspection, collection of data, infrastructure development, training of AHT and CAHWs, conduct diagnostic activities, procurement of drugs, biologicals and other veterinary products; and licensing private practices [18].

District level veterinary services: The main activities of district veterinary services include: provision of vaccination and treatment services to prevent and control diseases; conduct meat inspection at municipal slaughterhouse and collection and reporting of animal disease occurrence and meat inspection data [19]. According to a study which was conducted in Ada'a district of Oromia region, respondents put the public veterinary service as their first choice for its effectiveness and affordability compared to the private veterinary service in their area. In addition, they have high trust in the drug used by public veterinary service providers. Clients blame the public veterinary service providers for lack of timeliness and rank them behind the private veterinary service providers [20].

Currently, participation of the private sector in the delivery of veterinary services is occurring at an increasing rate. However, most of the participants are geared towards operating drugs shops and importation of veterinary pharmaceuticals, while clinical or diagnostic services are very minimal and are operative in and around big cities where there are commercial livestock farms [10]. Encouraging the private sector to participate in clinical and diagnostic services will create a competitive environment which helps in providing veterinary service of good quality [12].

Veterinary manpower and infrastructure in Ethiopia

It is well known that for proper delivery of veterinary services, adequate manpower should be available. According to the FAO recommendation, a veterinarian could manage to take care of 30,000 to 50,000 animals as far as preventive measures are concerned and 5,000 for curative services. The animal health service in the rural areas is structured with regional laboratories for diagnostic and surveillance services, woreda clinics at woreda towns, rural health posts each serving three to five peasant associations (PA), though this ratio varied between the four (Oromiya, Tigray, Amhara and SNNPR) regions [9].

There are private clinics/drug shops and community animal health workers (CAHWs) supporting the services. Rural clinics are manned by one clinician, sometimes two. The woreda offices and clinics are manned usually by veterinary graduates supported by diploma holders. The clinicians work basically comprises individual treatments, vaccinations, spraying and assisting births. The treatments are usually basic injections, drenching and castrations. The quality of veterinary education is threatened by the growing number of new veterinary schools in the country. Over the past decade, the number of veterinary schools in Ethiopia has grown from 1 to 11. With such rapid growth comes a risk relating to maintaining educational and professional standards in teaching and in professional practice. Moreover, the education system is not geared to address new and growing challenges in the sector such as trade, diversification and intensification of production systems [16].

Only 45% of the country is served by animal health delivery systems. Field services are constrained by lack of input supply, high operational cost and lack of transport. Budgets do not allow drug purchasers to cover more than a part of the annual needs. The ratio of salary expenditures to recurrent costs is high and is increasing. The lack of well-developed quarantine and certification systems, which comply with international standards and meet the requirements of trading partners, is further compounded by the absence of livestock movement controls, and identification and traceability systems [16].

Coverage of veterinary service has improved over the past years. Veterinary infrastructure in the field is improving as the government moves towards an ambitious target of providing approximately one animal health clinic or post per three peasant associations (PAs) or Kebeles. The lack of well-developed quarantine and certification systems, which comply with international standards and meet the requirements of trading partners is further compounded by the absence of livestock movement controls, and identification and traceability systems. The country lacks laboratory and staff capacity and a quality management system especially at the regional level and there are poor linkages between federal and regional laboratories as per NEPAD in 2005.

There are poor import quarantine and inspection systems to control the introduction and establishment of exotic diseases into the country through import of live animals, animal products, genetic and pathological materials. Sound and cost-effective disease control strategies are lacking, mainly due to lack of reliable epidemiological information and risk assessment. Implementation of control programs is mainly monitored in terms of the number of vaccinations achieved, and not by monitoring the level of the disease targeted for control or eradication [21].

There are no well-developed, adequately funded and coordinated emergency preparedness and contingency plans for exotic, emerging and re-emerging diseases. The prevention and control of zoonosis and food-borne diseases is poorly addressed and the veterinary service is not providing front-line services. Inspection services are limited to export meat and poorly address primary livestock products such as milk, egg, honey and fish. Existing laws are obsolete and fail to comply with current scientific developments and international standards [12].

New private practices and drug shops are rapidly being established in an unregulated environment. This will have negative influences on privatization as they will most likely lead to increase in malpractice – misuse of drugs including use of out-of-date products, use of unsuitable products, under-dosing, over-charging and so on. This in turn will erode the confidence of livestock producers in the private veterinary sector discourage senior decision makers from supporting privatization, and consequently could significantly delay the progress of veterinary privatization. Formal (licensed) private providers of clinical services and veterinary drugs are facing increasing competition from unlicensed service providers and uncontrolled illegal operators. In turn this could lead to cost-cutting and malpractice. The current 'mess' in provision of animal health clinical services and supply of veterinary drugs is getting worse and, if this situation persists, will become increasingly difficult to control [12,21].

