

# Nutrition epidemiology

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Epidemiology Case Study Nutrition epidemiology affiliation" Asthma is a chronic disease that affects millions of people around the world. For many years, researchers have tried to identify potential risk and protective factors. This study was implemented to investigate whether asthma was modified by higher intake of dietary antioxidants in the population. Asthma and non-asthma individuals were defined based on a survey in a random sample of adults, and usual diet was assessed using a food questionnaire. Primary and secondary exposures of interest were defined and analyses were performed in 1471 individuals. Apple and selenium intake were negatively associated with asthma, suggesting that a higher consumption may protect adults.

The present is a case-control study, a design that starts with subjects with and without an illness, and looks back in time to determine prior exposure history; it has backwards directionality. In this particular case, the study design is appropriate, since selection of individuals is based on disease status and the researchers want to determine if the diet (exposure) is disproportionately distributed between cases and controls (asthma and non-asthma individuals; moreover, these are not unusual or rare exposures, so a case-control study design is suitable. However, in order to avoid confounders, selection and other types of bias, a cohort study would be much more appropriate.

The major exposure in this study is diet intake: primary exposures were "fruit, vegetables, flavonoid-rich items, antioxidant vitamins, and trace elements with antioxidant properties"; secondary exposures of interest included chocolate, fish, and tomato rich-products, among others.

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Confounding is failure to adjust for variables other than the exposure variable. According to the online supplement of this study, such confounders were " age, sex, body mass index, social class, housing tenure, employment status, whether a single parent, smoking, passive smoke exposure at home, and total energy intake".

The diet of the previous 12 months was assessed, in the 1471 individuals, using a food frequency questionnaire that included 200 items, too long for individuals to answer. Weekly and daily nutrient intake was also calculated, and a repeat questionnaire was sent to a random sample of respondents in order to estimate repeatability. The method is based on a questionnaire, so one of the problems is recall bias.

Advantages include that this kind of study requires a smaller population than forward studies, and investigators do not have to wait a long time to address primary outcomes. The exposures can be thoroughly evaluated, and the odds ratio tells us that individuals who consume apples and selenium have less risk of asthma than do individuals who do not consume these foods.

The main weaknesses of the study are recall bias, because data were obtained from surveys and questionnaires. The appropriateness of the source of population is important to address, since selection bias may also arise. The case and control definition, asthma and non-asthma, is based on survey questions, not a rigorous criteria.

## References

Shaheen, S. Sterne, J. Thompson, R. et al. 2001. Dietary Antioxidants and Asthma in Adults. American Journal of Respiratory and Critical Care Medicine. Vol. 164, pp. 1823-1828.