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INCIDENCE OF KID MORTALITY IN IKWUANO LOCAL GOVERNMENT AREA OF ABIA STATE, NIGERIA

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ABSTRACT

The incidence of kid mortality was studied in Ikwuano Local Government Area of Abia State, Nigeria. The Local Government Area was divided into four zones: Oboro, Oloko, Ariam and Ibere . Data were randomly collected from a total of 210 households who managed goats under traditional system of husbandry between June 2008 and May 2009. A grand total of 1,553 kids were born in the Local Government Area during the period and this comprised 608, 281, 366 and 298 respectively in Oboro, Oloko, Ariam and Ibere. The results showed that a total of 347 (22.3%) kids died in the Local Government Area during the period. Among the four zones in the Local Government Area, kid mortality was highest in Ibere (34.8%) followed respectively by Oboro (21.4%), Ariam (18.3%) and Oloko (16.4%). There was positive correlation between kid mortality and the system of husbandry, season of the year, parity of the doe, birth weight and sex of the kid. Post mortem examination of some of the kids showed that deaths were probably caused primarily by Peste des Petits Ruminants (35%), Pneumonia (30%), starvation (18.1%), helminthosis (11.3%) and ectoparasitism (5.6%). This study suggests that kid mortality is high in Ikwuano Local Government Area; intending goat farmers should bear this in mind and institute adequate control measures against lt.

Key words: Mortality, kid goats, Ikwuano, Abia State

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INTRODUCTION

Small ruminants (sheep and goats) occupy a strategic position in the economic and social life of the small–holder farmer in Nigeria. Consequently, most households keep 2 – 5 animals per household in Southern Nigeria [1]. Over 70% of the people in Ikwuano Local Government Area (ILGA) of Abia State keep a few sheep and goats, of the West African Dwarf (WAD) breed, for meat, immediate source of cash, and for use during sacrifices, marriages, funerals and other social events. About 90% of the small ruminant keepers keep goats probably because goat meat is more acceptable than mutton in the area. The people are farmers and the small ruminants are integrated into the farming system and kept under traditional management systems. Kid mortality is a major constraint to small ruminant production all over the world [2,3]. Many goat kids are born each year in ILGA and yet the population of small ruminants continue to remain very low possibly because few of the kids attain maturity.

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This study was therefore designed to assess the incidence of kid mortality and the possible causes, which will help formulate a strategy to reduce the losses and so improve goat production in the study area.

MATERIALS AND METHODS

Study Area

Ikwuano Local Government Area (ILGA) is located at longitude 7^{o} 29´ East and latitude 5^{o} 32´ north on an elevation of about 120m above sea level. It falls under the rain forest zone of Nigeria with average annual rainfall of 2200mm distributed over eight-month period (March – November) which peaks in June/July with a short dry spell usually occurring in August [4]. It has warm humid climate and temperature that ranges from about 28^{o}C in the wet season to slightly over 35^{o}C in the hot season. The vegetation is composed of trees, grasses, legumes and browse plants.

Animals

A total of 1,553 kids were born in Ikwuano Local Government Area between June 2008 and May 2009. This comprised 608, 281, 366 and 298 kids respectively in Oboro, Oloko, Ariam and Ibere.The smallholder farmer in ILGA keeps between 2 - 5 goats and a few sheep of the WAD breed to meet domestic requirements. The animals are kept under the following production systems: i) In Oboro, Oloko and Ariam, the intensive system of animal management is practiced in which the goats are fed and managed indoors with limited access to grazing. Housing or shelter is provided and the animals are fed hand cut herbage and by-products of food processing. There is limited veterinary care for the animals. ii) In Ibere, the animals are reared under the extensive free-roaming production system that provides no specialized housing, feeding or healthcare throughout the year.

Data Collection

Data were collected by the stratified random sampling method [5] in which the Local Government Area was divided into four zones: Oboro, Oloko, Ariam and Ibere. Within the zones, 13 villages were randomly selected as follows: Oboro 5, Oloko 2, Ariam 3 and Ibere 3. Within the selected villages households were randomly selected as follows: Oboro 75, Oloko 35, Ariam 50 and Ibere 50. A total of 210 households were involved through the use of interview schedule, and structured questionnaire.

Only deaths occurring between kid birth and natural weaning (5 – 6 months) in the WAD breed within the locality were recorded as kid mortality. Does aged 18 months or less were regarded as young dams while those above 18 months were considered older dams. Other factors considered in categorizing kid mortality in the study area included kid age (in months), sex, weight (in kg) and the number of kids in the litter.