Farmers preferences on veterinary services in Ethiopia

According to a study that was conducted in North Gondar, of all

responding farmers, 58.54% preferred the government service, 21.14% liked both services equally and 20.33% preferred the private service. This is due to Government services, are cheaper (less costly), more effective, have more qualified professionals, possessed better quality drugs and diagnostic services. Also the government clinics are available nearby and the farmers have trust on the services. About 47.22% of farmers preferred government service because of cost [12].

The farmers who preferred the private service attributed their preference to the availability of service whenever it was needed. The existing service delivery under the current animal health service was seen to be unsatisfactory, both in the private and public service systems, in terms of both quality and range of veterinary services [12].

Methodology

Study area

The study was conducted in Shebedino district of Sidama zone, SNNPRS. The administrative seat of Sidama zone is situated in Hawassa town, which is located at about 275 km south of Addis Ababa [22]. Shebedino district is located at about 25 km south of Hawassa town at an attitude of 1800-2950 m. a. s. l and a total area of 197.1 km^2. The area receives between 900 and 1500 mm of annual rainfall, with average annual minimum and maximum temperature being 16°C and 25°C, respectively. The district has two rainy seasons: main rainy season (June-September) and short rainy season (February-April). There are two agro-ecological zones: 'Dega' (>2500 m. a. s. l) and 'Weinadega' (1800-25000 m. a. s. l). There are 35 administrative neighborhoods (Kebeles), 3 being in town and 32 in rural areas as per SDAO in 2013.

Sampling technique and sample size determination

A multi-stage simple random sampling procedure was employed to select peasant associations and households in the study area. The households were primarily isolated at their respective peasant associations. Three peasant associations, namely Telamo, Howolso and Xaramessa were randomly selected from the district. The sample size for the questionnaire survey was determined according to the formula designed by Arsham (2007), considering a standard error of 5%. Thus, the sample size was determined based on the formula given below:

$N= 0.25/SE^2$

where, N= The required sample size;

SE=Standard Error (0.05) at 95% Confidence Level.

Hence, a total of 100 household heads were selected for subsequent administration of structured questionnaire (40, 30 and 30 respondents from Telamo, Howolso and Xaramessa, respectively).

Data collection technique

In order to collect the desired information for the research, structured questionnaire was designed and administered to a sample of livestock owners and community representatives (key informants) in three randomly selected Kebeles of Shebedino district. Additionally, group discussions and interviews were made with veterinary officers and statutory bodies at district level. Accordingly, baseline information was collected pertaining to common livestock production system and animal health problems; major strengths and weaknesses of both governmental and private veterinary institutions; and major measures to be taken to improve the veterinary services. Finally, secondary data were collected by reviewing relevant desk documents (annual plans, periodic reports, etc.). More importantly, retrospective data over the recent 5 years were collected from the agricultural district offices in order to assess budgetary and administrative constraints relating to planned activities and the ability to implement them with the available resources.

Data management and statistical analysis

The data collected during the survey period were properly handled, stored in Microsoft office Excel (2016) and analyzed using SPSS software (Version 20). Qualitative and quantitative data collected through questionnaire, focused group discussion, and interviews of veterinary service providers and veterinary statutory bodies were subjected to descriptive statistical analysis using tables, charts and figures.

Results

Demographic characteristics of sampled households

The present research was conducted in Shebedino district of Sidama zone, southern Ethiopia. For this purpose, 100 household heads (livestock owners and community representatives) and 26 veterinary officers and administrative bodies were selected and interviewed to assess the status of veterinary services and to identify major challenges to the effectiveness of the services. The response rate was 100%, with the majority of the respondents being males (67%) and the rest females (33%). The average family size of the respondents was 5, while the age of household heads ranged between 30 and 60 years. The major socio-economic features of the respondents and their livestock holdings are presented in Table 1 below.

Livestock management and health problems

The interviewed livestock owners wholly indicated that they have been engaged, for decades, in mixed agriculture comprising of both crop production and livestock raising (Table 1). They also disclosed that their livestock have been facing a wide range of health problems, which often lead to deterioration in the production and productivity of their herds. Accordingly, livestock owners listed the main diseases and syndromes which recurrently affect their herds (Figure 1). As indicated in the figure above, livestock herds in the study area have been frequently affected by mastitis, various ectoparasites, gastro-intestinal parasites, and reproductive health problems such as dystocia and abortion, among others. On the other hand, muscle degeneration and subsequent wound were the commonly encountered health problems (10%) in equines.

Assessment of veterinary services in the study area

Farmers' preference for veterinary services: When asked about their preference for veterinary institutions to treat sick animals, about

Age category	(%)	Formal education (class years)	(%)	Major means of livelihood	(%)	Average livestock	Holdings/ Household*
30-35 years	13%	0 years	41%	Mixed farming	89%	Cattle	4.9 (0.51)
36-45 years	51%	1-4 class	47%	Off-farm jobs	11%	Sheep/goats	6.5 (1.32)
>45 years	36%	> 4th class	12%			Drought oxen	3.8 (1.17)
*Standard deviations were reported in the parenthesis							

Table 1: Socio-economic features of interviewed households in Shebedino district.

