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Community Perception and Practices on Post Slaughter Hide and Skin Quality Management In and Around Bale Robe and Goba

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Abstract: The raw hide and skin production in Ethiopia faced a serious challenge since hide and skins were downgraded and rejected as a result of various post mortem effects such as improper flaying, curing, collection and transportation. A questionnaire survey was conducted to study community perception and practices on post slaughter skin and hide quality management in and around Bale Robe and Goba of Oromia regional state, south central Ethiopia, from November, 2013 to April, 2014. The study was carried out on 135 livestock producers, eight municipality abattoir workers, five hide and skin collection centers and two key informants to collect data on perceptions and practices to keep hide and skill quality during flay, preserving and transporting. The result of this study showed that 85.93% livestock producers did use hoisting method for small ruminants and hoisting was common at municipality abattoir for bovine. From them, 54.07% livestock producers used curved knife for flaying while 87.5% of municipality abattoir workers have used strait knife. Out of the 135 producers interviewed, 88.1% have habit of starting of flaying after agony has been completed while 50% of abattoir workers started flaying immediately after slaughtering. 92.59% of livestock producers removed meat, fat and blood completely from hides and skin during flaying but 29.6% replied that, they did not know the effect of fat on hide and skin quality. Of those having habit of cleaning hide and skin, 58.5% of them performed cleaning using knife and 18.5% cleaned hides and skin by washing. Only 33.3% of producers used on ground drying method while 50% of the abattoir workers used frame drying method but 80% of collection centers did not use any drying methods. Mostly, 90.37% of the producers used plastic ("phestals") for transporting hides and skin. All of key informants asked and said that, even though there is regular super vision, still there are problem of loading, shaping, absence of appropriate knives for slaughtering and flaying, absence of presentation of skin and hide to collection center at appropriate time, lack of structured hide and skin market in the area and had a problem of the fluctuating market price. Therefore, this study showed the requirement of an effective extension system and program should be implemented to raise public awareness on methods of flaying, preservation and transportation.

Key words: Perceptions · Practice · Hide · Skins · Flaying · Preservation · Transportation · Bale · Goba · South Central Ethiopia

INTRODUCTION

Livestock production constitutes one of the principal means of achieving improved living standards in many regions of the development world. In sub-Saharan African countries; livestock plays a crucial role both in national economies and the livelihood of rural communities. It provides drought power, high value food, clothing, transport and serve as a source of case of cash and manure for energy and soil fertility [1].

Livestock products such as meat, milk, egg, wool, hides and skins on average accounts for 28% of agricultural GDP of sub-Saharan African countries, with wide variation between countries [2]. Hides and skin

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constitute valuable material removed from the animal carcass. The coat of cows and buffaloes is called hide and those of goat and sheep is called skin [3]. The use of leather goes back to the pre-historic times. People, who lived during the Ice Age some 500, 000 years ago, were likely the first to use skins and hides of animals to protect their bodies from the environmental climatic extremes. Just as leather today is a by-product, our ancient ancestor hunted animals primarily for food, but once they had eaten the meat, they would clean the skin by scraping off the flesh and then sling it over their shoulders as a crude form of coat [4].

Similarly, livestock is a significant contributor to economic and social development in Ethiopia at the household and national level. Ethiopia has the largest livestock herd in sub-Saharan Africa, with an estimated cattle population of 49 million, sheep population of 25 million and goat population of nearly 22 million. Livestock accounts for 15-17% of total GDP and 35-49% of agricultural GDP [5]. Livestock contribute 12-15% of the export earnings and the sub-sector has been the second major source of foreign currency through export of live animals, hides and skins [6]. Among the export of livestock products skins and hides have the largest share of exports followed by live animals [7].

Hides and skins account for a significant portion of the value of livestock output and for some countries like Ethiopia it is an important source of foreign exchange earnings. However, it is generally observed that the full potential of hides and skins product is not realized in most countries because of several reasons, the most important being low quality of the product produced with consequent poor demand in both domestic manufacturing industries and in the export market [2].

