

## A Study to Characterize and Identify Handling Problem of Camel During Transportation to Feedlot and in Feedlot at Adama and Methera, Ethiopia

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**Abstract:** The current cross-sectional and retrospective studies were conducted to characterize and identify handling problem of camel during transportation to feedlot and in feedlot at Adama and Methera. Data of 55 livestock stations were collected by direct visiting of the feedlot and preparing questionnaire. Questionnaire data collected was coded accordingly entered into Microsoft Excel spread sheet and was analyzed by using SPSS version 16.0 software. Retrospective analysis of secondary data collected, from a total of 207797 camels collected from different markets within four years (2011-2014) and 2729 (1.3%) were found dead. Along four months, purposively visits to the farm were conducted on camels which were presented for export at Adama animal quarantine that were brought from different markets of the country. Out of the total 500 inspected camels, 35.1% had skin lesions (wound), 1% broken leg, 55.8% leg paralysis, 3.8% subcutaneous abscess, 0.8% bloat, 4.4% mange mites and 20% pneumonia. Main factors for injuries of camels were handling problem during restrain for treatment, loading and unloading time. During restrain camels were punched, kicked, circling and dragged camel over the ground. Camel could not be exported due to transportation problem and management activity in the farm within the four years of the study (2011-2014 (six months)) were 5006 (1.4%). Generally when considering the effect of transport and its economic significance, the handling problem of livestock is one of the important livestock export problem which imposes huge impact to the country's economy. So emphasis should be given to the welfare of livestock which helps to reducing economic losses due to cost of treatment, rejection of animal from export and economic loss due to the loss of animals.

**Key words:** Economic Impact • Handling Problem • Loading • Transportation

### INTRODUCTION

Ethiopia has an enormous livestock resource with a total contribution of 15% of gross domestic product and 33% of agricultural output. The current estimate shows that there are 41.5 million head of cattle 28.2 millions of sheep and goats, 5.8 millions of equine species, millions of camels and over 42 million of poultry [1]. It is the world's tenth largest producer of livestock and the livestock sector represents about one-fifth of its gross domestic products (GDP). The government has indicated a strong interest in increased foreign investment in the agriculture sector, among others, commercial breeding and production of meat, milk and eggs.

Ethiopia is one of the countries containing a large old dromedary camel population with no export of camel. Previously, the number of camels exported to different countries was not clearly indicated and the export data registered only total live animal exported indiscriminately without singling out the share of camels [2].

Currently, animals are transported along all the supply chain, i.e. from market to the feedlots and from feedlots to the port outlet for export either by ordinary trucks or by walk. The ordinary trucks are proved not convenient for loading and unloading, lack shade to protect animals from sun burn and cold, not suitable to provide enough space and difficult to provide rest, feed and water to the animals whenever necessary while on

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transport. Contrary, transporting animals by dedicated trucks avoid stress, injuries, weight loss, and deterioration of body condition and death associated to poor transport [3]. Transportation by its nature is an unfamiliar and threatening event in the life of an animal. Transportation involves a series of handling and confinement situations which are unavoidably stressful and can lead to distress, injury or even death of the animal unless properly planned and carried out [4].

The procedures of loading and unloading animals into and out of transport vehicles can have very severe effects on the animals and these effects which vary considerably by species are revealed in part by their responses to loading procedures [5]. An understanding of the behavior of livestock will facilitate handling, reduce stress, and improve both handler safety and animal welfare. Large animals can seriously injure handlers and/or themselves if they become excited or agitated. Reducing stress on animals has been demonstrated to improve productivity and prevent physiological changes [6].

Patience and the use of rewards (positive reinforcement) in handling camels are effective training principles. Management practice that may cause pain must not be carried out where painless practical methods of husbandry are available. Any injury, illness or distress observed should be treated promptly [7]. Poor transportation can have serious effects on the welfare of animals and it caused a significant loss of meat quality and production. Some of the effects of improper transportation of animals include stress (which lead to poor color and taste of meat), bruising (which is the most serious and significant production waste), dehydration and exhaustion (as a result of long distance travel without proper watering and feeding) and injuries (such as broken legs, horns, etc) [8].

Economic considerations associated with livestock transportation normally consist of direct costs associated with freight charges dictated by load size, hauling distance, difficulty in reaching pickup or delivery destination, and any special handling that may be required. Items such as shrink, death loss, and requirements of special insurance may also be considered. Simultaneously, indirect costs resulting from other factors contribute to the realized expense of transportation with respect to proper transport and livestock-handling techniques [9].

