UNIT 4 WELFARE ISSUES IN SMALL RUMINANTS

Structure

4.1 LEARNING OUTCOMES

a) Knowledge and Understanding: After studying this Unit, you will be able to:

- Identify specific welfare issues in small ruminants farming.
- Explain the reasons for practicing painful management procedures in small ruminants farming.

b) Practical and Professional Skills: After studying this Unit, you will be able to:

- Discuss the specific animal welfare issues in small ruminants farming.
- Demonstrate the welfare concern behind each practice and suggest alternatives to improve welfare of small ruminants.

4.2 INTRODUCTION

Dear Learner,

In the previous unit, you were introduced to the concept of small ruminants farming, different breeds and production systems, physical, mental and naturalness aspects of welfare and general constraints in small ruminants farming and their welfare implications. There are welfare issues / practices in housing, feeding, breeding and healthcare of small ruminants reared in different production systems, which are painful and cause stress. This unit introduces you to some specific welfare issues pertaining to small ruminants under the following heads:

- Welfare issues in housing (overcrowding; poor ventilation and light; hygiene and sanitation; poor housing system, and; less care in winter and rainy seasons).
- Welfare issues in feeding (delay in colostrum feeding; unbalanced and nutrient deficient feed and fodder; poor quality water, and grazing management).
- Welfare issues in breeding (indiscriminate breeding and castration).
- Welfare issues in health care (poor prophylactic measures – deworming, dipping, coccidiostat drenching and vaccination; high level of neonatal mortality), and
- Other welfare issues (tail docking, shearing and transportation).

4.3 WELFARE ISSUES IN HOUSING

4.3.1 Overcrowding

Good housing conditions improve the welfare of small ruminants and reduce production stress. Overcrowding of small ruminants in shelters leads to compromise in five freedoms, especially freedom from thermal and physical discomfort and freedom to express normal behaviour (Fig. 4.1).Overcrowding is disadvantageous for health of the animals and their productivity, thus also leading to a compromise in freedom from pain, injury and disease. Overcrowding leads

to pollution from manure and gases emission from enteric fermentation of small ruminants. Concentration of pollutants in shelters is directly proportional to stocking density of small ruminants. Hence, optimum stocking density is to be maintained in the shelters for the welfare of small ruminants.

Fig. 4.1: Unhygienic and Overcrowded Sheep Shelters

(Source: ICAR-CIRG, Makhdoom)

Normally sheep do not require elaborate housing facilities but the provision of the minimum housing requirement will increase productivity and reduce losses due to mortality.

Example: 1 m^2 per sheep as a minimum and ideally 1.5-2 m^2 per sheep meet the minimum welfare requirements related to normal behaviour, thermal and physical stress. A higher amount of space for sheep with horns is recommended. Shelters measuring 60' × 20' having thatched or asbestos roofing can accommodate about 120 sheep (Bhat and Arora, 2009).

The optimum floor space requirements for goats to avoid overcrowding are summarised in Box 4.1.

Box 4.1: Optimum Floor Space Requirement for Different Categories of Goats

Age / Category	Floor Space (m^2/goat)	
	Covered	Open
0-3 months	0.20-0.25	0.4-0.5
3-6 months	0.5-0.75	1.0-1.5
6-12 months	0.75-1.0	1.5-2.0
Adult animals	1.5	3.0
Buck, pregnant and lactating does	1.50-2.0	3.0-4.0

(Source: Mishra and Kumar, 2009)

4.3.2 Poor Ventilation and Light

Small ruminants need to maintain a constant body temperature by continuously adjusting their heat gain and heat loss within the environmental zone of thermo-neutrality beyond which stress acts contrary to maintenance of thermal homeostasis. Here comes the need for appropriate shelter having good ventilation, proper lighting, and required heating or cooling devices in extreme climate. Direct sunlight has germicidal action and kills bacteria and other infectious agents in the shelter. It also facilitates cleanliness in the house and helps in meeting the vitamin D requirements of the small ruminants.

Improper ventilation leads to increase of humidity (up to 90%), ammonia concentration to >20ppm, higher level of carbon dioxide and moisture. This condition is very harmful for small ruminants and leads to respiratory disease and stress. Also, poor availability of ventilation leads to dampness of the shed.

The optimum limits of thermo-neutrality for goats for welfare are summarised in Box 4.2

Box 4.2: Optimum Limits of Thermo-neutrality for Goats

- Air temperature of 13°C-27°C
- Relative humidity of 60-70%
- An average wind velocity of 5-8 km/hr and
- A medium level of solar radiation

Best orientation of shed to get optimum light and ventilation is long axis running East-West and next best is North-East to South-West.