Hide are broadly defined as the external integuments of large animals, while skins are provided by smaller animals. The best source of hides and skins from domesticated animals are cattle hides and sheep-goat skins. However, hides and skins may also be obtained from other species of domesticated and non-domesticated animals (hides from cattle, buffalo, horse, camel, elephant, etc.) and (skins from sheep, goat, pig, snake, frog, ostrich, shark, etc) [7]. These hides and skins are the end products of animal production, as end products of animal production, as an end product although more correctly they are by-products; they are important and valuable resources [8].

Based on annual off take rates of 7% for cattle, 33% for sheep and 35% for goats, the potential production is estimated at 2.38 million cattle hides, 10.07 million sheep skins and 7.38 million goat skins in 1998/99. This raw material of the leather industry is mainly derived from local areas of the country where basic amenities for slaughtering and subsequent marking are lacking. Considering the development potential and economic importance of hides and skins, in the last many years, the government of Ethiopia has launched different development programs aimed at increasing the supply and improving the quality of the raw material. Despite these development interventions, hides, skins and the leather industry are still constrained by the poor quality of raw materials, lack of an efficient market structure, a weak extension service, competition from local/rural tanning industries and a lack of price incentive for production of good quality raw material [9].

Skin problems caused by ecto-parasites such as mange mites, lice, keds and ticks and other skin diseases result in serious economic losses to smallholder farmers, the tanning industry and the country as a whole. They can result in mortality, decreased production and reproduction, down grading and rejection of skins [10-12]. Skin problems caused by ecto-parasites are responsible for 35% of sheep skin and 56% of goat skin rejection. Similarly, other skin disease such as lumpy skin disease (LSD) and Dermatophilosis has a significant negative impact on hides and skin quality [13].

The environment (Where the animals live) and husbandry practices (farming, transportation, slaughtering) also contribute to the reduction in the quality of raw materials. Apart from damage due to ecto-parasites and diseases, it is estimated that more than 300 different kinds or more of physical or mechanical damages can be identified on skin and hides. According to Bultri [14] and Zemene and Addis [15], these include those caused during ante-mortem (on the farm, during transport, at markets/abattoir) and post-slaughter (at the abattoir/hide market, during storage, preservation).

Main damages in slaughter houses and transport according to Bultri [14] and Zemene and Addis [15] include: butcher strain, flay/holes, goads (small punctures caused by goads, wire whips, pitch forks to control animals; also on loading/unloading on butt and back areas), miss-shape, scratches and staling. The consequences of such defects are that every tannery (or trader) had to adopt customized criteria to select/sort quality of incoming raw hides/skins and outgoing finished leather ultimately resulting in price differences among grades.

Hence, intensive assessments addressing the major problems are mandatory to design intervention mechanism in order to improve pre-and post- slaughter quality of hides and skins in our country. Bale Robe and Goba areas are some of the known producers of ruminant livestock and consequently huge number of hide and skins are expected to enter the local market. As for most parts of the country, post-slaughter hide and skin defects are common and are often responsible for the rejection of large numbers of them. It is believed that knowledge about the perception and practices of farmers and other actors involved is important in the designing and implementation of hide skin quality improvement strategies. The objectives of this paper were to assess the perception of farmers and all actors involved in the hide and skin handling on the post-slaughter hide and skin quality management in and around Bale Robe and Goba areas and to assess the practices of the community on post slaughter skin and hide quality management in and around Bale Robe and Goba areas.

