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[Nihon Eiseigaku Zasshi](#). 2003 Sep;58(3):385-94. doi: 10.1265/jjh.58.385.

[Association between the rates of low birth-weight and/or preterm infants and aircraft noise exposure]

[Article in Japanese]

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Abstract

Objectives: Intense noise exposure having been observed in vicinal areas around the U.S. military airfields in Okinawa, Japan, suggests the possibility of adverse effects on fetal growth, as studies have reported such effects around other airfields. This study analyzes the birth records in Okinawa prefecture and investigates whether lower birth weights of infants and shorter gestation periods are observed around the airfields.

Methods: The records of 160,460 births in 15 municipalities around the Kadena and Futenma airfields from 1974 to 1993 were subjected to analysis. Average WECPNL among residents in each municipality was calculated as a measure of noise exposure, since the birth records did not contain information on precise birth addresses but only the municipalities. The odds ratios of low birth weight, i.e. under 2,500 grams, and preterm birth, i.e. less than 37 weeks, were obtained by multiple logistic regression analysis with adjustment for the primary factors that would be related to fetal growth. The factors included sex, maternal age, live birth order, occupation of householder, legitimacy of the infant, year of birth and interaction between maternal age and live birth order.

Results: The logistic regression analysis showed a significant dose-response relationship between low birth weight and noise exposure. The significance probability of trend test was less than 0.0001. The adjusted odds ratio was 1.3 in the highest noise exposure area, which was Kadena Town, located in the immediate vicinity of the Kadena airfield. Significantly higher rates of preterm births were also found across the noise exposed municipalities. Although the obtained results were not adjusted for some confounding factors like smoking habit, another survey conducted by the present authors did not show particular differences in the female smoking rate between Kadena Town and the other municipalities around the Kadena airfield.

Conclusion: Aircraft noise exposure is most likely to cause adverse effects on fetal growth, raising the rates of low birth weight and preterm infants around the Kadena airfield.

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