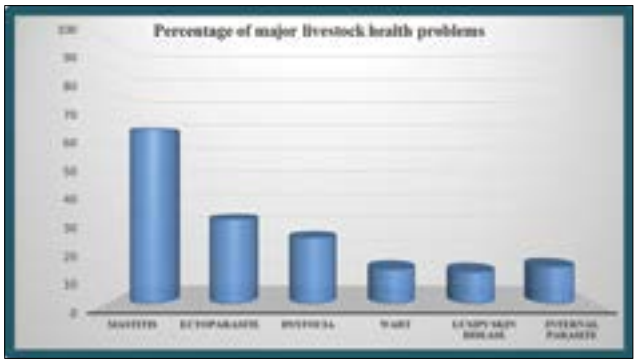

Figure 1: Major livestock health problems in Shebedino District, South Ethiopia.

78% of the respondents witnessed that they most commonly use governmental (public) veterinary institutions for the treatment of their animals, with the rest 22% preferring private vet services and/or traditional healers. On the other hand, veterinary officers disclosed that the entire livestock owners (100%) use governmental veterinary institutions to vaccinate their animals against the common livestock diseases, including Anthrax, Blackleg, CCPP/CBPP, sheep/goat pox, PPR, etc.

The farmers that had an opportunity to get treatment in both governmental and private clinics/shops were requested to compare the service charges in these institutions. Accordingly, most of the respondents (78%) perceive that the service charges in government veterinary clinics are fair, while the rest (22%) believe that the charges are expensive. The majority of respondents (96%) indicated that veterinary services are more commonly available in private clinics/shops compared with those of government institutions. The level of satisfaction by livestock owners towards the veterinary services rendered in public and private institutions is compared and summarized in the following section (Table 2 and Figure 2).

According to the findings summarized in Table 2 above, majority of the livestock owners (78%) prefer government services because of the presence of qualified professionals; relative fairness of service charges; quality of drugs and sustainability of veterinary services, among others. On the other hand, some livestock owners (22%) preferred private vet institutions due, at least, to punctuality of vet officers; availability of various vet drugs, and home-to-home services for emergency cases, even on weekends and public holidays.

Despite the above strengths of the government/publicvet institutions, interviewed household heads complained that there is shortage of basic infrastructure, including transportation facilities, vet drugs and laboratory equipment as the major bottlenecks to customer satisfaction in government clinics. Similarly, respondents were not satisfied with services in private clinics owing to the unreasonably high service charge; provision of often poor-quality drugs and less sustainability of the services.

Human resource required for veterinary services: During the survey, desk information was collected regarding the institutional and financial sustainability of the veterinary services in the study area, as evidenced by the level of professional staffing, physical and financial resources available in the district veterinary offices and at Kebeles. The human resource currently engaged in performing public veterinary services at district and Kebele level is summarized below (Table 3).

As shown in Table 3 above, the majority of veterinary positions at district level are currently occupied by competent and experienced (between 3 and 11 years of work experience) vet professionals. Veterinary officers witnessed that there has been little staff turnover, and thus good sustainability of the vet structure at district level. However, most of the positions at kebele level are presently vacant despite the high public demand for veterinary services. Furthermore, it was disclosed that there has been repeated turnover of recruited paraprofessionals at PA (Kebele) level, mainly due to insufficient remuneration for animal health extension workers.

This was also strongly supported by the complaint from the community representatives that the insufficient number of vet professionals and total absence of CAHWs at PA (Kebele) level usually

S/N	Major indicators of vet services	Government vet institutions	Private vet institutions
1	Presence of qualified vet professionals	+++	+
2	Fairness (price) of vet service charges	++	--
3	Transparency of vet services	+	---
4	Availability of vet drugs and inputs	---	+++
5	Quality of vet drugs and inputs	+++	--
6	Punctuality for vet services	---	+++
7	Sustainability of vet services	++	--
8	Service for emergency cases	--	++

Keys: +++, Strongest satisfaction; **++**, Stronger satisfaction; **+**, Moderate satisfaction; **---**, The least satisfaction; --, Lesser satisfaction; **-**Less satisfaction

Table 2: Comparison of government and private veterinary services in Shebedino district.

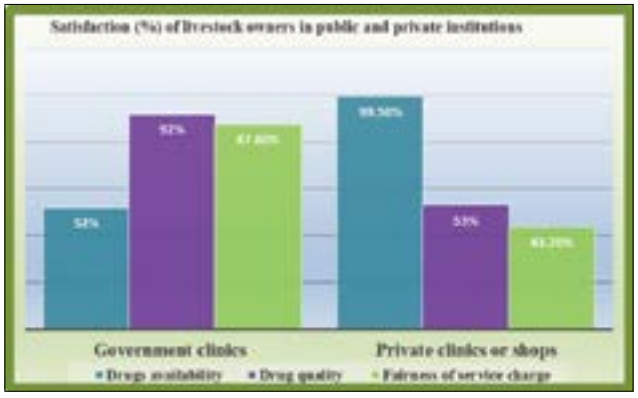

Figure 2: Relative satisfaction of livestock owners by government (public) and private veterinary services in Shebedino District, South Ethiopia.