Post mortem examination was carried out on some dead kids. The areas of origin of the kids were identified. Such kids were necropsied for gross lesions and tissues subsequently collected for laboratory examinations to determine the cause of death. The period of study covered June 2008 – May 2009.

RESULTS

Mortality Rate

A total of 1,553 kids were born while 347 kids died within the study period, representing 22.3% mortality rate in the Local Government Area. Mortality rates in the four zones of Oboro, Oloko, Ariam and Ibere were 21.4%, 16.4%, 18.3% and 34.8% respectively (Table 1).

Season and Kid Mortality

About 15.9% of the overall kid mortality was recorded in the rainy season while 6.4% was recorded in the dry season. All the four zones recorded high mortalities in the rainy season (Table 1).

Influence of Dams age on Kid Mortality
Younger does (less than 18 months/primipara dams) recorded 14.3% kid mortality rate while the older dams (above 18 months/multipara dams) recorded 8.1% mortality rate. The condition was mostly noticeable at Ibere (Table 1).

Influence of Sex on Kid Mortality
Female (15.5%) more than the male kids (6.9%) died during the period, especially at Ibere. (Table 1).

Influence of the age of Kids on Mortality
Kids between the ages of 2 – 3 months recorded 12.6% mortality rate, those between 3 – 4 months old recorded 7.0% rate while the kids 1 – 2 months old recorded 2.7% mortality rate and kids above 4 months recorded less than 1% mortality rate. (Table 2).

Influence of Husbandry practice on Kid Mortality
In Oboro, Oloko and Ariam, intensive method of husbandry was practiced while in Ibere the extensive method was practiced. A total of 1255 kids were born in the intensively managed group with 243 (19.4%) dying within the period whereas in the extensively managed group 104 (34.9%) kids died out of 298 kids born in the group.

Influence of Birth weight on Mortality Rate
Kids which weighed more than 2.5kg at birth recorded 0.9% mortality rate while kids which weighed less than 2.5kg at birth recorded 18.9% mortality rate. (Table 2).

Single or Multiple Births and Mortality Rate
Kids from single births recorded 1.4% mortality rate while kids from multiple births (2 and above) recorded 21% mortality rate (Table 2).

Post Mortem Diagnosis of Cause of Death
Post mortem examination revealed possible causes of death in the kids as Peste des Petits Ruminants (PPR), Pneumonia, Starvation, helminthosis and ectoparasitism in that order. Ibere zone recorded the greatest number of diseases in the Local Government Area (Table 3).

DISCUSSION
The overall kid mortality rate of 22.3% recorded in the present study appears low compared with figures reported elsewhere in Nigeria [6,7,8]. The lower kid mortality recorded in three of the four zones in the LGA which practiced intensive husbandry and the high kid mortality rate in Ibere which practiced extensive management is in agreement with Smith *et al*. [9] who reported that goats raised under free roaming system suffer high mortality compared to those confined. Intensive husbandry should be encouraged in Ibere zone to reduce the mortality rate in the area.

The high kid mortality recorded in the rainy season was also observed by Osuagwu and Akpokodje [6]. The peak kidding period in Eastern Nigeria is in August [10] and this is also the peak of the rainy season with high disease prevalence and cold weather condition all of which are responsible for increased mortality in goats [11]. The kid mortality could be reduced by targeting breeding such that kidding periods fall within the dry season (November - December). Kids born during the cold season should be kept warm to reduce the incidence of pneumonia.

More kids from the primi-parous does (first breeders) died compared to kids from older mothers. This contrasts with the observations of Osuagwu and Akpokodje [6]. We postulate that this may be due to inexperience in the mothering ability of the younger does which were indiscriminately mated at very young age; some of them before 12 months of age. In–breeding is widely practicd in the area. Agbede *et al.* [12] reported that udder size correlated positively with milk yield. It is possible that the underdeveloped udders of the young does did not produce sufficient milk for the kids which could result in starvation. We advise that the age of the breeding does be increased to about 18 months to allow for better udder development and mothering ability.

