

Exploring Development Origin of Health and Disease (DOHaD) hypothesis employing publicly available data

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Background: DOHaD is a concept initially proposed by David Barker that environmental influences during fetal development may predispose the individual towards specific phenotype or diseases. Many epidemiological and animal studies have been undertaken to prove this hypothesis and study its molecular mechanism. However, the impact of this concept to public health is not fully described in Japan and other Asian countries.

Objective: As for a preliminary survey, we searched for clues that sustain DOHaD hypothesis, and find if there are correlation between low birth-weight and increasing trend of obesity in children and/or adult of Japan and other Asian countries.

Materials and Method: Publicly available data and literature search were employed. These include Japan's school health data, Japan's National Health and Nutrition Survey, WHO World Health Statistics data and other related databases. The correlation of the rate of low birth-weight during 1970-2000 with 5 years interval and the rate of obesity at their age of 10 years was analyzed by plotting the prevalence of obesity against prevalence of low birth-weight. Simple linear regression and Pearson's correlation coefficient was used to determine the strength of correlation in variables. **Results:** Among eight Asian countries surveyed, Japan and Korea were encountering a significant increasing trend of low birth-weight. We observed a tendency of positive correlation between rate of low birth-weight and rate of obesity at 10-year-old, but it was not statistically significant. (p=0.15)

Conclusion: The cause and outcomes of increasing rate of low birth-weight in Japan and other developed countries warrant further research studies. We are currently investigating birth-weight and other intrauterine factors that associate with DOHaD hypothetical outcomes among Japanese population.

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