Categories of technical/supportive staff	No. positions required	No. positions occupied
Veterinarians (DVM and above, district level)	4	3
Assistant veterinarians (BSc, district level)	3	2
Animal health extension workers (Diploma, Kebele)	11	3
Laboratory technicians (total at district level)	1	0
Meat inspectors (Total at district and Kebele level)	4	1
Supportive staff (Total at district and Kebele level)*	11	1
CAHWs (Total in all rural Kebeles)	-	0

*Janitors and finance officers collectively considered.

Table 3: Technical and administrative personnel in Shebedino district, South Ethiopia.

enforce livestock owners to search for traditional healers to treat sick animals when the need arises. Furthermore, it was observed that daily cash resource from the sale of veterinary drugs was collected by animal health extension workers at vet posts at Kebele level. Currently, cash resource was being collected by finance officer at district veterinary institution.

Physical and financial resources for implementation of veterinary services: Discussions with vet officers and woreda-level veterinary statutory bodies, and successive personal observation of basic infrastructure of the government veterinary institutions revealed that, the necessary veterinary facilities are not currently fulfilled to effectively run quality services for the community in the research area. It was also indicated that their veterinary institutions have no sufficient field facilities (such as motor bike/vehicle, vaccine bags and ice box);laboratory equipment; but there was partial supply of office furniture and communication facilities at district level. On the other hand, there was partial fulfillment of administration buildings/office for storage of vet equipment and facility of animal management (crush, restraint materials, etc.), but officers revealed that placement or maintenance of obsolete veterinary items does not occur most often.

More importantly, vet officers have repeatedly complained that they have been facing recurrent financial problems for routine clinical duties, procurement of veterinary drugs and associated supplies, emergency activities, and for construction of basic infrastructure. It was disclosed that there was no significant improvement in financial funds over the last five fiscal years to effectively undergo veterinary services (Figure 3). Veterinary statutory bodies and officers indicated that the continuous scarcity of financial resources was attributed mainly to the absence of direct veterinary department's participation in annual financial plans.

As indicated in Figure 3, the financial resource allocated for district-level veterinary institutions showed insignificant increment over the last five consecutive fiscal years, and the budget has been entirely used for the purchase of essential drugs and associated veterinary consumables. Veterinary statutory bodies and officers at the district level wholly (100%) complained that due to budgetary constraints, they could not be able to assume their responsibilities to satisfy the demands of the community. Thus, they disclosed that it was difficult to conduct vaccination campaigns and create public awareness about livestock health management, as per the annual schedule. Allocation of financial resource under direct participation of the veterinary department, and giving political commitment were suggested as the possible solutions to alleviate the problems which can hamper quality veterinary services in the study area.

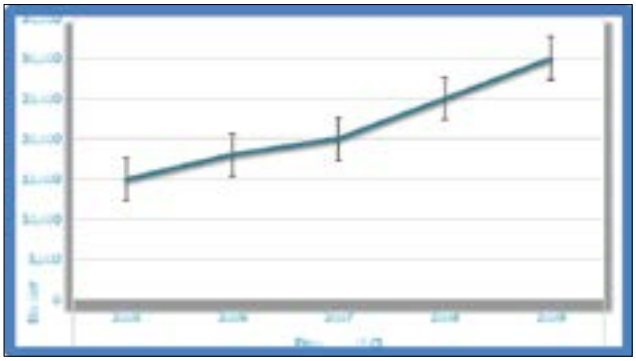

Figure 3: Financial resource allocation for public veterinary institutions in Shebedino District over the last five fiscal years (2005-2009 E.C).

Technical authority and capability of the veterinary services: Interviews and group discussions were conducted with veterinary staff and statutory bodies at district level, to know if the veterinary services have been carried out with institutional autonomy and freedom from any sort of external influence which may affect technical decisions. Thus, the findings indicated that most of the technical decisions have been based on scientific findings and evidences, but there have been several circumstances where the decisions were subject to review, modifications and even possible alteration based on non-scientific considerations.

In addition, the vet staff indicated that the request for the purchase of essential vaccines during outbreaks and regular programs has often been made possible only base on the good will of governing woreda administrative bodies. As the result, interviewed vet officers disclosed that there has been repeated staff turnover over the years, which lead to less stability of the structure and, thus sustainability of the veterinary services in some Kebeles. Furthermore, the majority of the vet staff (97%) revealed that there is often a lack of internal coordination (chain of command) to mobilize the resources and effectively command the public veterinary activities to deliver quality services for the community.

Veterinary clinical and laboratory diagnosis: Regarding veterinary clinical activities and laboratory diagnosis, veterinary staff and statutory bodies disclosed that, currently there are no laboratory technicians even at the district level and, thus poor laboratory activities, as witnessed also by personal observation. Thus, it was realized that sick animals have been diagnosed only based on clinical signs, without confirmation by appropriate laboratory tests, even at the district level. The officers suggested that, the possible mechanism to timely correct the problems could be through giving serious attention for recruitment of competent officers and fulfilling laboratory diagnostic facilities in the veterinary institutions.