MATERIALS AND METHODS

Study Area: The study was conducted at Bale Robe and Goba, which are located in Oromia regional state, Ethiopia. Robe is separated city of Bale Zone and Sinanaworeda in South-centeral Ethiopia. It is located in the Bale Zone of the Oromia Region approximately 430 km Southeast of Addis Ababa. This city has a latitude and longitude of 7°7'N 40°0'E with an elevation of 2.492 meters above sea level. Goba is a city and separate woreda in South-central Ethiopia. It is located in the Bale Zone of the Oromia Region approximately 446km Southeast of Addis Ababa. This city has a latitude and longitude of 7°0'N 39°59'E and an elevation of 2.743 meters above sea level [16]. The average annual temperature and rainfall in Robe are 14.4°C and 930mm, respectively. The average annual temperature and rainfall of Goba are 13.3°C and 947mm, respectively [17]. The domestic ruminant population of Bale Zone in general is estimated to about 2.2 Million cattle, half a million sheep and one million goats. Out of these, Bale Robe was estimated to have livestock population of 251489 cattle, 47121 sheep and 10300 goats and Goba was estimated to have livestock population of 86925 cattle, 55476 sheep and 7611 goats [18].

Sampling: A total of 135 producers were interviewed from two district of Bale Zone. In Sinana and Goba districts of Bale Zone, ten and six Kebeles respectively were identified for the study in consultation with hide and skin development offices of each district. After the study kebeles were identified purposively based on accessibility, household data were obtained from local agricultural development agency. Individual respondents were selected randomly from the list provided and respondents were interviewed after obtaining their verbal consent for participation. Moreover, a total of 5 hide and skin collection centers, 8 abattoir workers and 2 key informants were also interviewed

Study Design: A cross sectional study was conducted from October, 2013 to April, 2014. A semi- structured questionnaire survey technique was applied to gather information from individual respondents.

Questionnaire Survey: Questionnaire survey was conducted to know the awareness of farmers, abattoir workers, hide and skin collection centers and key informants about post slaughter skin and hide quality management and their common practices to keep the quality of the skin and hide. It is designed and carried out carefully based on how people flay, cure, preserve and transport hide and skins.

Observation: The other method applied in data collection was direct observation. This method was used to acquire data on different methods used for flaying, curing hides/skin, preservation and transportation. Slaughter houses and hide and skin stores were also visited. Observation which is the most primary source of data was conducted in a number of different municipal abattoirs and skin and hide collection centers in Bale Robe and Goba. During this observational study a number of factors including the nature of the slaughtering floor (smooth or roughed), method of flaying, way of transporting skins and hides to the market, ways of preservation and storage were well observed.

Data Analysis: Qualitative data derived from direct observations and from individual interviewing were presented in form of discussions and also the data was edited, coded and entered in a Microsoft office excel and the statistical package for social Science (SPSS) software version 20 spread sheets was used for the analysis. Descriptive statistics ware run to give frequencies and percentage. Tables and bar chats were used to present different variables.

RESULTS

Produces' Perception on Post-Slaughter Hide and Skin Quality Management

Producers: Producers' perception on skin and hides importance was summarized in Table 1.

Activities done by farmers to keep and skin quality: The livestock producers responded to use three methods to keep hide and skin quality. Out of the 135 producers interviewed 58 (43.0%) responded that) they sold skin and hide immediately, 30 (22.2%) of them responded they use salting method and 36 (26.7%) of them responded they use air drying method and the rest 11(8.1%) used both salting and air drying methods. Fifty five (56.3%) of interviewed producers responded that, they sold skin and hides within 12hrs of flaying, 19 (14.1%) within 24-48hrs, 30 (22.2%) after salting it and 6(4.4%) used it for home purpose. Out of 135 interviewed, 3 (2.22%) responded they use wet salting for preservation of hide and skin, 43 (31.85%) uses dry salting and 89(65.93%) do not use salting methods. Form the total interviewed, 45(33.3%) responded to use on ground drying, 5(3.7) on frames drying, 10(7.4%) on ground and on house wall drying, while 75(55.6%) sold the hides and skins when they were fresh (do not use any drying methods).

Abattoir/Slaughterhouse Slabs Workers: Abattoir workers perceptions on skin and hides importance was summarized in Table 2.