(Source: Mishra and Kumar, 2009)

4.3.3 Hygiene and Sanitation

Hygiene and sanitation are the most effective methods of prevention of diseases and to improve welfare. Small ruminants habitation must be kept clean and dry especially the floors, mangers and drains. Animal excreta and other wastes are good sources of disease-causing microorganisms and poisonous gases (Fig.4.2).

Example: Colibacillosis, coccidiosis, foot-rot, mastitis and many more diseases of small ruminants are associated with poor hygiene and sanitation.

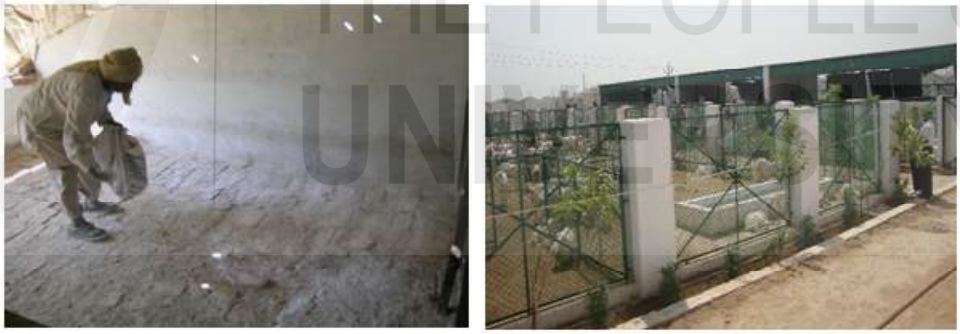

Fig.4.2: (a) Application of Lime (b) Clean and Hygienic Farm

(Source: ICAR-CIRG, Makhdoom)

Disposal of excreta and other wastes from animal habitation is a very important activity to prevent growth of pathogenic organisms. It should be removed frequently, at least twice a day. There are many disinfecting agents available with variable properties. Selection of disinfectant should be based up on its merits and demerits. Disinfectants can be used for environmental disinfection, skin disinfection and instrument disinfections (Box 4.3).

Box 4.3: Disinfectants Used in Shelters of Small Ruminants

Fresh Lime: It is often sprinkled on the floors, walls and ground for disinfecting them. It is also used inside the buildings, mangers and water troughs.

Chlorine or Hypochlorite: It is cheap, convenient to use, powerful, and has action against bacteria, virus and fungi. It is corrosive in nature. Domestic preparation contains 1% of available chlorine.

Phenol or Carbolic Acid: It has antimicrobial property and 5% solution is a good disinfectant for metallic objects, clothing etc.

Formaline (40% formaldehyde): As a 5% solution in water it is a good disinfectant. It can also be used as a vapour for disinfection of complete house.

Caustic Alkalies: They have a strong germicidal activity. Hot sodium carbonate (2-4%) solution is useful for killing microbes. At 4% solution it is used as disinfectant in Foot and Mouth Disease (FMD) outbreak.

Iodine: It is used as antiseptic. Commonly used preparations are tincture iodine, betadine etc.

Potassium Permanganate: It is used in wound dressing and in foot-baths.

(Source: Mishra and Kumar, 2009)

4.3.4 Poor Housing System

Housing requirements of sheep and goats depend on climate, level of adaption, breed and production system. Poor housing leads to poor production, productivity and high level of mortality and morbidity. Poor housing of small ruminants leads to a compromise in five freedoms, especially freedom from thermal and physical discomfort, freedom from pain, injury and disease and freedom to express normal behaviour.

To improve welfare related to housing, the site of house should be at higher elevation and free from dampness with proper drainage. Recommended scientific layout plan should be followed by maintaining proper distance (8m) between two houses. There should be proper disposal of waste materials.

4.3.5 Less Care in Winter and Rainy Seasons

Many poor farmers don't have proper house to protect animals during winter and rainy seasons (Figs.4.3a & b).If animals are frequently exposed to severe cold or rain, it leads to fever and pneumonia. Due to wet floors, animals suffer from foot-rot condition and many other infectious diseases. Animals are highly susceptible to disease in rainy season, so extra care is necessary.

To meet the minimum welfare requirements, provide proper shelter, avoid wet bedding material, provide dry feed, clean drinking water and extra care of hoof.