Competition in export market is becoming more stringent from time to time. To supply quality products to the export market at competitive prices, one of the areas that need due consideration is improving the prevailing

live animal transport. One of the proposed interventions in this regard is to raise awareness of all actors on magnitude of the problem and how to alleviate it. This entails dissemination of information through different means such as: radio, television, press and organizing sensitization forums at federal and regional levels. Involvement and active role of federal offices and regional bureaus are of paramount importance [3].

Animal health, welfare and bio-security are important at all stages of the livestock production chain [10]. Each can have potentially adverse impacts on productivity if managed poorly and because producers have a duty of care to their livestock. If not upheld, these issues have the potential to reflect badly on the whole industry [11]. Properly designed and constructed facilities on farms, at auction yards and slaughter houses will contribute significantly towards the safe handling of livestock, thereby reducing the risk of injuries and stress to animals and workers like [12].

Camels fed in yards need a diet high in bulk. They need to adapt to the gradual introduction of supplements or pelleted foods to their diets. Feeding facilities should allow adequate access for all camels and should be maintained in good repair and in clean condition. Feeding of camels in troughs located off the ground avoids waste, consumption of dirty or sand and reduces the transmission of intestinal parasites [7]. The best facilities and the latest technology make handling livestock easier but unless the owner or manager is convinced that proper handling practices are economically rewarding, it is unlikely that the employees will routinely follow appropriate practices and procedures. The manager that is most effective in maintaining high animal welfare standards is involved enough in the day-to-day operations to know and care, but not so involved that he/she becomes numb and desensitized [13].

The purpose of this study was to characterize camel handling during transportation, management practice in quarantine and identifies the problems and constraints with the systems.

## **MATERIALS AND METHODS**

### **Description of the Study Areas and Study Population**

**Study Areas:** The study was conducted in Adama and Methara (55 livestock station) of East Shoa zone of Oromia Regional state, Ethiopia. Adama town is found 99km south east of Addis Ababa with varying ranges of altitude from 1400-2300meter above sea level. It receives annual rain fall of 600-1150mm with a mean maximum

and minimum temperature of 12 and 33°C respectively. There are about 356112 livestock population [14]. There are different means of transportation in the town of which horses drawn carts are preferably used for loads in accessible to taxis and because of relatively lower cost, specially the place where taxis are not concentrated.

The area experiences three seasons: kiremt (rainy), meher (winter) and bega (spring). The main rainfall usually occurs from late bega (June) to late kiremt (September). The main crops grown are Tef (*Eragrostis tef*) and wheat (*Triticum aestivum*), Maize (*Zea mays*), Barley (*Hordeum vulgare*), Beans (*Phaseolus vulgaris*) and naturally occurring pasture-tropical grasses are also grown. Cattle, sheep, goats, donkeys and poultry are kept by the majority of households in the area. The majority of household income comes from agriculture. Livestock and labor (off-farm) activities contribute the remaining income. The area is the major quarantine stations for livestock export [15].

**Study Population:** Camels which come to Adama and Methara (55 livestock station) animal Quarantine centre for export was conducted as study animals in considering handling problems in quarantine, and during transportation.

**Study Design:** A cross-sectional study was conducted from November 2013 to March 2014 to determine the handling problems of camels in quarantine, and during transportation that are going to be exported. Study was done to identify whether handling systems have negative impact on camel export or not. Also, a retrospective study covering a period of four years (2011-2014), was carried out using recorded data at Adama animal quarantine bureau and information collected included number of camel received, exported, died and rejected from export.

**Sample Size Determination:** Two towns Adama and Methara were purposely selected based on their potential for feedlot industry, from which three farms, were randomly selected and used for study. The sampling procedure were cluster sampling, because cluster might contain too many elements to obtain measurement on each or it might contain elements so nearly alike that measurement of only a few elements provides information on the entire cluster.

**Study Methodology:** Visits to the farms were conducted to determine effect of transportation, disease prevalence in the farm and to observe the general management activity

(feed hygiene, visitor and predatory control, isolation room of the farm, handling infectivity) undergo, in and around those study area.

**Questionnaire Survey:** Data on origins of the camel, time of the day, duration of journey, speed of driver, floor space, number of camels per vehicle and pre-loading management were collected using the structured questionnaire by distributed, interview and discussion with laborers of the farm and the manager of the animal quarantine.