Hide and Skin Collection Centers:

Effect of Fluctuating Market Price on Quality of the Product: Out of the 5 hides and skin collection center owners interviewed, all of them (100%) said that there were fluctuations of price of skin and hide which intern affected the quality of product because of farmers did not get attention to it.

Key Informants

Structure of Hide and Skin Market in the Area: Of a total of key informants form the two sites asked about structure of hide and skin market, both of them responded that, there was no structured hide and skin market in the area with sequence of keeping skin and hides from slaughter to tanneries.

Gaps in Post-Slaughter Hide Skin Quality: They said that, there were problems of loading, problem of shaping, absence of appropriate knives for slaughtering and flaying and absence of skin and hide presentation to collection center at appropriate time.

Hide and Skin Quality Management Practices Producers

Habit of Slaughtering Animals for Meat Consumption: Out of 135 farmers interviewed, all (100%) of them have habit of slaughtering animals for meat consumption at different occasions. Out of 135 farmers interviewed, 3.704% answered they commonly slaughter bovine, 89.63% of them commonly slaughter ovine and 6.667% of them slaughter goats.

Habit of Hoisting of Animals During Flaying: The interview indicated that out of 135 livestock producers interviewed, 14.07% did not use to hoist sheep and goats during strip skin off but 85.935 did use to hoisting. All of the 135 livestock producers replied that, they do not hoist bovine during flaying.

Slaughtering and Time of Flaying: Out of the 135 interviewed, 1.5% usd to starts flaying immediately after slaughter, 88.1% have habit of starting flaying after agony has been completed, 1(0.7%) starts after sufficient bleeding and 13(9.6%) starts flaying after agony and sufficient bleeding completed (Table 3).

Complete removal of meat, fat and blood from hides and skin during flaying: Out of 135 producers, 7.41% replied that, they did not remove meat, fat and blood from hides and skin during flaying and 92.59% replied that, that, they remove meat, fat and blood completely from hides and skin during flaying. From a total of 135 producers interviewed, (40(29.6%) replied that, they do not know the effect of fat (left over skin and/or hide) on hide and skin quality and 95(70.4%) replied, they know the effect of fat remnants on the quality of hide and skin (Fig. 1).

Cleaning of hide and skin after flaying: of the 135 interviewed, 31 (22.96%) did not have habit of cleaning hide and skin after flaying and 104(77.04%) replied, they clean hide and skin after flaying. Twenty five (18.5%) replied, they clean hide and skin by washing and 79(58.5%) by using knife. Out of those having habit of cleaning hide and skin after flaying, 21 (15.54%) replied, they clean hide and skin by washing and 79 (84.46%) clean it by using knife.

Type of knife used for flaying: This study finding revealed that livestock producers use two types of knife for flaying namely, curved knife strait knife. Out of the total interviewed most of them (54.07%) use curved knife for flaying, while the other 45.93% uses strait knife for flaying. Using fist for flying: Of the 135 interviewed individuals, most (69.6%) replied that they did use fist for flaying of skin of small ruminants and the rest (30.4%) replied they did not use fist for flaying.

Table 1: Producers' perception on importance of hide and skin for themselves and for their country

Importance of skin/hide for you	Frequency	Percent (%)
Cash income	133	98.5
Used for home	2	1.5
Total	135	100.0
Importance of skin/hide for your country		
Foreign exchange	133	98.5
I do not know	2	1.5
Total	135	100.0

Key: N=Number of respondents

Table 2: Abattoir workers perception on importance of hide and skin for themselves and for their country

Important of the skin or hide for you	Frequency	Percent (%)
Good	3	37.5
Not as much	5	62.5
Total	8	100.0
Importance of hide and skin for the country		
Foreign exchange	8	100.0

Key: N=Number of respondents

Table 3: Time when producers start flaying of hide and skin after slaughtering completed at the two sites

