# SHORT COMMUNICATION

# A pilot survey on factors limiting veterinary service delivery systems at animal health facilities in Hawassa, Shashemene, and Negele Arsi, Ethiopia

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## Abstract

A pilot questionnaire survey was carried out from December 2021 to June 2022 at animal health facilities in Hawassa city and Shashemene and Negele Arsi towns in Ethiopia. The objective of the survey was to determine what factors in the study area limited the provision of veterinary services at animal health facilities like veterinary clinics, veterinary pharmacies, and veterinary administrative offices. Government veterinary staff, clinical veterinarians, and private veterinary pharmacists were purposefully chosen based on their availability at each study area, whereas livestock owners (clients) were chosen at random at the point of service. A semi-structured questionnaire with multiple-choice and open-ended questions was administered to 100 study participants. It was discovered that the public sector was generally preferred by 74% of livestock owners and the private sector was preferred by 26%. In terms of infrastructure coverage, the current animal health service delivery system was found to be deficient (35.7%). Drug shortages were a major problem for most public veterinary service providers (66.7%), while expensive drug prices were a problem for private veterinary service providers (34.0%). Additionally, it was determined that poor management (57.1%), a lack of funding (14.3%), a lack of commitment (28.6%), and a lack of attention to the veterinary sector (78.6%) were among the factors that hindered the provision of proper veterinary services in these areas. To carry out efficient veterinary clinical activities, the existing public veterinary institutions should be given sufficient financial resources, qualified personnel, and physical resources.

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**Keywords:** Animal health; Hawassa; Negele Arsi; Shashemene; veterinary service delivery.

# Introduction

Agriculture forms the foundation of the economies of the majority of developing nations. The majority of the countries in eastern and southern Africa derive more than 30% of their GDP from agriculture (Institute of Biodiversity Conservation, 2004). By supplying cheap labor, capital investment, foreign currency, and markets for manufactured consumer goods, increasing agricultural productivity encourages industrial growth (Upton, 2004). One of the most crucial ways to raise living standards in many developing nations is through livestock production. Livestock is essential to national economies and rural communities in Sub-Saharan African nations (Sibanda *et al.*, 2014). About 12–16% of the country's total GDP, 35% of the agricultural GDP, and 60%–70% of Ethiopians' means of subsistence are derived from it (Halderman and Nelson, 2004).

Ethiopia has 61.5 million cattle, 33 million sheep, 39 goats, 59.4 million chickens, 11.96 million equines, 1.76 million camels, and 7.1 million beehives. Cow milk is produced at a rate of 3.3 billion liters annually, camel milk at a rate of 282.2 million liters annually, eggs at a rate of 151.47 million, and honey at a rate of 58.6 million kg annually (CSA, 2019). More than half of all industrial raw materials are supplied by it, making it the most significant economy in terms of foreign exchange (Hoekstra *et al.*, 2011). The productivity of the livestock sector is lower than the potential of the average African production rate despite the significance of livestock to the majority of the population and the economy as a whole (Duguma *et al.*, 2012a). Diseases, an out-of-date management approach, poor genetics, food shortages in both quantity and quality, and a lack of a well-developed market infrastructure are all to blame (Duguma *et al.*, 2012b).

Numerous signs point to serious shortcomings in veterinary services in Sub-Saharan Africa and the Horn of Africa, especially when it comes to investigating, reporting, managing, and quickly responding to outbreaks of livestock disease (OIE, 2019). The majority of African nations, including Ethiopia, have experienced a decline in animal health services as a result of several factors, including underdeveloped economies with increased state obligations, inadequate and erratic access to foreign currency, global economic fluctuations, and

the presence of various production systems within a single economy in a country (MOARD, 2010). Farmers treat diseases in their livestock with a variety of veterinary drugs, and uneducated people sell these substances as common market goods (Moritz *et al.*, 2013; Vougat Ngom, 2017). Drug abuse in food-producing animals is exacerbated when metabolite residues in tissue, which indirectly affect the respective consumers' health, are present (Sanders, 2007).

