Geographical Analysis of Sudden Infant Death Syndrome (SIDS) and Associated Risk Factors in Douglas County, Nebraska

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Abstract

Background: Sudden Infant Death Syndrome (SIDS) is defined as the sudden and unexpected death of a child less than one year of age without an identifiable cause. Known risk factors of SIDS include prone and side-sleeping positions, bed sharing, male sex, pre- and postnatal tobacco exposure, poverty, prematurity, low birth weight (<2,500 g), and poor prenatal care.

Significance of Problem: In the United States, SIDS is the most common cause of death in infants between one month and one year of age, with approximately 3,500 infants dying each year. The incidence of SIDS has decreased by more than 55% since the Back to Sleep campaign began in 1994. However, SIDS rates remain higher than the national mortality rate every year since the campaign began. A Fisher’s exact test indicated a significantly higher SIDS rate in Douglas County, Nebraska among children receiving care in the first trimester compared to the non-receiving care in the first trimester. A significant negative association exists between SIDS mortality rates and the percentage of births that received medical care in the first trimester. Significant, positive correlations exist between SIDS mortality rates and percentage of low birth weight (rho = 0.90, p = 0.002) and percentage of smokers before pregnancy (rho = -0.88, p = 0.004).

Conclusion: If geographically mapped, will SIDS localize to specific regions of Douglas County? If SIDS is localized to specific regions of Douglas County, will associated risk factors concentrate in those areas?

Conclusions and Future Direction

Known risk factors for SIDS include inadequate prenatal care, tobacco use during pregnancy, prematurity, and low birth weight. Analysis of these risk factors in Douglas County demonstrated a positive correlation between SIDS mortality rates with low birth weight and with prematurity. Additional analysis calculated a negative correlation between SIDS mortality rates with the percentage of women receiving prenatal care in the first trimester. Thus, a strategy that aims to lower the rate of SIDS in Douglas County should focus on more accessible first trimester prenatal care and smoking cessation during pregnancy, especially for patients in the East Northeast and West Northeast regions, where these risk factors were significantly different from the best performing regions in Douglas County. By addressing modifiable risk factors such as access to early prenatal care and smoking cessation in areas of demonstrated need, the incidence of prematurity births, low birth weights, and SIDS in Douglas County could eventually decrease over time.

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References