Abattoir services and disease records: Office records were referred and personal visits were made to the slaughterhouses which are available in the district, with the aim to collect information about meat inspection and collection of disease information. Accordingly, it was realized that antemortem and postmortem inspections have been undertaken in conformity with the national standards for the distribution of meat for human consumption. Nevertheless, there have been little/no efforts to carry out antemortem inspection for most animals presented for slaughter. Furthermore, the slaughterhouses lack hygienic standards mainly due to poor water services, inefficient sewage system, lack of meat inspectors, and poor inspection facilities in all the slaughter houses.

Epidemiological surveillance and rapid response to livestock emergencies: Review of the office records indicated that there have been periodic, but irregular occasions to conduct active and passive surveillance for some relevant diseases to produce official report and communicate the information with zonal and regional veterinary services (VS) about the diseases. However, it seems that the linkage with disease risk analysis department of the zone and region is not formalized, because there was lack of regularity of reporting and feedback delivery.

Regarding early detection and rapid response to disease outbreaks and other livestock emergencies, the office heads and vet officers indicated that there are legal frameworks and contingency plans for anticipated emergencies. Nevertheless, veterinary officers unanimously (100%) revealed that there has been no planed financial support for the purchase and mobilization of vaccines, antibiotics, as well as human resources to rapidly respond to livestock emergencies. Moreover, it was

indicated that the response, if any, has not usually been coordinated through a strong chain of internal command.

Promotion and protection of animal welfare: Interviews were made with livestock owners, vet officers and administrative bodies at district level. The findings indicated that there were little efforts to create awareness and education for butchers and farming communities regarding the importance of animal welfare, most importantly on pack animals and animals meant for slaughter. However, there are presently signs of the administrative bodies to establish cooperation with some NGOs (notably Donkey sanctuary Ethiopia and SPANA) regarding public awareness creation, training and input supply on promoting animal welfare in the district.

Interaction with stakeholders regarding veterinary services: Desired information was collected about the interaction of the district veterinary institution with concerned stakeholders regarding the major veterinary services, planed programs and related developments in livestock and public health. For this purpose, desk documents were reviewed, and group discussion made with veterinary officers and administrative bodies. The results revealed that the public veterinary institutions have established some contacts and communications with certain partners (e.g., local NGOs, agricultural research institutions, private entrepreneurs, etc.).

However, it was realized that the contacts have been irregular and not always up-to-date in providing the desired information and feedback. Furthermore, the district veterinary services do not have planned communication with key stakeholders, including livestock owners, Ethiopian veterinary association (EVA), etc. Veterinary officers currently working at district level revealed that the above problems primarily emanate from the absence of veterinary communications structures in the district and zonal veterinary statutory bodies (bureaus), and subsequently lack of animal health communications strategies and plans.

Regarding the official representation in relevant meetings organized by concerned institutions, interviewed veterinary statutory bodies and officers indicated that there has been official representation of professionals and office heads in meetings relevant to livestock development and health aspects. Nevertheless, officers disclosed that there has been usually lack of transparency in selecting officers to participate in the meetings and trainings, and that the information so obtained could not be incorporated into strategic plans and programs of the district veterinary institutions.

Discussion

Veterinary services have been globally recognized as public good, with the aim to serve the farming communities across the world. Accordingly, the expansion of livestock industry requires strong governance of animal health systems to acquire human and logistical resources, which help in addressing the risks associated with the livestock sub-sector. Hence, it is essential that countries acknowledge the importance and role of national veterinary services, and give them the desired human, physical and financial resources to fulfil their responsibilities.

In the current research, efforts were made to collect baseline information to assess the strengths and weaknesses of the performance of veterinary services (PVS) in Shebedino district, in compliance with the OIE international standards. Accordingly, it was indicated that the production potential of the livestock resource has been hampered by various diseases and associated health problems. This conclusion favourably goes with a plethora of researches which disclosed the prevalence of different livestock diseases and reproductive health problems impeding the productive opportunities of Ethiopian livestock sub-sector in various agro-ecologies [9,11,12,14].

According to the present findings, most livestock owners in Shebedino district prefer public veterinary services over private institutions, based mainly on service charge, professional qualities and sustainability of veterinary services. This could be justified by the fact that the national veterinary service has been dominated by the public sector [23] where there has been high subsidy (40-45%) for most veterinary drugs and other inputs [11,24] and the finding by OIE that the veterinarians' practices, knowledge and attitudes are of a standard that usually allows for appropriate clinical and administrative activities of veterinary services in Ethiopia [25].

On the other hand, the majority of livestock owners (96%) have not been satisfied by public veterinary services due to lack of punctuality, drug insufficiency and absence of emergency services, among others. These days, most public services (including veterinary institutions) in our country have been facing varieties of problems basically associated with lack of good governance. Other researches on similar issues have also revealed that public veterinary service in the remote rural areas of most developing countries have been constrained by limited physical and financial resources for effective treatment and prevention of livestock diseases [1].

