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## PARTUM AND POST-PARTUM BEHAVIOURS OF WEST AFRICAN DWARF DOES AND KIDS

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### ABSTRACT

Seventeen West African Dwarf does housed intensively were used for this study. Does were naturally mated and pregnancy was confirmed by non-return to oestrus. The predicted parturition date was calculated. Two days to the predicted date of parturition, the does were closely monitored until the day they actually kidded. The behaviours of the does (duration of parturition, and latency to groom kids) and the kids (latency to stand) were recorded. Data were subjected to independent T-test of SPSS statistical package. The mean duration of parturition in WAD does was  $9.5 \pm 2.65$  min and the latency of kids to stand was  $10.5 \pm 3.45$  mins. Duration of parturition was greater ( $P < 0.05$ ) in the 1<sup>st</sup> than 2<sup>nd</sup> parity does. A significant negative correlation was established between parity and duration of parturition ( $r = -0.635$ ,  $P < 0.05$ ). Kids from 1<sup>st</sup> parity does stood up earlier ( $P < 0.05$ ) compared to those from the 2<sup>nd</sup> parity does. A positive correlation was established between parity and the latency of the kids to stand ( $r = 0.598$ ,  $P < 0.05$ ). In conclusion, the duration of parturition and latency of kid to stand were not affected by the sex of the kid delivered, however WAD does groomed female kids earlier than the male kids.

**Key words:** behaviour, goats, grooming, parity, parturition

### INTRODUCTION

Small ruminant like West African Dwarf goat play a very important role in the national economy and in the lives of small scale farmers. They are primarily kept for meat in Nigeria (Fajeminsin, 1991). West African Dwarf (WAD) goat is a non-seasonal breeder with the possibility of kidding 5 times in 3 years. Most signs of approaching parturition though variable as an accurate prediction of the date of parturition relates to changes in the pelvic liga-

ments, enlargement and oedema of the vulva and mammary gland activity (Jainudeen and Hafez, 2000). Both foetal and maternal mechanisms play roles in initiating parturition; the foetal endocrine system dominates in ruminants (e.g., sheep, goat, and cattle; Jainudeen and Hafez, 2000). In goat, most births occur during day time with over 80% occurring between 06:00am and 20:00pm (Das and Tomer, 1997).

The survival of kids depends on both the maternal and neonatal (new born kids) behaviour. Kid mortality (6.8%) in Agora goats was attributed to does abandoning their kids with single-born kids having the lowest mortality rate (10%), followed by twin-born (13%) and triplet-born (22%) kids (Snyman, 2010). Duration of parturition is dependent on the number and sex of the kids in Murciano-Granadina goats (Martinez *et al.*, 2009). The neonate tries to stand up within 5–10 min after birth and usually succeeds in doing so by 20 to 30 min. In less than 1h after birth, neonate finds doe's udder by trial and error exploration and begins to feed. This early suckling ensures that neonate is protected against environmental antigens by a supply of maternal immunoglobulin through colostrum (Klobasa *et al.*, 1986). The initial suckling by the neonate is also important for the establishment of a bond with the mother (Keverne, 1988). Till date, very little work has been conducted on behaviour in West African Dwarf does especially during parturition. Hence, this study was designed to investigate the effect of parity and sex of kid on duration of parturition and latency of kids to stand.

## MATERIALS AND METHODS

***The research was conducted in accordance with the Institutional Animal Ethics Committee guidelines of the Federal University of Agriculture, Abeokuta, Nigeria***

### ***Experimental area***

The experiment was conducted at a smallholder dairy goat farm close to Federal Uni-

versity of Agriculture, Abeokuta, Ogun state. The experimental site lies at latitude 7°25'N and longitude 3°25'E. The area is characterized with an annual rainfall of about 1037mm. The average temperature and relative humidity are 28°C and 82%, respectively.

### ***Experimental animals***

A total of 17 pregnant West African Dwarf does reared at a smallholder dairy goat farm unit were used for the study. Weight ranges of the does were 18-22 kg. The does were reared intensively and fed concentrate consisting of corn bran (35%), palm kernel cake (30%), wheat offal (27%), beans offal (5%), limestone (1%), bone meal (1%) and premix (1%) in the morning and freshly chopped elephant grass (*Pennisetum purpureum*), or guinea grass (*Panicum maximum*) in the afternoon.

The does were housed in pairs in an open sided slated-floor housing unit (1.6m x 1.2m). The animals were vaccinated against Peste des petits Ruminants (PPR) once, dewormed, treated for ecto and endo-parasites before mating. Does were mated naturally by introducing doe to buck. Once conception was confirmed by non-return to oestrous, the predicted date of parturition was calculated. The pen, feeding and drinking troughs were cleaned daily by 6.00am. Concentrate feed of 300g was offered to each pregnant doe/day. In the afternoon (4.00pm), goats were offered 45g/KgBW of chopped and dried forage. Two days to calculated parturition date, does were closely monitored until the day they kidded. The behaviour of does monitored during parturition and kids after parturition are fully described in Table 1.