		Site	
Time when flaying starts after Slaughtering completed	Total (N = 135) Fre (%)	Goba (N = 55) Fre (%)	Robe (N = 80) Fre (%)
Immediately after slaughter	2(1.5%)	1(1.8%)	1(1.2%)
After agony has ended	119(88.1%)	47(85.5%)	72(90.0%)
After sufficient bleeding	1(0.7%)	1(1.8%)	0(0.0%)
After agony and bleeding completed	13(9.6%)	6(10.9%)	7(8.80%)

Key: N = Number of respondents

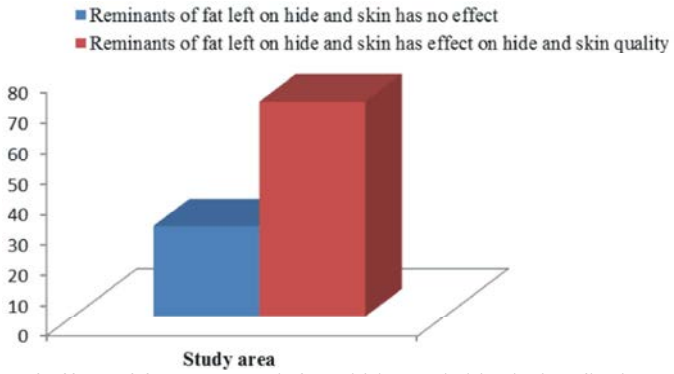

Fig. 1: Presence or absence of effect of fat remnants left on hides and skin during flaying

Occurrence of knife cuts on hides and skin during flaying: From the total of 135 producers interviewed, 121(89.6%) responded that they encountered knife cuts on skin and hide and only 14(10.4%) said that never encountered knife cuts. Among 135 producers interviewed about activities done on hide and skin with knife cuts, 11.11% of them responded that they covered it with soft tissue/ suture it and sold it, 41.48% of them responded they sold it at a discount local collectors, most of the interviewed (43.70%) responded they used it for home and 3.71% them said it has no value.

Ways of transporting hides and skin: Interviewed farmers responded that, they used three ways of transporting hides and skin to ward hide and skin collection centers for selling it. Of those 3(2.22%) replied they transport skin and hide in open air, 4(2.96%) in containers, 122(90.37% in plastic and 6(4.44%) do not sale it.

Abattoir Workers /Slaughterhouse Slabs Workers

Time When Flaying of Hide and Skin Starts: Out of 8 abattoir workers interviewed about the time when flaying

Table 4: Skin and hide with knife cuts

Skin and hide with knife cuts	Frequency	Percent (%)
Has no value	2	25.0
Sold with low prices	6	75.0
Total	8	100.0

Table 5: criteria that used for grading hide and skin.

		Site	
Criteria used for grading hideand skin	Total (N=5) Fre (%)	Goba (N = 2) Fre (%)	Robe (N = 3) Fre (%)
No grading system	3(60.0%)	1(50.0%)	2(66.7%)
Size weight, absence of knifeCuts, absence of branding, Absence of pontification	2(40.0%)	1(50.0%)	1(33.3%)

Key: N=Number of respondents

of hide and skin starts after slaughtering ended, 50% of them said they start flaying immediately after slaughtering completed, 25% of them starts after agony has completed and 25% of them starts after sufficient bleeding.

Having of appropriate knife: out of the 8 abattoir workers who were interviewed, 62.5% have appropriate (suitable) knife for flaying, whereas (37.5%) have appropriate knife but not sufficient. From 8 people interviewed, 1(12.5%) uses curved knife and the rest 7(87.5%) people uses strait knife.

Skin and hide with knife cuts: Summary of skin and hide with knife cuts given in Table 4.

Method of drying hide skin: This study finding shows that, there is only one method for drying of hides and skins at abattoir of the study area. From the total 8 people, 4(50%) of them use frame drying method and 4(50%) of them do not use any drying method.

Ways of transporting hide and skin: All of the people interviewed for the way of transporting hide and skin and 8(100%) of the people used a car for transportation of hide and skin to collection center at Addis Ababa.