Similar problems on the drug availability were also reported in Ada'a district [20], North Gondar [12] and eastern Tigray [26]. Generally, the Ethiopian veterinary services, most importantly at the regional and district levels, have limited financial funds for routine veterinary activities and livestock emergencies over the last ten years [25,27]. Therefore, the private sector should be encouraged to participate in clinical and diagnostic services to create a competitive environment which helps in providing efficient veterinary services.

In this survey, about 56% of the community were not satisfied with veterinary services in private institution due to high service charge, poor quality of drugs and less sustainability of the services.

This is similar to the findings of Tefera [28] who found that private veterinary service providers ranked first for timeliness but last in the effectiveness and cost of services. Basically, Ethiopia has been encouraging the private sector, but effective regulatory mechanisms are yet to be implemented for monitoring unreasonable increments on private veterinary services [27]. Further, illegal introduction and sale of poor-quality drugs have been identified in different districts of the country, including rural private veterinary clinics and drug vendors [11,23,24,29,30].

Regarding human resource requirement, high professional vacancies were recorded at kebele level despite the high demand for veterinary services, as confirmed by official records and complaint from livestock owners. Based on this finding, one can expect considerable disease impacts on the huge livestock resource in the district. However, it is well known that adequate manpower is required for proper delivery of veterinary services. To this effect, the Food and Agriculture Organization (FAO) has recommended that at least 1 veterinarian should be assigned take care of 30,000 to 50,000 animals for preventive measures and 5,000 for curative services [9]. Hence, there is a need for urgent recruitment of animal health extension workers to meet the public demands for veterinary services.

Comparatively, the veterinary administrative offices and associated

physical resources at district level were well constructed, furnished and were equipped with telecommunications, though internet connections are weak. This indicates the commitment of the regional government to intensify veterinary infrastructure, but at the same time demands further efforts towards its target of one animal health facility per three PAs [16]. In the evaluation report of the PVS of Ethiopia, OIE recommended the need for the expansion of new veterinary health facilities, and maintenance and/or replacement of obsolete equipment used for veterinary services [25].

Similarly, there was persistent, unresolved financial scarcity which has been seriously impeding effective implementation of public veterinary services in the study district. There seems lack of transparency from the district agriculture office, thus little commitment in resource allocation for veterinary services in the district. The OIE evaluation report about the PVS confirmed the absence of financial funds for Ethiopian veterinary services, and that livestock emergencies may be approved but approval is through a political process [25]. Hence, the absence of revolving funds or contingency financial resources for livestock emergencies in Shebedino district calls for political commitment to fully utilize the PVS pathways recommended by the OIE [4].

According to the results of the research, there has been institutional autonomy, but considerable external interference (notably political influence) which affect technical decisions regarding veterinary services in Shebedino district. Essentially, it was realized that there are circumstances to modify or completely change technical decisions on the basis of non-scientific considerations. This incidence is in agreement with the OIE official report, which revealed the high level of political interference into technical decisions of the PVS in Ethiopia [11,25] as well as many countries in the greater horn of Africa [3,24]. Nevertheless, veterinary services should be independent in their activities; all decisions should be based on sound science, and immune from all aspects of political pressure [4].

In the same manner, the absence of strong internal coordination (chain of command) to effectively implement public veterinary activities in Shebedino district favourably goes with the findings of other researchers in Ethiopia [11,12,26], Kenya [3,24] and other countries in sub-Saharan Africa [1,27,31].

Frustratingly, there were very limited laboratory facilities in the research area, even at the district level, as the consequence of which sick animals have been treated without definitive diagnosis using appropriate laboratory tests. In their efforts to assess the major health constraints to livestock development in selected areas of Tigray region, Haftu et al. [26] have confirmed that there were serious limitations of veterinary facilities, and livestock diseases were diagnosed based on history and clinical manifestations. Similarly, it was recommended that the PVS of Ethiopia, primarily at district level should be supported by the necessary diagnostic facilities, and that there should be capacity building for field staff to undertake disease investigations and sampling independent of regional laboratory staffs [25].

Regarding abattoir services and disease records, the findings disclosed that animals are slaughtered and their meat is distributed for human consumption, without antemortem and postortem inspections. Personal observation of the abattoir at district level indicated the presence of zoonotic parasitic diseases (including hydatidosis, cycticercosis due to *C. bovis*, etc.). Similar situations would be expected at other sites in rural slaughter houses and butcheries, which could pose public health concerns in the district. At national level, the official OIE report revealed that ante-and postmortem inspections are not usually conducted in conformity with recommended standards, especially at zonal and district level [25]. Thus, it is strongly that particular attention should be paid to urgently solve this problem, by recruiting competent professionals and fulfilling laboratory facilities for slaughter houses.