**Table 1: Behavioural categories and their description (behaviour of doe during birth)**

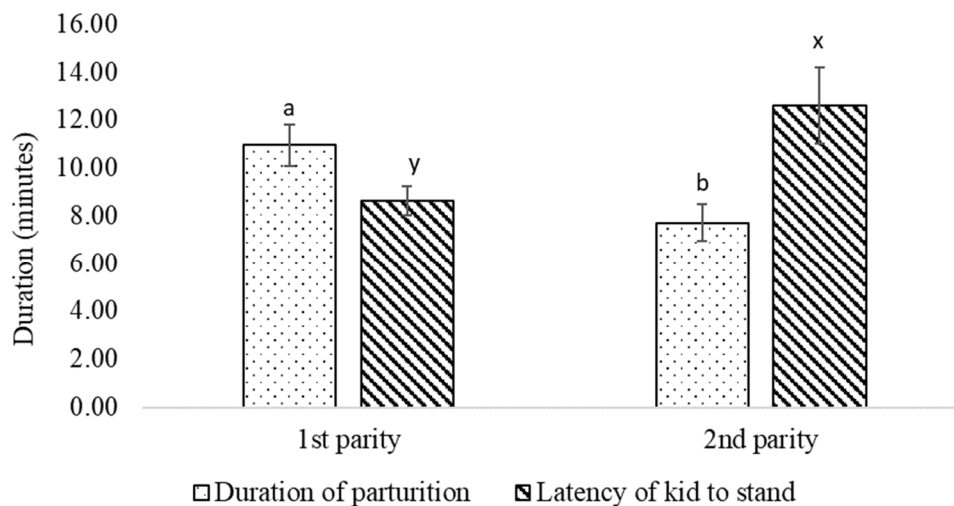
Behaviour	Description
Duration of parturition (min)	Time from the first contraction to the expulsion of the kids
Latency to groom kid (min)	Time from the instant of birth of kid to first lick of the kid
Latency of kids to stand (min)	Time from delivery to when the kid stood on its two legs

**Statistical analyses**

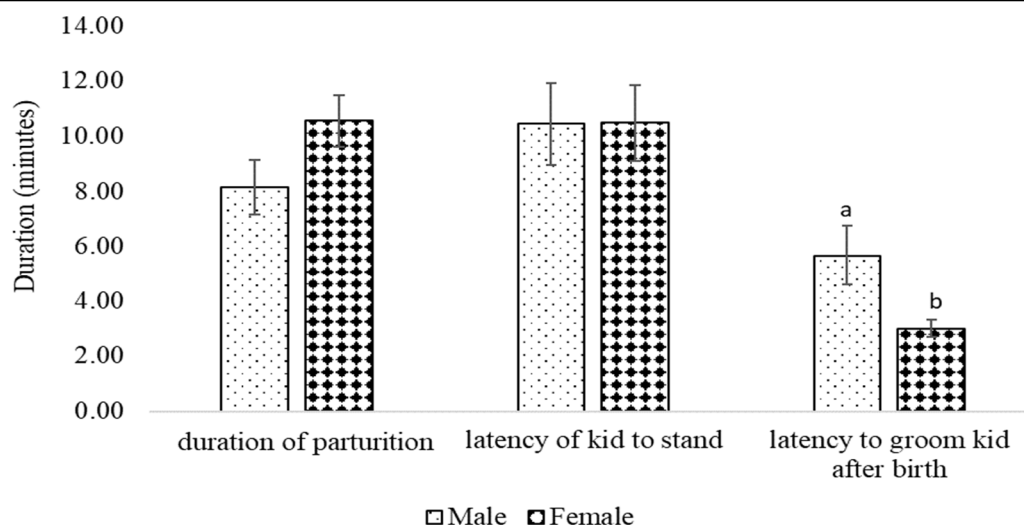
All data collected were subjected to analysis using SPSS statistical package (version 16). The four does that had twin birth were not included in the analysis. The effect of parity of does (1<sup>st</sup> and 2<sup>nd</sup> parity) on duration of birth and latency of kids to stand were analysed using independent sample T-test. Effect of sex of kid (male or female) on behaviour of kid after parturition was analysed using independent sample T-test. Correlation between duration of parturition, latency of kids to stand and parity was analysed using Pearson's correlation. Differences were considered statistically significant at  $P < 0.05$

**RESULTS**

Effect of parity on duration of parturition and latency of kids to stand is presented in Fig. 1. The results showed that duration of parturition was longer ( $P < 0.05$ ) in WAD does in first parity compared to second parity does'. In addition, kids from second parity does took a longer ( $P < 0.05$ ) time to stand compared to kids of first parity does. Sex of kid had no significant effect ( $P > 0.05$ ) on duration of parturition and latency of kid to stand, however, WAD does groomed female kids earlier than male kids (Fig. 2)



**Figure 1:** Effect of parity on duration of parturition and latency of kid to stand. *a, b; x, y* Means with different letters differ significantly ( $P < 0.05$ ).