Four categories of veterinary services are distinguished: (1) curative services, which include disease diagnosis and treatment; (2) preventive services, which include immunization and vector control; (3) production of veterinary pharmaceuticals; and (4) human health protection, which includes sanitary inspection of animal products (De Haan and Umali, 1992).

A crucial step toward helping rural poor farmers benefit from the rising demand for livestock products while also lowering risks to both animal and human health is improving veterinary service delivery to combat and control emerging and re-emerging animal diseases (Wymanns *et al.*, 2007; Hall *et al.*, 2004). Despite a few pilot studies in particular regions of the central highlands of Ethiopia, mostly for academic purposes, there is a lack of comprehensive, well-documented, and reliable information about the state of the veterinary services delivery system, as well as significant obstacles impeding the effectiveness of these services in both public and private veterinary services. The factors limiting the provision of veterinary services at animal health facilities in Hawassa, Shashemene, and Negele Arsi, Ethiopia, are similarly undocumented. Therefore, the objective of this pilot survey was to determine what factors were restricting the provision of veterinary services at animal health facilities in Hawassa, Shashemene, and Negele Arsi, Ethiopia.

## Materials and methods

### Description of study areas

From December 2021 to June 2022, the study was carried out in Hawassa city, Shashemene, and Negele Arsi towns, Ethiopia.

The capital of Sidama Regional State, Hawassa, is situated 275 km South of Addis Ababa.

1750 meters above sea level, it is located between 6°83' and 7°17' N and 38°24' and 38°72' E. It has an average annual temperature of 20 °C and 955 mm of precipitation (Fesseha *et al.*, 2020).

Shashemene, on the other hand, is a town and woreda in the West Arsi zone of the Oromia Regional State. It is situated between 7°12' N and 38°36' E, 250 km South of Addis Ababa. Its elevation ranges from 1,672 to 2,722 meters above sea level. The town's annual rainfall varies between 1,500 and 2,000 mm, and its temperature ranges from 12 to 28 °C (CSA, 2003).

In addition, Negele Arsi is a town situated in the West Arsi Zone of Oromia Regional State, in southeast Ethiopia, on the paved road North of Shashemene. It is roughly 225 kilometers from Addis Ababa and is situated between 7°21' N and 38°42' E. The altitude of the town is 2043 meters above sea level (ORS, 2004).

### Study design and sample size determination

Data were gathered using a cross-sectional study design that included an observational assessment and a semi-structured questionnaire. Using the formula given by Arsham (2007), the sample size for the questionnaire survey was calculated, with a standard error of 5% and a 95% confidence interval. As a result, the sample size was determined using the formula below:

Where, N is the required sample size, which is the total number of respondents to the questionnaire survey; SE is the standard error (0.05) at a 95% confidence interval. As a result, it was calculated that there were 100 participants in total.

### Study participants

Veterinarians from public clinics, private veterinary pharmacists, and employees of veterinary service facilities were all purposefully selected as study participants based on their availability at the veterinary service facilities. However, a simple random sampling technique was used to choose livestock owners (clients). As a result, the questionnaire survey was completed by 50 livestock owners (clients), 13 veterinarians from public clinics, 23 veterinary pharmacists, and 14 members of the veterinary administrative staff.

## Questionnaire survey

A semi-structured questionnaire with multiple choice and open-ended questions was used with 100 participants in the study area. To ensure consistency, the questionnaire was also translated from English into regional tongues. The respondents were interviewed in person for the questionnaire. People who work in veterinary service facilities, especially public clinic vets and private veterinary pharmacists, were questioned about the biggest challenges they faced and whether drug smugglers were present or not. The questionnaire also asked about the staff members' knowledge of other limitations on the area's veterinary service delivery systems, such as management-related restrictions and inaccessible veterinary facility infrastructure.

## Observational assessments

Both private and public veterinary service facilities received regular visits. There were many facilities, including veterinary clinics, but not all of them used laboratory diagnostics. Drugs were unavailable or improperly stored, animal holding areas were dirty, lab equipment was inadequate, there were no quarantine or isolation areas for disease outbreaks, and there were no suitable operating rooms or emergency rooms.