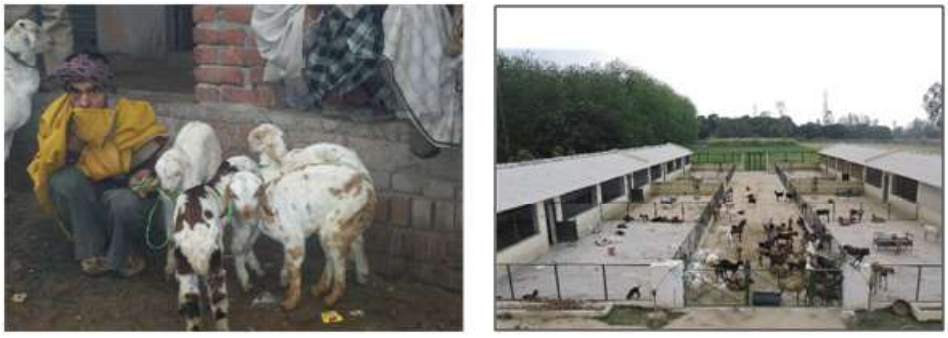

Fig.4.3: (a) Exposure to Cold (b) Well Planned Farm
(Source: ICAR-CIRG, Makhdoom)

Before we proceed, please complete activity 1.

Activity 1: Visit a nearby sheep or goat farm. Discuss with the farm owner about different housing management practices and welfare measures they are following. Write the outcome of the discussion.

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Check Your Progress 1

Note: a) Use the spaces given below for your answers.

b) Check your answer with those given at the end of the unit.

1) Name different animal welfare issues in housing of small ruminants.

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2) How overcrowding of small ruminants in shelters leads to compromise in five freedoms?

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3) What are the welfare implications of poor ventilation and light?

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4) Name any four disinfectants that are commonly used in animal shelters.

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4.4 WELFARE ISSUES IN FEEDING

4.4.1 Delay in Colostrum Feeding

First milk just after kidding/lambing is called colostrum which is essential for the new born. The colostrum acts as a laxative, is rich in nutrients and immunoglobulins. Feeding of colostrum to new born confers immunity against certain diseases. Delay in colostrum feeding leads to poor transmission of immunity from mother to kids/lambs.

The colostrum should be fed to the kid/lamb within half to one hour after birth. Udder and teats of the doe/ewe should be washed with lukewarm water containing potassium permanganate. In case of non-availability of colostrum from mother, colostrum from other doe/ewe or preserved colostrum can be fed (Fig. 4.4 and Box 4.4).

Fig 4.4: Care of Kid by Dam and Colostrum Feeding

(Source: ICAR-CIRG, Makhdoom)

Box 4.4: Colostrum Feeding vis-a-vis Welfare of Kids

Poor colostrum feeding practices compromise kid welfare and may result in increased kid mortality, failures in metabolic / respiratory adaptation. The three major welfare concerns that arise due to inadequate colostrum feeding soon after birth are:

- Hunger
- Hypothermia, and
- Respiratory distress

Therefore, consumption of sufficient and high quality colostrum should be considered a critical component of care to promote kid well-being and welfare.

4.4.2 Unbalanced and Nutrient Deficient Feed and Fodder

Most of the grazing lands have either been degraded or encroached upon restricting their availability for grazing. The area under fodder cultivation is limited to about 4 per cent of the cropping area, and it has remained static for the last four decades. As per the estimates of the ICAR- National Institute of Animal Nutrition and Physiology (NIANP), the deficit in the requirement and the availability of dry fodder, green fodder and concentrates in 2015 was to the extent of 21 per cent, 26 per cent, and 34 per cent, respectively. This is likely to increase to 23 per cent, 40 per cent, and 38 per cent, respectively, by 2025. The fodder and feed deficit in India in terms of green fodder, dry fodder, and concentrates was 26 million tonnes (MT), 21 MT, and 34 MT in 2015, which is expected to reach 40 MT, 21 MT, and 38 MT by 2025, respectively (Business Line, April 28, 2020).

The resultant welfare concerns are:

- Unbalanced and nutrient deficient feed and fodder lead to starvation, improper growth, induce many nutritional and metabolic diseases, ruminal imbalance and ultimately welfare compromise as well as poor production in small ruminants. In pregnant animals it affects foetal growth, offspring vigour and milk production leading to increased mortality in young animals, and cause pregnancy toxaemia.
- Imbalance of the intestinal microorganisms and release of more toxins leads to liver damage. So, proper ration balancing in small ruminants is also required to reduce these risks.
- Due to shortages of feed resources, many farmers feed only the productive animals optimally, and the rest of the animals are fed lower quantities.