**Data Analysis:** The data which collected from the study area was recorded in the format developed for this purpose and later on it was coded accordingly entered into Microsoft Excel spread sheet and was analyzed by using SPSS version 16.0 software.

## RESULTS

### Cross Sectional Study Results

**Farm Visiting:** Along four months (November, 2013 to February 2014), visits to the farm were carried out for identification of camels handling problems before export. Within these four months identification of the problems conducted and the result obtained that, the farms had no isolation room for the new arrived, sick and recovered camels. Camels were disturbed with wild animal during the night. There is shortage of feed troughs (camel computed on feed), restrain material and shortage of trained staff for behavior of camel. Feed is contaminated with the fecal of camel and spoiled with waste material.

**Problems Observed During Loading for Export:** This study revealed that, camel thrower and dropped when restrained during loading for export, they were punched, kicked at the time of loading; circling and they were dragged over the ground. Camels frequently defecate and urinate; became disturbed, making noisy and sudden movements. The farmers gave no consideration to age, body condition, and of the suitable time of the day to transport the camels. They used ordinary truck for trucking animals. The farms not cleaned and disinfect the truck before journey as the respondents give answer for this.

Out of 500 inspected camel at Adama camel quarantine 35.1% had skin lesions (wound), 1% broken leg, 55.8% leg paralysis, 3.8% subcutaneous abscess, 0.8% bloat, 4.4% mange mites and 20% pneumonia.

Table 1: Management activity observed in each feedlot during visiting of the farm

No.	Management and biosecurity	Quarantine stations		
		Qoshe 1	Qoshe 2	55 livestock stations
1	Feed hygiene	Poor	poor	Poor
2	Visitor and predatory control of the farm	Poor	poor	Moderate
3	Isolation room for sick, new arrived and recovery camels	Poor	Poor	Moderate
4	Equipment cleaning	Poor	poor	Poor
5	Wind and hot stress proof of the yard	Poor	poor	Poor
6	Curative treatment	Moderate	Moderate	Moderate
7	Deworming	Good	Good	Good
8	Vaccination	Moderate	Moderate	Moderate

**Retrospective Study from Secondary Data:** Secondary data taken from quarantine bureau recorded that the number of camel first received, from that how many of it is death, sold to local market due to injured and exported for analyzing of economic losses during transportation. As the manager of the farm and manager of the completely animal quarantine discussed also, death of camel was also recorded due to car accident during journey to feedlot. Out of 207797 camel received on average 5006 (1.4%) were rejected from export due to death and sold to local market.

### DISCUSSION

The purpose of this study was to characterize camel handling during transportation, management practice in quarantine and identifies the problems and constraints with the systems. This was achieved by distributing questionnaire and informal interviews of laborers doing in the studied area. In addition, physical contact of the farm is conducted to achieve this purpose.

During study, the result revealed that the biosecurity and the handling infectivity of the studied farm are poor. Entrance restriction of the visitor and predatory control of the farm is not more effective (Table 1). This disagrees with Quarantine station operation guideline given for the quarantine of the animal. The guideline [16] given for Quarantine station allows that security fences are to be located on all station, external boundaries and additionally around the internal core of quarantine area. These fences are to be human/animal deterrent fences, with the internal fence offering even greater protection from access by outside animals [16]. The shelters or yards of the farm have no head shed, exposed the camels to direct sun light and heat, rain and wind chill. This result agreed with research reported by Mengistu and Tsegay [17] most of the shelters exposed camels to sun, rain and wind without overhead shed. This problem is probably due to the insufficiency budgets supply for the farm and no rule which enforce the owner for fulfilling all characteristics needed for feedlot animals.

Physical observation also confirmed that except the 55 livestock station farm which has isolation room for sick animals, all have no isolation room for sick, recover and new arrived camel (Table 1) No special care (isolation and feed alone) for those animals. According to world organization for animal health [18] any animals that have become sick, injured or disabled during a journey should be appropriately treated. The camel refused to consume their feed when good hygienemeasures arelaking or their feed is spoiled with soil, urine and fecal of other camels, so a checklist for sanitation was recommend to prevent manure contamination of feed and equipment used orally [16].

Curative, deworming and vaccination schedule of the farm is almost good (Table 1) A deworming schedule, (Ivermectin for deworming) antibiotics and wound spray (Alamysin) were used for treatment and anthrax vaccine for vaccination, so the quarantined animals should be free from internal and external parasites [19].