Table 1. Distribution of kid mortality in Ikwuano Local Government Area of Abia State

Area	No. born	Number (%) dead kids						
			Sex		Season		Age of dam (months)	
		All kids	Male	Female	Wet	Dry	<18	≥18
Oboro	608	130 (21.4)	23 (3.8)	107 (17.6)	98 (16.1)	32 (5.3)	82 (13.5)	48 (7.9)
Oloko	281	46 (16.4)	32 (11.4)	15 (5.3)	39 (13.9)	7 (2.5)	32 (11.4)	14 (5.0)
Ariam	366	67 (18.3)	41 (11.2)	26 (7.1)	52 (14.2)	15 (4.1)	29 (7.9)	38 (10.4)
Ibere	298	104 (34.8)	12 (4.0)	92 (30.8)	58 (19.5)	46 (15.4)	79 (26.5)	25 (8.4)
Total	1553	347 (22.3)	107 (6.9)	240 (15.5)	247 (15.9)	100 (6.4)	222(14.3)	125 (8.1)

Table 2. Distribution of kid mortality [No. (%)] in Ikwuano Local Government Area of Abia State

Area	Kid age (Months)				Kid size (kg)		Litter size	
	1 – 2	2 – 3	3 – 4	>4	≥ 2.5	< 2.5	Single	Multiple
Oboro	27 (4.4)	92 (15.1)	10 (1.7)	1 (0.2)	10 (1.7)	120 (19.7)	9 (1.5)	121 (19.9)
Oloko	8 (2.9)	13(4.6)	25 (8.9)	0 (0)	1 (0.4)	5 (1.7)	5 (1.8)	41 (14.6)
Ariam	1 (0.27)	40(10.9)	26 (7.1)	0 (0)	1 (0.3)	66 (18.0)	7 (1.9)	60 (16.4)
Ibere	6 (2.0)	50 (16.8)	48 (16.1)	0 (0)	2 (0.7)	102 (34.2)	0 (0)	104 (34.9)
Total	42 (2.7)	195 (12.6)	109 (7.0)	1 (0.1)	14 (0.9)	293 (18.9)	21 (1.4)	326 (21.0)

Table 3. Postmortem diagnosis of causes of kid mortality in Ikwuano Local Government Area of Abia State

Cause of death	No. (%) dead kids by community				
	Oboro	Oloko	Ariam	Ibere	Total
PPR*	10 (34.5)	4 (30.8)	6 (31.6)	36 (36.4)	56 (35.0)
Pneumonia	8 (27.6)	3 (23.1)	6 (31.6)	31 (31.3)	48 (30.0)
Starvation	5 (17.2)	3 (23.1)	2 (10.5)	19 (19.2)	29 (18.1)
Helminthosis	4 (13.8)	2 (15.4)	4 (21.1)	8 (8.1)	18 (11.3)
Ectoparasitism	2 (6.9)	1 (7.7)	1 (5.3)	5 (5.1)	9 (5.6)
Total	29(18.1)	13(8.1)	19(11.9)	99(61.9)	160 (100)

*Peste des petits ruminants

The female kids died more than the male kids. This was also observed by Adu *et al.* [13] and Osuagwuh and Akpokodje [6] who observed that the mean birthweights of female kids were significantly lower than those of the males and so attributed the higher mortality of the females to their low birthweights. They also noticed significant differences between the weights of dead and surviving kids. This suggests that if the average birthweight could be raised, losses at and shortly after birth could be remarkedly reduced. Good birthweight is a function of the genetic makeup of the animal as well as adequate feeding and management during pregnancy. This can be achieved through proper selection and careful application of the nutritional requirements during pregnancy.

The 12.6% of the kids that died within 2 – 3 months probably did so because the milk yield of WAD goats usually declined within the first 5 weeks post partum [14] such that in 2 - 3 months of lactation there is virtually very little milk left for the kids, which have not yet started grazing. Such kids may die of starvation unless they are given creep-feed containing adequate protein and energy.

Kids from multiple births died more than kids from single births. Similar observations were made by Ngere *et al.* [7]. This suggests that under the present management practice in ILGA multiple births are not desirable possibly due to reduced birth weight and viability of the kids [6] and insufficient milk production by the dams, especially primiparous does.

Peste des petits ruminants has been recorded as the “number one killer” of small ruminants in Eastern Nigeria [15]. Morbidity and mortality, sometimes approaching 50 – 100%, are highest in kids 4 - 12 months of age. Kids should be vaccinated against PPR in the third month of life. This period corresponds to the time of declining maternal immunity and milk yield [16].

Finally, it is believed that with good intensive management system and well formulated veterinary prophylactic interventions in the areas of vaccinations, dipping and use of anthelmintic drugs, kid mortality rate will reduce considerably resulting in enhanced goat production in Ikwuano Local Government Area.

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