The optimum feed requirements of small ruminants to avoid welfare issues related to feeding are summarised in Box 4.5.

Box 4.5: Recommended Feed Requirements of Small Ruminants

Age (Month)	Concentrate mixture (g)		Green fodder	Dry fodder
	Small breed	Large breed		
3	150	200	*Ad libitum*	*Ad libitum*
4	200	250	*Ad libitum*	*Ad libitum*
5	225	275	*Ad libitum*	*Ad libitum*
6	250	300	*Ad libitum*	*Ad libitum*
7	275	325	*Ad libitum*	*Ad libitum*
8	300	350	*Ad libitum*	*Ad libitum*
9	300	350	*Ad libitum*	*Ad libitum*
10	300	350	*Ad libitum*	*Ad libitum*
11	300	350	*Ad libitum*	*Ad libitum*
12	300	350	*Ad libitum*	*Ad libitum*

(Source: Mishra and Kumar, 2009)

4.4.3 Poor Quality Water

A safe general recommendation is to provide sheep and goats with clean water *ad libitum* (Fig. 4.5). Sub-optimal water intake will result initially in the reduced feed intake, followed by reduced performance and gradual starvation. Contaminated water is the source of many diseases. Pond water, a common source of drinking water in rural areas is the major cause of parasitic infestation in small ruminants.

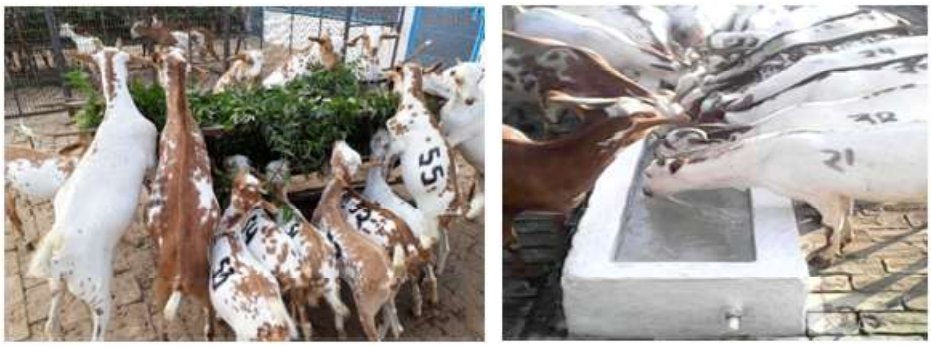

Fig. 4.5: Feeding and Watering of Goats

(Source: ICAR-CIRG, Makhdoom)

An average daily allowance of 18 litres of water is to be provided per goat / sheep. Water intake is affected by level of lactation, ambient temperature, water content of forage consumed and taste factors (CIRG, 2009).

4.4.4 Grazing Management

For good grazing management, the small ruminants should be grazed on well maintained pastures, follow rotational grazing and avoid grazing during extreme climatic conditions (Fig. 4.6).

Fig. 4.6: Grazing in Different Field Conditions (Full to Low Vegetation)

(Source: ICAR-CIRG, Makhdoom)

The seasonal movements, inadequate feed supplies, and infection by parasites seriously affect the weight of the animal and cause high mortality. Some of the welfare issues during grazing are:

- Injuries during grazing due to barbed wires. Sometimes nails and other foreign bodies can pierce the wall of the rumen/ reticulum which may result in death of the animal.
- Injuries to feet.
- Plastic bags can choke the small ruminants and block the stomach.
- Tin cans and glass can cut the mouth, feet and legs.

Before we proceed, please complete activity 2.

Activity 2: Visit a nearby sheep or goat farm. Discuss with the farm owner about different feeding management practices and welfare measures they are following. Write the outcome of the discussion.

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Check Your Progress 2

Note: a) Use the spaces given below for your answers.

b) Check your answer with those given at the end of the unit.

1) Why is not feeding sufficient colostrum a welfare issue in new born lambs/ kids?

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2) Write the welfare implications of unbalanced feed and fodder.

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4.5 WELFARE ISSUES IN BREEDING

4.5.1 Indiscriminate Breeding

The small ruminants' welfare is often compromised with indiscriminate breeding. Sometime farmers select cross breeding between small sized female breed and large sized male breed. It results in dystocia (difficulty in kidding/lambing) due to an oversized kid or lamb. It is very painful and stressful condition.