## Data management and statistical analysis

The data gathered during the survey period was entered into Microsoft© Office Excel before being encoded and analyzed using STATA statistical software version 14. The chi-square ($\chi2$) test was used to examine the relationship between various risk factors. To analyze qualitative data, descriptive statistics were used. Frequencies and percentages were used to summarize the output. The threshold for statistical significance was set at $p<0.05$.

# Results

## Demography of study participants

A total of 100 participants took part in the study, including 50 livestock owners (clients), 13 public clinic veterinarians, 23 veterinary pharmacists, and 14 veterinary administrative staff (Table 1).

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**Table 1. Summary of study participants**

| Participants | Number of participants and their geographical locations | | | |
| --- | --- | --- | --- | --- |
| | **Hawassa** | **Shashemene** | **Negele Arsi** | **Total** |
| Clients | 20 | 15 | 15 | 50 |
| Public clinic veterinarians | 6 | 4 | 3 | 13 |
| Veterinary pharmacists | 10 | 6 | 7 | 23 |
| Government staff | 5 | 5 | 4 | 14 |
| Total | 41 | 30 | 29 | 100 |

## Veterinary service delivery constraints identified

In the three study areas, various restrictions on the provision of veterinary services were found, the majority of which were connected to the prescription of drugs without laboratory confirmation of cases (94.4%), the inaccessibility of infrastructure (71.4%), a lack of drugs (66.7%), the presence of drug smugglers (58.3%), and delays in disease reporting (40.0%) (Table 2).

**Table 2. Identified constraints of veterinary service delivery**

| Questions | Number of respondents (N) | |
| --- | --- | --- |
| | **Yes (%)** | **No (%)** |
| Are there sufficient drugs with types and abundances available in your pharmacy? | 12 (33.3) | 24 (66.7) |
| Do you know that there are smugglers who sell drugs? | 19 (52.8) | 17 (47.2) |
| Have you faced expired drugs? | 15 (41.7) | 21 (58.3) |
| Do you treat an animal with specific drugs as requirements? | 14 (38.9) | 22 (61.1) |
| Do you depend on the lab result for a prescription? | 2 (5.6) | 34 (94.4) |
| Is there a shortage of skilled manpower in the Vet Clinic? | 7 (50.0) | 7 (50.0) |
| The animal health staff in these areas are adequate in number and can cover the area and address the vet. Needs of livestock keepers? | 9 (64.3) | 5 (35.7) |
| Is there infrastructure inaccessibility for delivering vet Service to the intended receiver? | 4 (28.6) | 10 (71.4) |
| Are there communication problems between the animal's owner and the veterinary service provider? | 24 (48.0) | 26 (52.0) |
| Do you take your animal to a veterinary clinic quickly once they are diseased? | 30 (60.0) | 20 (40.0) |

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# Preference for veterinary service facilities among clients

About 74% of clients were discovered to frequently use public veterinary services for the care of their animals, while 26% of clients preferred private veterinary services (Table 3).

**Table 3. Preference for veterinary service facilities among**

| Services | Frequency | Percent (%) |
|---|---|---|
| Public veterinary service | 37 | 74.0 |
| Private veterinary service | 13 | 26.0 |
| Total | 50 | 100 |

## Limitations in providing proper veterinary services to livestock owners (clients)

In Shashemene (16.7%), distance from the service center is a minor constraint, while it was the biggest issue for livestock owners in Hawassa (83.3%) in providing proper veterinary care. Distance from service centers was not cited in Negele Arsi, though, as a barrier to offering clients quality veterinary care. Other factors were also identified, including farmers needing drugs without bringing their animals, low perception of veterinary services, and bringing animals after attempting self-treatment on several occasions (Table 4).