**Figure 2: Effect of sex of kid delivered on duration of parturition, latency of kid to stand and latency of doe to groom kid after parturition. <sup>ab</sup> Means with different letters differ significantly at P<0.05**

Table 2 shows Pearson’s correlation between duration of parturition, latency of kids to stand and parity. Duration of parturition was negatively correlated to latency of kids to stand (P<0.05). Duration of parturition was negatively correlated to parity (P<0.05) and this indicated that as parity increased the duration of parturition reduced. The results showed a positive corre-

lation between parity and latency of kids to stand (P<0.05) and this revealed that as parity increased the latency of the kids to stand increased. Furthermore, sex of kid delivered had no significant effect on duration of parturition and latency of kid to stand. However, WAD does groomed female kids earlier (P<0.05) compared to male kids (5.67 vs 3.00 min).

**Table 2: Pearson correlation between duration of parturition, latency of kids to stand and parity**

	Duration of parturition	Latency of kids to stand	Parity
Duration of parturition	1.000		
Latency of kids to stand	-0.512	1.000	
Parity	-0.635*	0.598*	1.000

\*P<0.05, N=13

## DISCUSSION

In the current study, duration of parturition for male and female kids with an average of  $9.45 \pm 2.65$  min was comparable. This result was close to 10 min recorded by Awotwi *et al.* (1999) in WAD does in Ghana. Duration of parturition in the second parity does was shorter compared to the first parity does (10.95 vs. 7.7 min) and this was further supported by a negative correlation between parity and duration of parturition ( $r = -0.653$ ). However, Yilmaz *et al.* (2012) reported a higher mean duration of parturition in Norduz primiparous does (22 min). The results seem to indicate that as parity increases the reproductive efficiency increases. However, this result disagrees with the result obtained by Awotwi *et al.* (1999) who reported no effect of parity (primiparous vs. multiparous) on duration of birth in West African Dwarf goat.

Irrespective of sex of kids, it took WAD kids about 10 min to successfully stand after birth, which is quite shorter than the 20-30 min reported by Allan *et al.* (1991). Awotwi *et al.* (1999) reported that the average latency of WAD kid to stand was 13.2 min. About 62% of Toggenburg kids attempted to stand within 15 min after birth (Lickliter, 1985). Latency to stand in Norduz goat kid was  $17.50 \pm 2.42$  min (Yilmaz *et al.*, 2012). In comparison with other goat breeds, WAD kids successfully stood earlier after parturition.

In the present study, WAD does groomed female kids earlier than male kids (3 min vs. 6 min). Although there is limited information on differential care of male and female neonates in sheep and goats, Serafin *et al.* (2003) suggested that does may preferentially lick males more than females and that

this difference relies on olfactory information. The result of this study is in agreement with that observed in Primiparous Murcina-Granadina goats with single birth, where the doe licked the female kid earlier than male kids (40s vs. 120s), but those with twin birth showed no difference in the latency to lick the first twin whether it's a male or female (Otal *et al.*, 2010). Few minutes after expulsion of the foetus, the mother rises and starts to lick her kid vigorously, generally beginning with its head and neck (Awotwi *et al.*, 1999), licking is accompanied by numerous low and high pitched bleats and occasionally by flehmen behaviour, especially when consuming urine from the neonate (Sambraus and Wittmann, 1989). Although the current study did not clearly show the duration spent by the doe grooming the kids however, Awotwi *et al.* (1999) reported that WAD goat kids are groomed for averagely 10 min while Lickliter (1985) reported that domestic goats lick their kids for 2-4 h. The process of grooming helps to remove the foetal membranes and fluids, stimulates teat seeking activity and establishment of mother-offspring bond (Dwyer, 2009). Dams lick their neonate and rapidly establish selective bond with the kids through olfactory recognition, they also develop visual and acoustic recognition of the kids within 4 h after parturition (Poindron *et al.*, 2007)

## CONCLUSION

Duration of parturition decreased as parity increased in West African Dwarf does. WAD does groomed female kids earlier than male kids. Kids born by second parity does took longer time to stand than first parity does. Goat at first parity may have problems in kidding compared to multiparous does.

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