Understanding meta-analysis in cancer epidemiology: dietary fat and breast cancer.

Meta-analyses of the relationship between dietary fat and breast cancer risk using different methodologies have reported conflicting results. This investigation compares methodologic aspects of meta-analyses of patient data (MAP) with meta-analyses of data from the literature (MAL), and computes relative risk (RR) estimates from a random effects model using 28 published studies of dietary fat and breast cancer. MAP and MAL results compare closely when homogeneity is verified. When statistical homogeneity is rejected, a random effects model adjusting for study design and location is appropriate. The highest RR was found for case-control studies of European women (RR: 1.46), followed by North American case-control studies (RR: 1.25), case-control studies of women on other continents (RR: 1.23), cohort studies in Europe (RR: 1.20), and cohort studies in North America (RR: 1.02). The overall risk estimate in a MAL with heterogeneous studies should be interpreted only in a conditional model.