On the other hand, despite ongoing epidemiological surveillance in the district, there has been little training of professionals and a weak chain of internal command between concerned government bodies in timely communication of information on notifiable livestock diseases and related emergencies. This finding is strongly supported by investigations carried out in the horn of Africa [9,32,33]. Additionally, similar conclusions were drawn by researches that were conducted in the arid and semi-arid pastoral areas of Afar and Somali regional states [24,34], as well as the Northern and central highlands of Ethiopia [14,18,26]. Hence, field veterinarians should get more training in field outbreak investigations to improve their skills.

Pertaining to animal welfare issues, the findings disclosed that the district veterinary statutory bodies (VSB) have made little efforts to create public awareness regarding the importance of animal welfare, most importantly on pack animals and animals meant for slaughter. In Ethiopia, considerable efforts have been made to include animal welfare issues in veterinary education, but there is no strong legal framework on the same issue. Thus, there is persistent harm and cruelty to animals destined for transportation and slaughter [25]. To this effect, it is recommended to formulate welfare provisions in livestock legislations, promote the importance of animal welfare for concerned stakeholders and the public at large.

Conclusions and Recommendations

The expansion of livestock sub-sector in most rural areas of the developing world has been seriously challenged by rampant diseases, poor veterinary infrastructure and limited professionals. Thus, delivery of effective veterinary services requires strong governance of animal health systems in addressing the risks associated with this resource. To this effect, implementation of the OIE tool is a key element in the assessment of the efficiency and quality of veterinary services.

Over the recent decade, Ethiopia made strenuous efforts to ameliorate the production and productivity of livestock resources. Consequently, there has been rapidly improving animal health system of commendable quality. This is also the case with the SNNPRS, and Shebedino district of Sidama zone. Evidences abound as to the recent activities and steady improvements in the delivery of veterinary services and general management of livestock resources. However, the present research identified many gaps in relation to the coverage and quality of veterinary services both in the public and private veterinary institutions. Accordingly, while the public veterinary services have been praised for rendering quality services for the public (in terms of professional competence, service charge and sustainability of services), these efforts have been counterproductive by financial scarcity, limited physical logistics, poor service coverage, and management-related constraints.

Similarly, the private veterinary services have been commended for timeliness of veterinary services. Nonetheless, service delivery in these entities has been challenged by gaps in the implementation of legal and ethical practices, as well as over subsidized services in government veterinary institutions. Finally, findings of the survey revealed that there have been no formal and up-to date communications of district veterinary institutions with key stakeholders in exchanging the desired information about livestock production and related developments.

This calls for the urgent formulation of veterinary communications structures in the district and higher hierarchies, with the roleto design strategies and plans to fill this gap.

Based on the above conclusions, the major impediments of the veterinary services should be ameliorated, by paying special emphasis to the following recommendations:

- The existing pubic veterinary institutions should be granted sufficient financial funds, competent manpower and the necessary physical resources to carry out effective clinical activities, epidemiological surveillance as well as handling livestock disease emergencies;
- Privatization of veterinary services should be more encouraged to alleviate the existing and potential burden on public institutions. Simultaneously, regulatory mechanisms should be consolidated to ensure the quality and sustainability of private veterinary services;
- There must be strong interaction between the district veterinary statutory bodies, the entire community and other concerned stakeholders to promote the importance of animal welfare and prevent cruelty against animals meant for transportation and slaughter.

