

Management Practices to Reduce Kid Mortality Under Intensive Goat Farming System

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ABSTRACT

Kid mortality is one of the major constraints affecting productivity and profitability of goat farming systems worldwide. Losses due to kid mortality significantly reduce net and gross returns, threatening the economic sustainability of both smallholder and commercial goat enterprises. Mortality rates are influenced by multiple factors including season, birth weight, age, parity of the dam, nutritional status, management practices, and disease incidence. The present review critically evaluates the major predisposing factors, causes, and management-related determinants of kid mortality in goats. Emphasis is placed on prenatal care of does, periparturient management, neonatal care, colostrum feeding, housing, nutrition, vaccination, and control of major diseases. Evidence-based management strategies to reduce kid mortality are discussed, highlighting the importance of integrated health, nutrition, housing, and welfare-oriented interventions for improving survival and overall farm profitability.

Keywords: Colostrum ,Disease Control,Goat Kid Mortality,Housing, Neonatal Management, Small Ruminants

INTRODUCTION

Goat farming plays a crucial role in the livelihood security of rural households and is often referred to as the poor man's cow due to its low input requirements and high adaptability. Despite these advantages, kid mortality remains a major bottleneck limiting productivity and economic returns in goat farming. Losses due to kid mortality have been estimated to account for more than 20% of net returns and over 5% of gross returns in organized goat farms, underscoring its economic significance (Kumar, 2007). Reducing kid mortality is essential for improving reproductive efficiency, flock replacement rate, and long-term sustainability of goat production systems. Understanding the multifactorial causes of kid mortality and implementing appropriate management interventions are therefore critical.

Importance of Kid Mortality in Goat Production

Kid survival directly influences flock size, genetic progress, and profitability. High kid mortality reduces the effective fecundity and litter size of the flock, leading to poor economic viability of goat

farming enterprises. Studies have demonstrated that mortality during the pre-weaning period has a disproportionately greater impact on farm profitability compared to losses at later stages (Debele *et al*, 2011). Consequently, kid mortality is considered a key performance indicator of management efficiency in goat farms.

Factors Affecting Kid Mortality

Season

Seasonal variation plays a significant role in kid mortality. Higher mortality rates are commonly reported during the wet season compared to the dry season, primarily due to increased pathogen load, damp housing conditions, and greater climatic stress. Fluctuations in ambient temperature between day and night predispose kids to hypothermia and infectious diseases (Debele *et al*, 2011).

Age of Kids

Pre-weaning mortality is consistently higher than post-weaning mortality, with the highest risk occurring during the first two weeks of life. Neonatal

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kids are highly susceptible to infectious diseases due to immature immune systems and gradual development of passive immunity (Chowdhary *et al*, 2008). Among the preweaning mortality, death before 30 days found to be maximum (Muthukumar *et al*, 2016)

Birth Weight

Low birth weight is a strong predictor of kid mortality. Kids weighing less than 1.5 kg at birth exhibit significantly higher mortality rates. Inadequate prenatal nutrition and poor maternal care during gestation contribute to low birth weight, emphasizing the importance of proper feeding and management of pregnant does (Chowdhary *et al*, 2002). Kids born with 1.5-2.5 Kg weight survived better than the one weighed more than 2.5 Kgs and less than 1.5 Kg (Muthukumar *et al*, 2020).

Litter size

Multiple-born kids generally show higher mortality than single-born kids due to lower birth weight, mis-mothering, and insufficient milk availability. Proper suckling management, hygiene, and fostering practices can mitigate these risks (Misra *et al*, 1985). The single born kids had the maximum survivability followed by kids born as twins and kids born as triplets had the lowest survivability (Muthukumar *et al*, 2016).