To avoid this, the breeding strategy for genetic improvement of animals should be essentially framed on the basis of the breed size, adaptability for climatic conditions and fitness traits, existing feeding resources, socio-economic conditions of farmers and demand/market of produce (Mishra and Kumar, 2009).

4.5.2 Castration

To minimise the risk of aggressiveness, increased body weight and to make them easier to manage in later life, the male lambs and kids are often castrated. Also, castration prevents the aversive flavour which is characteristic of the meat of uncastrated male kids once they reach puberty. Other benefits of castration include preventing undesired pregnancies.

The method of castration varies between regions and farming systems but all techniques lead to testicular necrosis and are typically carried out without anaesthesia or analgesia:

- Application of rubber rings, a latex band and/or a clamp (Burdizzo castrator) within the first week most frequently performed procedures.
- Surgical castration - either performed by incision of the scrotum and cutting or tearing the spermatic cords.
- Short scrotum castration consists of pushing the testes up into the abdominal cavity by applying a rubber ring around the distal scrotum. The higher temperature in the abdomen affects testicular function and induces infertility.

There is both behavioural and physiological evidence that castration is stressful and painful procedure for sheep and goats. Surgical castration is more painful than the other methods. Acute pain induced by castration lasts several hours and is followed by chronic pain which can last more than 48 hours.

Although castration is intended to try to reduce the risk of other welfare problems, it may not always be as necessary or justifiable as farm owners believe. When castration is unavoidable for welfare reasons, pain relief should be provided if a practical method is available in the farm.

In village conditions castration is performed in adult small ruminants by 3 methods viz., Burdizzo's method, rubber band method and incision method. In open surgery method castration is performed without following surgical guidelines, measures for pain management like anaesthesia and antibiotics. Wound is left open without much care. Sometimes it leads to systemic infection and animal death.

To avoid this, the male kids and lambs unless they are required for breeding should be castrated before the age of 1-2 months to prevent indiscriminate

breeding, improve weight gain and quality of meat besides making the castrated animals docile.

4.6 WELFARE ISSUES IN HEALTH CARE

4.6.1 Poor Prophylactic Measures

Under extensive systems, the prophylactic measures are poorly performed due to various reasons related to economics or lack of awareness. Prophylactic measures would keep the sheep / goat healthy and free from diseases. Under preventive health care and to improve the welfare of small ruminants, the operations like deworming, dipping, coccidiostat drenching and vaccinations should be performed scientifically.

4.6.1.1 Deworming

Deworming is done to check the internal parasitic infestations. In sheep and goats, parasitic load is a serious problem as they drink water in ponds during grazing (Figs.4.7a&b). In some chronic cases animals may die after showing symptoms of diarrhoea and colic. Their alimentary tract harbours a variety of helminthic and protozoan parasites, which in nature mostly occur as a mixed infection and are responsible for parasitic gastroenteritis. Pre and post monsoon deworming is recommended based on parasitic worm egg count and veterinarian's advise.

Fig.4.7: (a) Source of Parasites during Grazing
(Source: ICAR-CIRG, Makhdoom)

(b) Deworming
(Source: Dr. K. Deepika, Veterinarian, Tumarada, Andhra Pradesh)

4.6.1.2 Dipping

Dipping is an essential component of controlling the ectoparasite infestation i.e. ticks, mites and lice, which suck the blood of the animal causing ill health and mange. Recommended practices should be followed before performing dipping. Sheep can be dipped immediately before the post-winter shearing and/or before the post-autumn shearing. In addition, they can be dipped 1-4 weeks after shearing, when the fleece has grown long enough to retain dip solution and also allow cuts and scratches incidental to shearing time to heal.

When single or few sheep are affected with scab or maggots and have open wounds, dipping is not advisable. In such animals, a small quantity of dip is poured into the fleece along the back, sides and belly to achieve the objectives of dipping.

4.6.1.3 Coccidiostat Drenching

Coccidiosis is a protozoan disease affecting the kids / lambs of 1-3 months of age. They suffer from severe enteritis/diarrhoea with or without haemorrhages/ blood drops with foul smell, abdominal colic, anaemia and loss of body weight. With the consultation of a veterinary doctor coccidiostat should be given.