Hide and Skin Collection Centers /Hide and Skin Trader: Common customers for hide and skin collection centers: Of the total of 5 respondents asked, 2(40%) of them responded that their customers were home/restaurant and the others 60% responded abattoir, local collectors, home/restaurant and local collectors were their customers.

Time when salting of hides and skin start after it brought to collection center: Out of 5 persons interviewed, 2(40%) use salting method immediately, 2(40%) use salting method with in 12hrs and 1(20%) do not use salting method.

Criteria used for buying hide and skin: About 2(40%) of the respondents uses size, absence of knife cuts, absence of branding, absence of purification as a criteria whereas about of 3(60%) of the respondents use absence of knife cuts and absence of branding as criteria for buying hide and skin.

Grading of hide and skin: Among 5 respondents interviewed, 2(40%) of the respondents used size/weight, absence of knife cuts, absence of branding, absence putrefaction as a criteria for grading hide and skin while 3(60%) of them not used grading system (Table 5).

Rejection of hide and skin and methods used for drying hide and skin: Among the total sampled, 5(100%) of them reject hide and skin if there was abnormalities on hide and skin. From the total of 5 respondents, an only one used frame drying and rest do not use any drying methods than salting. Two of traders (40%) salting the skin and hides immediately after receiving, 2(40%) were salting within 12hrs and 1(20%) did not use salting at all.

Key Informants

Regular Super Vision: The interviewed key informants responded that there was regular super vision of farmers, collection center and traders. They also responded that there was regular training on skin and hide quality management.

DISCUSSION

In order to improve the income gained from skins and hides better quality management practices should be conducted. Therefore, this survey was conducted with the objective of getting relevant information from Bale Robe and Goba livestock producers, municipality abattoir workers, hide and skin collection centers and hide and skin development offices (key informants) about their perception and practices on post slaughter hide and skin quality management starting from slaughtering up to tanneries.

Livestock producers used hides skin for selling, building houses, making milking containers, drums, seat covers. Muslim communities use them as praying mats among others. In addition to the above this study finding indicates that hide and skin used as cash income for the producers and as foreign exchange for the country. Similar result was reported by other workers [19]. Livestock producers responded that some sold fresh skin and hides; others responded salting skin and hides before selling, others used air drying. This is consistent with what Leach [20] stated that preservation should ideally begin immediately after slaughter and should never be delayed overnight. Without preservation, the hides or skins would spoil before they were received in the tannery. 60% of hide and skin collection centers did not use salting method immediately. This was not in line with the principle of Lan [21] that explained preservation is most effective when it is carried out quickly and thoroughly. Preservation methods such as salting or frame drying are not practical fully by farmers, collectors and traders of hides and skins, as result of which hides and skins suffer from hair slips, mould and bacterial attacks. Delays in cleaning, drying or curing of hides and skin causes damage through putrefaction [10]. Lack of air circulation, excess atmospheric humidity, skins contacting frames, ground/soil, poles, or ropes etc. during drying/curing will all lead to putrefaction [6].

This study revealed that there were no sequential follow up skin and hides from slaughter to tanneries although the key informants responded there were training. Similar findings were reported by Global Hides and Skins Market [22] that states skins and hides were not considered as primarily raw materials of the leather industry by significant number of farmers interviewed, but as by-product of the meat and additional it was noted that certain merchants of hides and skins with holder supplies especially when prices were not favorable, all of which have negative effects on the quality of skin and hides. As this study finding indicate that there were problem of loading, problem of shaping, absence of appropriate knives and no consistent skin and hide presentation to collection center at appropriate time. Majority of the producers responded to use hoisting method for small ruminants but no hoisting for bovines slaughtered at homes. Hoisting of the animal during flaying makes it easy to use one's body weight to pull the skin off and leads to skins and hides without remnants [23].