**Table 4. Limitations in providing proper veterinary services to livestock owners (clients)**

| Limitations related to clients in the provision of veterinary services | Number of responses in each area (%) | | | |
|---|---|---|---|---|
| | Hawassa | Shashemene | Negele Arsi | Total |
| Distance from the service center | 5 (83.3%) | 1 (16.7%) | 0 (0.0%) | 6 (16.7%) |
| Low perception | 2 (33.3%) | 1 (16.7%) 3 (50.0%) | | 6 (16.7%) |
| Coming after several trials by themselves | 3 (37.5%) | 4 (50.0%) | 1 (12.5%) | 8 (22.2%) |
| Farmers need drugs without bringing their animals | 6 (37.5%) | 4 (25.0%) | 6 (37.5%) | 16 (44.4%) |

## Constraints in public veterinary clinics and veterinary administration

The public veterinary clinics encountered a variety of restrictions, the majority of which had to do with management. For instance, the limitations included the sector receiving little attention, poor management, a lack of commitment, and a lack of funding (Table 5).

**Table 5. Constraints related to public veterinary clinics and veterinary administration**

| Constraints related to public veterinary clinics and veterinary administration | Number of participants (%) | | | |
|---|---|---|---|---|
| | **Hawassa** | **Shashemene** | **Negele Arsi** | **Total (%)** |
| Lack of awareness about veterinary importance | 1 (20.0) | 0 (0.0) | 0 (0.0) | 1 (7.1) |
| Shortage of budget | 1 (20.0) | 1 (20.0) | 0 (0.0) | 2 (14.3) |
| Minimal attention is given to the sector | 3 (60.0) | 4 (80.0) | 4 (100.0) | 11 (78.6) |
| Lack of commitment | 2 (40.0) | 1 (20.0) | 1 (25.0) | 4 (28.6) |
| Shortage of manpower | 0 (0.0) | 1 (20.0) | 0 (0.0) | 1 (7.1) |
| Lack of incentive/bonus | 1 (20.0) | 0 (0.0) | 0 (0.0) | 1 (7.1) |
| Poor management (administration) | 2 (40.0) | 3 (60.0) | 3 (75.0) | 8 (57.1) |

## Limitations related to private veterinary service delivery system

Various constraints on the delivery of private veterinary services were identified. Non-professional involvement in the treatment of diseased animals, high service or drug costs, and treatment without a proper diagnosis was frequently reported (Table 6).

**Table 6. Constraints related to the private veterinary service delivery system**

| Major constraints in private veterinary service delivery system | Number of participants (%) (N=50) | | | |
|---|---|---|---|---|
| | Hawassa | Shashemene | Negele Arsi | Total (%) |
| Use of material without sterilization | 3 (75.0) | 1 (25.0) | 0 (0.0) | 4 (8.0) |
| Provision of services without proper diagnosis | 2 (20.0) | 3 (30.0) | 5 (50.0) | 10 (20.0) |
| High service or drugs cost | 6 (35.3) | 4 (23.5) | 7 (41.2) | 17 (34.0) |
| Inadequate qualification (non-professional involvement) | 9 (47.4) | 7 (36.8) | 3 (15.8) | 19 (38.0) |

# Discussion

It is widely acknowledged that a variety of factors, including farmers' perceptions of the services, wealth position, and household head education level, among others, influence the provision of high-quality veterinary care within a particular agroecology/production system (Gizaw *et al.*, 2021). Both the public and private sectors of Ethiopia's current animal health system offer poor-quality and limited-reach services. The government subsidizes the cost of clinical case treatment services and drug costs, making public veterinary services the preferred option over private ones in terms of effectiveness and cost (Girma, 2008). According to recent findings, the majority of livestock owners in the study area (74%) prefer public veterinary services (public veterinary clinics) to private veterinary service providers because these services are more sustainable than private veterinary services and have qualified professionals on staff.

The primary factors that cause livestock owners (clients) to dislike public veterinary services include drug shortages, weekend and holiday closures, a lack of punctuality, the absence of emergency services, and distance from the veterinary service facilities. On the other hand, some livestock owners (26%) preferred private veterinary clinics because of their punctuality, accessibility to a wide range of veterinary medications, and availability of home-to-home services for emergency cases, including on weekends and holidays. On the other hand, private veterinary care was more expensive than public veterinary care. These results were in line with the findings of Friederike (2003), which pointed out several problems that the government's veterinary service faced.