4.6.1.4 Vaccination

Diseases create heavy mortality and morbidity in small ruminants. Vaccination can protect the sheep and goat from many viral and bacterial diseases. Therefore, vaccination is an important part of a herd or flock health plan. When used correctly as part of health plan, vaccines can help prevent common endemic diseases in sheep and goat, leading to improved health, welfare and productivity (Fig. 4.8)

Fig.4.8: Vaccination of Sheep and Goats

Proper deworming, dipping, coccidiostat drenching and vaccination of small ruminants as per the recommended schedules help in improving the health and freedom from diseases.

4.6.2 High Level of Neonatal Mortality

Mortality in new born kids and lambs is very high due to poor or inadequate feeding of pregnant animals. Poor management especially during the first week leads to pneumonia, another important reason for mortality in kids and lambs. Stillbirths and neonatal mortality are major problems, particularly under intensive management conditions. The mortality in the preweaning stage varies from 8 to 72%. Neonatal mortality can be prevented by improving the level of nutrition in advanced stages of pregnancy (last 6 weeks), ensuring hygienic condition in the kidding sheds, providing proper bedding, and ensuring early feeding of colostrum.

4.7 OTHER WELFARE ISSUES

4.7.1 Tail Docking

As the hind quarters of small ruminants are relatively warm and moist, flies (wool maggots) are attracted there to lay their eggs. When the eggs hatch the maggots will eat the flesh of the sheep (flystrike), therefore flies are a welfare issue in small ruminants. Flystrike can cause pain and eventual death in untreated animals, as well as a reduction in wool quality and quantity, and reduces fertility of ewes. To minimise these risks and keep hind quarters clean, the tails of the young lambs (especially wool breeds) are often docked. Tail docking in sheep is carried out without anaesthesia and/or analgesia. As tail docking procedure causes

both acute and chronic pain, the rationale for doing it and the effectiveness of pain mitigation strategies should be considered as part of welfare plan.

Tail docking is performed by different methods:

- Surgery using a knife or scalpel.
- Docking with hot iron is a similar approach to the surgical approach, except that the wound is cauterized.
- The rubber ring reduces blood flow to the distal portion of the tail, which eventually becomes necrotic and sloughs off.
- In some cases, a clamp is applied next to the rubber ring to crush and destroy the underlying nerves.

Prevention of fly problem is the primary reason given for tail docking, but there is insufficient scientific evidence to support this reason. Fly problem also depends on flock management conditions, region and breed. Routine tail docking is unlikely to benefit sheep that do not have wool or in regions where fly problem is absent.

Tail docking is not very common in India. When the tail is docked, it is recommended to leave tail covering at least the anal region and vulva of the sheep. Tail docking cause pain regardless of the method used and the age of the animals. Local anaesthetics reduce acute pain during tail docking. For tail docking, the injection of a local anaesthetic sub-cutaneously into the tail immediately after the application of the ring or several minutes before the surgical or clamp procedure reduces pain.

4.7.2 Shearing

Shearing is the removal of fleece or hair or wool of small ruminants by cutting or clipping. Wool breeds of the sheep and goat should be shorn at least once every year, to help reduce the risk of external parasites and keep the animals comfortable. Some breeds of small ruminants are reared exclusively for wool production (Box 4.6).

Box 4.6: Changthangi or Ladakh Pashmina Goat

Native to high altitudes of Ladakh in India, the Changthangi Goat or Ladakh Pashmina Goat is a wool breed. They are mainly reared for fine pashmina grade of wool.

Sheep and goat are shorn in all seasons, depending on the climate and management requirements. Ewes are normally shorn prior to lambing in the warmer months, but consideration is typically made as to the welfare of the lambs by not shearing during cold climate winters (Moule, 1972).

The welfare issues in the removal of fleece or hair or wool of small ruminants are summarised in Box 4.7.

Box 4.7: Animal Welfare Issues Associated with Wool Production and Shearing

Pashmina / Cashmere is a fine fibre that is obtained from Kashmiri Pashmina goats and other similar breeds. The animal welfare issues relate largely to the collection of this fibre, which in many parts of the world is done using a metal comb with sharp teeth. The combing process is painful and prolonged, particularly if collection is carried out when the goat is not naturally moulting, and can result in bruising and injuries.

How Pashmina / Cashmere is Collected?

a) Removed by hand using a metal comb with sharp teeth. This process is followed in every spring when the goats are ready to moult (which refers to the natural period of the change of wool).

b) Shearing.