This study finding revealed that some of the producers start flaying immediately after slaughter; some of them after agony have ended, some of them start after sufficient bleeding; and after agony and sufficient bleeding completed. However, most of the producer start flaying after agony has ended but 50% of abattoir workers start flaying immediately after slaughter while 50% of hem starts after agony and after sufficient bleeding completed. This is not in line with Desta [23] flaying of skin and hide normally starts when bleeding has completely ended otherwise blood that is not completely drained though proper bleeding causes skin and hide damage. Flaying/skinning should be done within a few hours of the animal's death as skin will peel off especially easily.

Usually, 29.6% of the respondents do not know the effect of fat left on the hides and skins. This is not in line with the Gaidarov [24] who stated that a hide or skin just taken from the animal is called fresh and it cannot be kept in that condition for more than two hours and during this time the skin is dressed (removal of bit of flesh and fat, remains of cartilage, bone, tendons, horns, hooves and tail heads) and cleaned after which it is preserved, collected in production batches and stored. After the skin is separated, remove any meat and/or fat from the skin. Wash flesh side if contaminated with blood and/or gut contents. Then immediately cure with common salt or air drying to prevent putrefaction [23].

Livestock producers used two methods to clean hides and skins after flaying has ended namely; by washing and by using knife with majority (58.5%), using knife. This in line with the idea of Koloka and Moreki [25] those states that the type of flaying equipment also plays a major role in production of good quality hide. In this study large number of skin and hides contain defects due to careless and inefficient use of the flaying knife. This is not in line with the idea of Gatenby [26] who states that an improperly pointed knife adds to the problem that cause cuts and holes produced though faulty flaying and diminish the value of skins.

This study results show that, using first for flaying of skin from small ruminants has more practiced by most of the interviewed livestock producers but fisting for faying hide from cattle does not practiced in the study area. In many countries, skinning is done in case form to obtain a good quality skin. In many countries a knife is not used in the final phase [27]. There are absolutely no advantages to knifing a skin off. It is not faster! Thus, it often requires the butcher to punch his fist forcefully between the skin and the carcass surface to detach the skin referred to as fisting. Fistin is hygienically critical. The butcher must take care to frequently wash his hands

and arms and not touch the dirty outside of the animal's skin while removing the skin this way Desta [23]. Lack of proper tools like curved flaying knives, lack of flaying skills and carelessness lead to loss of quality or outright rejection of raw hides and skins [2].

Majority of abattoir workers used knife for flaying. This is not in line with the Koloka and Moreki [25] that explained the typed of flaying equipment also plays a major role in the production of good quality hides. Almost all slaughter facilities except some modern abattoirs use hand flaying. As a result, flag cuts are a common feature on hides and d skins and also a large number of skins contain defects due to careless and inefficient use of the flaying knife. This agrees with Gatenby [26] use of an improperly pointed knife adds to the problem. 75% abattoirs workers cause knife cuts some times on hide that leads decrease of prices. This was in line with Kagunyu *et al.* [28], Mbogo and Malala [29] poor flaying cause's holes and cuts on the hides and skins, which consequently fetch lower prices because of the poor quality and also results in higher rejection by tanneries during flaying of hide and skin there are partial or complete knife cuts on hides and skin.

Livestock producers responded that hide and skin with knife cuts covered with soft tissue/suture sold at a discount to local collectors, used for home and it has no value. During flaying of hide and skin there is a partial or complete knife cut on hides and skin. Complete or partial knife cuts (flay cuts) are the defects which occur during the flaying of the hides and skins, which cut into the fibers of the dermis. In thin leathers they show though and thereby spoil the grain. Some flay cuts go completely though the hide or skin, ruining it completely. These kinds of cuts are usually the result of careless or improper flaying. The only way to prevent these defects is to follow standard methods of flaying with proper care and attention.

This study results revealed most of the interviewed people transporting hides and skins in plastic while others transporting in open air and transporting in container like sacs ("madaberia"). In Ethiopia, a good percentage of skins are damaged during storage and transportation, especially during the rainy season. This study results revealed that all of the interviewed people transporting hide and skins by car. Inefficient transportation cause delays in arrival to tanneries or preservation centers as a result of which green or salted hides and skins deteriorate in quality. Poor handling during loading and unloading many damage quality of hides and skins [6].