Sex of Kids

Male kids often exhibit higher mortality compared to females, possibly due to sex-linked physiological differences and management bias in some production systems (Singh *et al*, 2008). No such significant difference in mortality rate among both the sexes were observed (Muthukumar *et al*, 2016)

Parity and Dam's Weight at Kidding

Higher mortality has been reported in kids born to first-parity does, attributed to poor mothering ability and lower milk yield. Excessive dam body weight at kidding may also predispose to dystocia and impaired fetal growth, increasing kid mortality (Hossain *et al*, 2004; Smith and Sherman, 1994). Influences of parity in the kid survivability were significant and falls higher at fifth to first in the descending nature (Muthukumar *et al*, 2016).

Causes of Kid Mortality

Kid mortality arises from a complex interaction of nutritional, infectious, parasitic, environmental, and management-related factors. Major causes include alimentary disorders diarrhoea, enteritis, tympany, hemorrhagic septicemia and pneumo enteritis (Ershaduzzaman *et al*, 2007), respiratory diseases (pneumonia), parasitic infestations (coccidiosis, haemonchosis), systemic infections (septicaemia, toxemia), specific infectious diseases like enterotoxaemia, colibacillosis, tetanus, FMD (Odoi *et al*, 2000), and miscellaneous causes such as hypothermia, navel ill, snake bite, and accidental injuries (Singh *et al*, 2008). In some studies *Clostridium perfringens* type D was very important and the main contributing factor to the kid mortality (Muthukumar *et al*, 2016).

Management Strategies to Reduce Kid Mortality

Management of Does

Proper selection, flushing, and adjustment of breeding time improve reproductive performance. Pregnant does should be provided adequate housing space, balanced nutrition, clean water, and timely vaccination and deworming. Supplementation with vitamins and minerals during late gestation enhances neonatal vigor and colostrum quality (Sikka and Lal, 2005).

Management at Kidding

Does should be shifted to clean, dry, and well-ventilated kidding pens at least one week before parturition. Hygienic maternity pens with adequate bedding reduce the risk of navel infections and neonatal diseases (Singh *et al*, 2008).

Care of the Newborn Kid

Immediate drying and cleaning of the newborn, clearing of airways, and navel dipping with strong iodine solution significantly reduce neonatal mortality. Proper neonatal care can reduce mortality from approximately 18% to below 7% (Ramachandran *et al*, 2006).

Colostrum Feeding

Colostrum intake within the first hour of birth is critical for passive transfer of immunity. Colostrum banking and appropriate preservation methods ensure availability during emergencies. Artificial colostrum

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may be used when natural colostrum is unavailable, though natural colostrum remains superior (Corbett, 1991).

Feeding and Housing Management

Structured milk feeding systems, creep feeding, and provision of adequate housing space are essential. Housing should be dry, well-ventilated, and protected from cold stress. Raised slatted floors and supplemental heating during cold seasons improve kid survival. Kidding pen to the doe's with more litters and lesser milk yield was recommended to some condition with customization and Kids born to goat breeds with high milk yield potentials may be managed with controlled nursing in order to have maximum kid survivability. (Muthukumar *et al*, 2020).

Vaccination and Deworming

Adherence to scientifically recommended vaccination and deworming schedules significantly reduces disease-related mortality. Control of major diseases such as enterotoxaemia, PPR, pneumonia, and parasitic infestations is critical for improving kid survival (Dhananjay *et al*, 2007). Vaccination of doe's in the last month of gestation against *Clostridium perfringens* type D increases the kid survivability (Muthukumar *et al*, 2020).

Management of Major Causes of Kid Mortality

Hypothermia, coccidiosis, enterotoxaemia, pneumonia, and colibacillosis are among the most common causes of kid mortality. Early diagnosis, prompt treatment, supportive care, and preventive management practices such as sanitation, proper nutrition, and stress reduction are essential for effective control (Donkin *et al*, 2004; Snyman *et al*, 2010).

CONCLUSION

Kid mortality remains a major constraint in goat production systems, with significant economic and welfare implications. Most causes of kid mortality are preventable through appropriate prenatal care, hygienic kidding management, timely colostrum feeding, proper housing, balanced nutrition, and effective disease control. An integrated management approach focusing on prevention rather than cure is essential for improving kid survival, farm profitability, and sustainability of goat farming enterprises.

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