Animal Welfare Concerns

a) Combing Method

- The collection process through combing method is the main animal welfare concern
- All four legs of the goat are usually tied up. At this stage, poor handling and poor immobilisation are likely to cause increased fear and stress.
- The combing process itself can be painful. The ends of the combing teeth are sharp, which can scratch the skin of the goats, leading to bruises and injuries.
- Duration of combing is prolonged; on average, it takes about 1h to remove all the cashmere wool from a goat. Therefore, goats may suffer from protracted pain and stress during this procedure.
- Some goats that are not moulting during the cashmere collection time may experience more pain and distress during combing.

The stress and pain by the combing method could be reduced by handling of goats in a low-stress manner. Combing should be performed slowly and carefully, ensuring not to yank the comb when it gets stuck in tangled hair to avoid unnecessary pain. However, controls and standards to ensure combing is performed in a low-stress manner are lacking (Ishrat *et al.,* 2019).

b) Shearing Method

Shearing is much faster than combing, but poor handling during shearing can also result in increased fear, distress and skin injuries causing unnecessary stress and pain. In addition, goats are generally only shorn during winter or early spring when weather conditions are cold and windy (Animal Health Australia, 2015). This means that adequate farm management is essential in order to prevent welfare issues such as hypothermia after they are shorn.

Sheep shearers are not formally trained and are paid by the number of sheep shorn, not by the hours / days they work. So welfare and care of the animal is secondary over speed. Shearing has to be carried out carefully and sympathetically to avoid welfare problems such as handling stress and injuries. It is also important that shorn sheep and goat are managed correctly to protect them from weather conditions.

Example: Shorn adult sheep / goat tolerate cold conditions well, but young animals will suffer.

They need several nights protection in shelters.

Some sheep or goat may also be shorn with stud combs commonly known as cover combs which leave more wool on the animal in colder months, giving greater protection.

Consumers can help reduce the unnecessary suffering of goats kept for cashmere production by making informed purchasing decisions. Ask the retailer or check the cashmere product for animal welfare certifications. Where certification schemes are in place, their standards must be publicly available and participating farms must be subject to regular as well as unannounced on-farm audits to ensure animal welfare is not compromised.

(Source: RSPCA (2019) https://kb.rspca.org.au/knowledge-base/what-are-the-animal-welfare-issues-associated-with-cashmere-production/)

4.7.3 Transportation

Sheep and goats are transported from place to place for various reasons including marketing, slaughter, re-stocking / destocking and from drought-affected areas to better grazing sites. Sometimes, sheep and goats are traditionally transported on the foot (trekking). With increasing urbanization and commercialization, transport by road / rail is increasing. During transportation, sheep and goat experience undue pain, distress or suffering due to inadequate space, care and negligence, resulting in heat stress, injuries from slips and falls, hunger and thirst, which are exacerbated by long journeys in poor vehicles over poorly maintained roads. Trekking of pregnant animals for long distances sometimes leads to abortions. Poor transportation practices in India are also partly due to lack of awareness and knowledge about transportation of animals among traders and farmers (Fig. 4.9).

Fig. 4.9: Transportation of Goats *(Source: ICAR-CIRG, Makhdoom)*

Before we proceed, please complete activity 3.

Activity 3: Visit a nearby veterinarian or an organized sheep / goat farm. Discuss about the castration of sheep and goat, methods followed along with welfare measures they are following. Compare the outcome with the information provided in the above section and write your observations on the following:

a) Reasons for Practicing Castration:

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b) Age and Methods of Castration:

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c) Welfare Measures Ensured in Castration (before, during and after):

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Check Your Progress 3

Note: a) Use the spaces given below for your answers.

b) Check your answer with those given at the end of the unit.

1) How does indiscriminate breeding affect the welfare of sheep or goat?

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2) Write different methods of castration.

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3) What are the prophylactic healthcare measures to improve the welfare of small ruminants?

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4) What welfare issues are involved in shearing of small ruminants?

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4.8 LET US SUM UP

- In this unit you were introduced to some specific animal welfare issues related to housing, feeding, breeding and healthcare management of small ruminants.
- The specific animal welfare issues in small ruminants farming discussed are:overcrowding, poor ventilation and light, hygiene and sanitation, poor housing management, poor kid and neonatal management, unbalanced and

nutrient deficient feeding, indiscriminate breeding, inhumane castration, poor prophylactic measures, tail docking, shearing and transportation.

- The suggested options for enhancing welfare of small ruminants are scientific housing, feeding, breeding and healthcare management of small ruminants.