The ordinary trucks were used for the transport of camels from the the farms. The guide line support dedicated vehicles for handling of animals during transport was recommended [19]. According to world organization for animal health [18] designated trucks that do not impede good handling during transport should transport animals. They should also, be provided with rest, food and water while on transport. The farm not bedded the truck properly and not shaded also. This may expose the camel to cold chill and hot stress and the camel may get pneumonic disease due to the transport stress. Workers usually did not disinfect the truck before and after loading and de-loading animals. But, guide kept for quarantine transporters delivering animals to quarantine stations must provide clean transport that have been washed prior to use and are free of gross contamination [16, 20]. Through cleaning of transport vehicles with disinfectants has been estimated to remove more than 95% of pathogens [21].

Table 2: Traumatic and disease prevalence observed in the farm

		Problems encounter															
		Leg broken		Leg paralysis		Skin lesion		Subcutaneous abscess		Bloat		Mange		Pneumonia			
Origin	No of sample	Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)		
Ginner	138	0	0	28	50.9	19	34.5	2	3.6	0	0	3	5.5	8	14.5		
Moyale	72	3	1.3	113	51.9	73	31.2	9	3.8	1	0.4	10	4.3	47	20.0		
Negalle	235	2	1.4	83	60.1	58	42.0	6	4.3	2	1.4	5	3.6	30	21.7		
Yabelo	55	0	0	46	63.9	25	34.7	2	2.8	1	1.4	4	5.6	15	20.8		
Total	499	5	1	279	55.8	175	35.1	19	3.8	4	0.8	22	4.4	100	20.0		

The result collected from respondent concerned with resting time for camel during transportation and the respondents give answer for this question; the camels have no resting time up to destination place, no feeding and watering, and special care. These may be exposed camel to stress, paralysis of legs, dehydrations and death (Table 2). As Berhe [8] kept on animal land transport guideline camel must be released and allowed to stand at least every four hours. According to world organization for animal health [22] reducing overall duration of journey may be preferable with increasing the frequency of watering, feeding and resting opportunities.

Regarding the healthy condition of camels, according to the respondent of the laborers in the study area and veterinarian profession of the farm declared that out of 500 camel studied (175) 35.1% of camel suffering from skin wound, 5 (1%) have broken leg, 19 (3.8%) subcutaneous abscessation, 279 (55.8%) have leg paralysis, 4 (0.8%) bloat, 22 (4.4%) infested by mange mites and 100 (20%) got pneumonia (Table 2). Also, camel rejected from export (Table 3) due to transportation problem and management activity in the farm within four years (2011-2014 (six months)) was estimated to be total of 5006 (1.4%). This may be due to truck edge and handling problem at the site of collection by throwing, pushing, dropping, punching, kicking, and dragging camel over the ground when restrained for load. The problem happens may be due inadequate salary for the employer, insufficient training staff for the behavior and absence of animal welfare awareness in the farm. This may have impact on economy of the countries due to increasing rejection of camels from export. Because, the farms cannot export camel's which have any injuries and disease. Fighting of camel with each other during journey, long hauling or long duration of journey, day of the journey, road problem and driver negligence are among of the causes of the above injuries as respondent give answer for this problem.

The relationships of origins in respect with healthy conditions and problem counts have non-significant difference. This may be due to the management activities

going at collection site and handling affectivity of camel in quarantine was similar.

### CONCLUSIONS

During study, the result revealed that the biosecurity and the handling infectivity of the farm were not more efficient. The main factors for causes of injury and death of camels were may be due to truck edge, handling problem at the site of collection (they threw, dropped, punched, kicked, and dragged camel over the ground when restrained for load). This may have impact on economy of the countries due to increasing rejection of camels from export. The truck the farm used for the camel is ordinary trucks, which is long work and have limitation for lack of shade to protect camels from sun burn and cold. Animal welfare is an issue of growing importance in the international trade for livestock. The use of behavioral principles should improve efficacy of livestock handling and reduce stress on animals. Reducing stress should help improve weight gain, welfare and animal health.

Based on the above conclusion the following recommendations are forwarded:-

- Any animal that has become sick or injured or disabled during journey should be isolated and appropriately treated.
- Prevent cross contamination of water, manure, feed, or equipment between groups.
- Prevent cross contamination between healthy and sick animals
- Animals should be loaded quietly and without unnecessary noise, harassment or force
- Before each journey trucks should be thoroughly cleaned and disinfected
- Livestock should be transported in a manner that avoids injury and minimizes stress throughout the journey.
- All individuals, including animal health personnel, involved in transporting and handling of animals should receive appropriate training of guidelines for livestock holding facilities.

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