As this study finding reveled that, majority of the people that interviewed did not use any drying methods while others used ground drying method. During of skins can be done in different ways. The techniques include drying on the ground, frame drying, drying by suspension over cords or wires and tent drying. Drying depends on the temperature, relative humidity and movement of air. If skin does not dry in 2-3 days, the chance of putrefaction is very high. Even after the hides are properly dried or cured, they many still suffer damage by careless handling. Inadequate strapping when the hides are baled can baled can do serious damage by the loose shanks and edges getting torn. Outsides of loosely packed bales have been almost torn in half when being moved and thrown about during transportation [2].

From a total of 8 abattoir interviewed, half of them did not use any drying methods while half of them use frame drying method. Drying of hide and skins can be done in different ways. The techniques include drying on the ground, frame drying, drying by suspension over cords or wires, tent drying. Drying depends on the temperature, relative humidity and movement of air. For example, a skin can be dried in three hours in a dry atmosphere. If a skin does not in 2-3 days, the change of putrefaction is very high [28].

Low number of hide and skin collection centers used size/weight, absence of knife cuts, absence of branding, absence of purification as a criteria whereas majority of the respondents used absence of knife cuts and absence of branding as a criteria for buying hides and skin. However, 60% of them did not use grading system which is not agree with Wayua and Kagunyu [30] grading of hides and skins is essentially a matter of determining the relative abundance of defects. The defects include knife cuts, bad shape, branding marks, etc.

As this study shows that all of the interviewed people reject hide and skin if there is abnormality on hide and skin. In most of collection centers frequency of knife cuts encountered is high. The product mostly presented at collection centers with 12 hours. A good proportion of hides and skin produced may be of poor quality, especially those produced in rural areas outside organized slaughter houses, due to inappropriate slaughtering, flaying, collection and initial processing methods used leading to spoilage and rejection in the market [2]. In the past 10-15 years defects from the diseases and other causes have reached very significant level especially in sheep and goat' skin dropping aniline leather and increasing rejections [31].

As this study showed that there is effect of fluctuating market price on quality of the product. This agrees with FAO [3] and Global Hide and Skins Market [22] that explained in the hides and skins trade, just as in any other segment of the business world; taking risks can be rewarded or penalized by profit or losses. Knowledge is crucial in reducing risks and increasing the likelihood of profit. The wide variation is mainly due to the quality difference. Similarly, the export price of partially processed and finish products reduced due to declining demand of these materials in the international market.

CONCLUSION AND RECOMMENDATIONS

It was observed that poor quality of hides and skins led to low prices which on the other hand discouraged people from selling their products. This could be addressed by training producers, abattoir workers and traders on better methods of curing (preserving) hides and skins. There is also need to train livestock producers on proper methods of flaying. Raw hide and skin production in Ethiopia faced a serious challenge since hide and skins downgraded and rejected as a result of various ante-mortem and post-mortem defects, improper slaughter and flaying operations and improper practices of curing, collection, transportation and storage. Due to this, the country has lost a large amount of money because of direct rejection or costs incurred for defective skins processing. Slaughter and flaying operations also conducted in many cases traditionally and by unskilled personals.

Therefore, based on the above conclusion the following recommendations are forwarded:

- Effective extension system and programs should be implemented that could raise public awareness on methods of flaying, preservation and handling of skins.
- Furthermore, professionals should do slaughtering of animals in order to reduce the defects created during flaying which has found to be among the major defects observed during examination of hide and skins.
- In addition appropriate transportation, storage and system should be in place to achieved maximum benefit from hides and skins.
- It is necessary to design an appropriate hide and skins development program to increase the contribution of hides, skins, leather and leather products to the country's exports.
- Awareness creation on the danger of the defects is very serious to minimize the burden on the economic product of skin and hides.

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