4.9 KEYWORDS

Castration: It is the removal or inactivation of the testicles of a male animal.

Deworming: Medication to control internal parasites of animals.

Dipping: Dipping is an essential component of controlling the ecto-parasite infestation in which animals are dipped or exposed in tank or water bath containing ecto-parasitic drug.

Foot-rot: It is a common disease in sheep and goats, in which it rots away the foot of the animal, more specifically the area between the two toes of the affected animal. It is extremely painful and contagious.

Hygiene: The principles and practices employed to promote health. Veterinary hygiene relates to the practices for promotion of health of all domestic animals.

Indiscriminate Breeding: Unplanned and unscientific breeding.

Kid: A baby of goat up to 6 months age.

Lamb: A baby of sheep up to 6 months age.

Overcrowding: Condition where more animals are housed within a given space than is considered tolerable from a safety and health perspective.

Prophylactic Measures: Measures designed to prevent the occurrence of an adverse event, a disease or its dissemination.

Sanitation: Sanitation literally means cleanliness. Environmental sanitation thus commonly refers to environmental cleanliness.

Unbalanced Feed: Feed stuffs which do not contain all essential and required nutrients.

Ventilation: Ventilation systems continuously remove the heat, moisture, and odours created by small ruminants in the shelter, and replenish the oxygen supply by bringing in dry and cool outside air.

4.10 BIBLIOGRAPHY AND FURTHER READING

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4.12 SELF ASSESSMENT EXERCISES

1) Discuss the housing related small animal welfare issues with suitable examples
2) What are the feeding related welfare issues? Discuss with relevant examples.
3) Explain the breeding and reproduction related welfare issues in small ruminants.
4) Discuss in detail various prophylactic health care issues in small ruminants.
5) Illustrate the welfare issues in the removal of fleece or hair or wool of small ruminants.

4.12 ANSWERS / HINTS TO CHECK YOUR PROGRESS

Check Your Progress 1

1) The animal welfare issues in housing of small ruminants include overcrowding, poor ventilation and light, hygiene and sanitation, poor housing system and inadequate care during winter and rainy seasons.

2) Overcrowding compromises with welfare of small ruminants in the areas like freedom from thermal and physical discomfort and freedom to express normal behaviour. It is disadvantageous for health of the animals and their

productivity, thus also leading to a compromise in freedom from pain, injury and disease.

3) Improper ventilation leads to increase of humidity (up to 90%), ammonia concentration to >20ppm, higher level of carbon dioxide and moisture. This condition is very harmful for small ruminants and cause stress. Also poor availability of light leads to dampness of shed. All these conditions leads to negative thermo-neutrality and leads to stress.

4) Fresh lime, chlorine or hypochlorite, phenol or carbolic acid, formaline, caustic alkalies, iodine and potassium permanganate are the commonly used disinfectants.

Check Your Progress 2

1) Poor colostrum feeding practices compromise kid welfare and may result in increased kid mortality, failures in metabolic/respiratory adaptation. The three major welfare concerns that arise due to inadequate colostrum feeding soon after birth are: hunger, hypothermia, and respiratory distress. Therefore, consumption of sufficient and high quality colostrum should be considered a critical component of care to promote kid well-being and welfare.

2) The welfare concerns due to unbalanced and nutrient deficient feed and fodder are: starvation, improper growth, induce many nutritional and metabolic diseases, ruminal imbalance and ultimately welfare compromise as well as poor production in small ruminants.

Check Your Progress 3

1) Indiscriminate breeding is breeding between small sized female breed and large sized male breed. It results in dystocia (difficulty in parturition) due to oversized kid. It is very painful and stressful condition.

2) Different methods of castration are application of rubber rings, a latex band and/or a clamp (Burdizzo castrator) within the first week, surgical castration short scrotum castration.

3) Under prophylactic health care and to improve the welfare of small ruminants, the operations like deworming, dipping, coccidiostat drenching and vaccinations should be performed scientifically.

4) Shearing is the removal of fleece or hair or wool of small ruminants by cutting or clipping. Wool breeds of the sheep and goat should be shorn at least once every year, to help reduce the risk of external parasites and keep the animals comfortable. Sheep shearers are not formally trained and are paid by the number of sheep shorn, not by the hours / days they work. So welfare and care of the animal is secondary over speed. It is also important that shorn sheep and goat are managed correctly to protect them from weather conditions. Some sheep or goat may also be shorn with stud combs commonly known as cover combs which leave more wool on the animal in colder months, giving greater protection.