Lemur babies of older moms less likely to get hurt

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Baby lemurs get bit now and then during tussles over food, perhaps just because they're clinging to their mothers, who are the real targets of the attacks. A study has found that the babies of older lemur moms are somewhat safer from such attacks. Credit: David Haring, Duke Lemur Center

A long-term study of aggression in lemurs finds that infants born to older mothers are less likely to get hurt than those born to younger mothers.

The researchers base their findings on an analysis of detailed medical records for more than 240 ring-tailed lemurs—cat-sized primates with long black-and-white banded tails—that were monitored daily from infancy to adulthood over a 35-year period at the Duke Lemur Center in North Carolina.

The results suggest that infants born to older mothers are less likely to get bitten. It may be that older moms are better at fending off attackers or protecting their infants during fights, say researchers at Duke University and the National Center for Scientific Research in Montpellier, France.

The study will appear online in the December 18 issue of the journal *PLOS ONE.*

In most animal societies, males are the more aggressive sex. But in lemurs, females can be bullies too, explained co-author Marie Charpentier of the National Center for Scientific Research in France. Female lemurs compete with one another for first dibs on food and chase away males at mealtimes, sometimes lunging or snapping at each other with their sharp canine teeth.

To tease out the factors that influence who gets hurt when ring-tailed lemurs tussle, Charpentier and Christine Drea of Duke University combed the animals' medical records for evidence of bite wounds.

Animals at the Duke Lemur Center live outdoors for much of the year in large forested enclosures ranging in size from 1.5 to 14 acres. In these natural habitat enclosures, ring-tailed lemurs live in mixed groups of

males and females who are free to forage, interact, play and move around as they would in the wild, providing a unique opportunity to study lemur social dynamics.

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Any victims of serial bullying are removed from the group to prevent additional injuries, and all wounds are recorded and treated by veterinarians. As a result, infant mortality for ring-tailed lemurs at the Lemur Center overall is about half of what it often is in the wild.

Of the 237 ring-tailed lemur babies born at the Duke Lemur Center between 1971 and 2006, 15 were bitten before their first birthday, all of

whom died from their wounds.

The researchers examined a range of possible risk factors that might influence how the infants fared, including sex, weight, genetic diversity, group size, and whether the infant was a twin or a singleton.

Of all the factors studied, the one that had the most significant impact on infant injury and survival rates was the age of the mother.

Infants that avoided injury were born to mothers who were two years older on average than the mothers of infants that were badly bitten. The results held up even when the mothers were first-time moms. "Whether the mother had had a kid before didn't matter," Drea said.

The records don't reveal who the perpetrators were, but in a separate behavioral study, the authors found that females—some of them related to the victims as sisters and aunts—were responsible for some of the biting.

In some animal species, males are known to attack and kill the infants of nursing moms to bring the females back into heat. But the same mechanism is unlikely to be at work in ring-tailed lemurs because these animals only breed once a season, and because females wean their infants before the next breeding season begins. "Even if a female stopped nursing prematurely due to the death of an infant, she wouldn't be ready to breed again until the next season anyway," Drea said.

Other researchers have found injured infants clinging to their mothers at the time of attack, rather than venturing out on their own. This suggests that the mother, not the baby, may be the intended target and infant injuries are a byproduct of skirmishes between adults.

Additional research is needed to determine why maternal age improves

infant survival, but it is possible that older moms are better at protecting their infants or are less likely to pick fights. Older females could also be less frequent targets of aggression from their female peers.

The study illustrates one of the ways that female aggression takes its toll, Drea added. For young female lemurs in particular, fighting for their place in the pecking order comes at a cost to their infants. "Female lemurs are more dominant and aggressive than females in other species, and that puts their kids at risk," Drea said.

More information: "Victims of infanticide and conspecific bite wounding in a female-dominant primate: a long-term study," Charpentier, M. and C. Drea. *PLOS ONE*, 2013. dx.plos.org/10.1371/journal.pone.0082830

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