One problem was how to coordinate the numerous actors despite resources being limited, communication issues existing, and more importantly how to keep a steady and reliable data flow. Respondents to the current study attributed the inability to maintain full-service supply to a lack of resources, a lack of knowledge, budgetary restrictions, and insufficient government attention to the industry.

In the study area, challenges with the handling, management, and marketing of illegal drugs are frequent. According to veterinary administrative staff members who were interviewed, the main barriers to customer satisfaction in public veterinary clinics are a lack of basic infrastructure, including recovery rooms for sick animals, veterinary medications, suitable buildings with the necessary equipment, and laboratory equipment. Budget constraints and a lack of properly trained personnel were also cited as major bottlenecks in the sector.

Ethiopian livestock performance continues to be largely attributed to animal diseases, creating a growing supply-demand imbalance for livestock products (Agrawal, 1995). Over the past three decades, conventional veterinary services have been crucial in the country's efforts to control and prevent livestock disease. However, they are unable to offer complete coverage of preventive and curative healthcare due to a lack of labor, logistical problems, unpredictable pharmaceutical supply, and the high cost of medicines and equipment. Additionally, many livestock farmers, especially those in rural areas, are far from veterinary clinics and even those who do have access to them might not be able to afford them (Sori *et al.*, 2004).

The current study revealed that, even though the majority of farmers lack formal education, they still purchase medications from veterinary drug stores and care for their animals on their own. As a result, farmers were unable to properly apply the medication because they could not read the drug labels. In a similar vein, Kebede *et al.* (2014) reported that farmers in North Gondar, Ethiopia, were indiscriminately using drugs from the black market to treat their animals. Irrational drug use includes over-prescription (prescription of drugs when none are clinically necessary), omission (not prescribing needed medications for conditions), inappropriate dosage (too high or low), incorrect duration (too short or long), incorrect selection (drug and organism mismatch), unnecessary risk, and others (Brahma *et al.*, 2012).

Discussions were held with respondents at the veterinary administration during the observational assessments, and they noted that inadequate budgetary provisions for preventive veterinary services were the main obstacles to the implementation of disease control services like vaccination and quarantine. Additionally, the staff members mentioned a lack of facilities for veterinary clinical activities and case diagnosis in laboratories. It was subsequently established that the majority of sick animals were identified based solely on clinical symptoms without the support of relevant laboratory tests. These results corroborated a study by Kebede *et al.* (2014) that found the only clinical tool available to diagnose ill animals in all veterinary clinics examined in North Gondar between 2011 and 2012 was a thermometer.

## Conclusions

The main factors limiting the veterinary delivery system in Hawassa, Shashemene, and Negele Arsi, Ethiopia, are a lack of laboratory facilities, a lack of drugs or a high cost of drugs, unclean restraint areas, a lack of quarantine and isolation areas for sick animals, a lack of suitable rooms for surgical and emergency cases, and inappropriate drug storage. It was evident that neither the public nor the private sectors' offerings of services were adequate to satisfy customers (clients). Additionally, it is difficult to maintain full-service provision due to customer distance from the service center, lack of knowledge about veterinary services, and client perception of veterinary services.

Accordingly, based on the foregoing concluding remarks, the following suggestions are made: a thorough analysis of the factors limiting the veterinary service delivery system should be carried out at the national level, awareness-raising events for both clients and professionals should be planned in consultation with the relevant government body, private-public veterinary service partnerships should be started, and short-term capacity building training should be provided to veterinarians.

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## Conflict of interests

The authors declare that there is no conflict of interest regarding the publication of this paper.

# Authors' contributions

STT – developed questionnaire, collected data, data analysis, and writing up of the first draft; TSM –developed questionnaire, data curation and analysis, and writing up the final draft; TEB – helped in data curation and analysis of data

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