References

1. Catley A, Admassu B, Bekele G, Abebe D (2014) Livestock mortality in pastoralist herds in Ethiopia during drought and implications for livelihoods-based humanitarian response. Disasters.
2. Msellati L, Commault J, Dehove A (2012) Good veterinary governance: Definition, measurement and challenges. Rev Sci Tech 31: 413-430.
3. Amankwah K, Klerkx L, Sakyi-Dawson O, Karbo N, Oosting SJ, et al. (2014) Institutional dimensions of veterinary services reforms: responses to structural adjustment in Northern Ghana. Int J Agric Sustain 12: 296-315.
4. OIE (2013) Tool for the Evaluation of Performance of Veterinary Services (OIE PVS Tool). (6th edn): The OIE PVS Tool. Rue de prony, Paris, France.
5. Marcotty T, Thys E, Conrad P, Godfroid J, Craig P, et al. (2013) Intersectoral collaboration between the medical and veterinary professions in low-resource societies: The role of research and training institutions. Comp Immunol Microbiol Infect Dis 36: 233-239.
6. CSA (2013) Federal Democratic Republic of Ethiopia Central Statistical Authority. Agricultural sample survey report on livestock and livestock characteristics, Addis Ababa, Ethiopia, p. 2.
7. Eneyew A, Bekele W (2012) Determinants of livelihood strategies in Wolaita, southern Ethiopia. Agricultural Research and Reviews 1: 153-161.
8. Teklewold H, Legese G, Alemu D, Negassa A (2009) Market structure and function for live animal and meat exports in some selected areas of Ethiopia. Ethiopian Agricultural Research Institute, Addis Ababa, Ethiopia.
9. FAO (2012) Head Counting of the major indicators of livestock disease complexes in the horn of Africa, October 2010 – January 2011, Food and Agriculture Organization of the United Nations (FAO) in collaboration with MoA.
10. Admassu B (2003) Primary animal health care in Ethiopia: The experience so far. Veterinary Field Officer Community-based Animal Health and Participatory Epidemiology unit. p: 1-13.
11. Admassu B (2010) History of community animal health service delivery: Current scenario and significance of community animal health network and its expected outcomes. Proceeding of the CAHNET-Ethiopia Launching Work Shop Held at Ghion Hotel, Addis Ababa, Ethiopia. Pp: 14-25.
12. Melaku A, Kebede H, Kebede E (2014) Constraints in animal health service delivery and sustainable improvement alternatives in North Gondar, Ethiopia. Onderstepoort J Vet Res 81: 1-10.
13. Rajkumar AS, Gaukler C, Tilahun J (2011) Combating malnutrition in Ethiopia: An evidence-based approach for sustained results. World Bank Publications, Washington D.C, USA.
14. Abebe G (2003) Community-based animal health services delivery in Ethiopia. Experiences and the way forward on community-based animal health service delivery in Ethiopia. Proceedings of a workshop held in Addis Ababa, Ethiopia.
15. MOARD (2010) Federal Democratic Republic of Ethiopia Ministry of Agriculture and Rural Development Country Position Regional Policy Framework on Animal Health, for Trade and Poverty Reduction Addis Ababa, Ethiopia, P: 11.
16. MoA (2013) Animal health strategy and vision for Ethiopia. International Livestock Research Institute. p: 2-5.
17. Peter H (2016) Review of animal health service delivery in the mixed crop-livestock system in Ethiopia. International Livestock Research Institute (ILRI), p: 1-9.
18. Gebreegziabher B (2009) An Overview of the Veterinary Services in Ethiopia: Relation to Public-Private Partnership (PPP) Regulatory Framework. Proceedings of the 23th Annual Conference of the Ethiopian Veterinary Association (EVA), held in Addis Ababa, Ethiopia. p: 1-10.
19. Zewdie S (2004) Animal Health Services Delivery in Ethiopia. Proceedings of the 18th Annual Conference of the Ethiopian Veterinary Association (EVA), held in Addis Ababa, Ethiopia. p: 51-55.
20. Jibat T, Mengistu A, Girmay K (2015) Assessment of veterinary services in central Ethiopia: A case study in Ada'a District of Oromia Region, Ethiopia. Ethiop Vet J 19: 1-9.
21. EVA (2013) The Ethiopian Veterinary Association. Proceedings of the 27th Annual Conference of the Ethiopian Veterinary Association, Held in Addis Ababa, Ethiopia.
22. NMA (2008) National Metrology Agency, SNNPR, Meteorological Office.
23. Drug Administration and Control Authority of Ethiopia (DACA) (2006) Standard treatment guidelines for veterinary practice.
24. Catley A, Aklilu Y (2013) Moving up or moving out? Commercialization, growth and destitution in pastoralist areas: In: Pastoralism and Development in Africa: Dynamic change at the margins. Routledge, Abingdon, New York, USA, pp: 108-120.
25. OIE (2011) OIE- PVS evaluation report of the Veterinary services of Ethiopia.
26. Haftu B, Asresie A, Haylom M (2014) Assessment on major health constraints of livestock development in Eastern Zone of Tigray: The case of "Gantaafeshum Woreda" Northern Ethiopia. J Vet Sci Technol 5: 174.
27. USAID (2013) Building resilience to recurrent crisis: USAID Policy and Program Guidance.
28. Tefera E (2008) The role of dairy cooperatives in stimulating innovation and market oriented smallholders development: The case of Ada' a Dairy Cooperative, Central Ethiopia. MSc Thesis, Haramaya University, Ethiopia.
29. Gewado A, Sisay W (2013) Detection of bovine trypanosomosis and efficacy of selected trypanocidal drugs in Konso district, Southern Ethiopia. Open Science Repository Veterinary Medicine.
30. Shaw APM, Torr SJ, Waiswa C, Cecchi G, Wint GRW, et al. (2013) Estimating the costs of tsetse control options: an example for Uganda. Prev Vet Med 110: 290-303.
31. Rathod PK, Nikam TR, Sariput L, Amit H (2014) Farmers perception towards livestock health care service delivery by dairy cooperatives: A case study of Western Maharashtra. Karnataka J Agric Sci 27: 95-96.
32. Farm Africa (2005) Community-based Goat Productivity Improvement in Central and South Meru Districts. DFID Livestock Production Program, Final Technical Report, Project R7634, p: 11.
33. Ilukor J, Birner R, Nielsen T (2015) Addressing governance challenges in the provision of animal health services: A review of the literature and empirical application transaction cost theory. Prev Vet Med 122: 1-13.
34. Admassu B, Nega S, Haile T, Abera B, Hussein A, et al. (2005) Impact assessment of a community-based animal health project in Dollo Ado and Dollo Bay districts, Southern Ethiopia. Trop Anim Health Prod 37: 33-48.