FRIED POTATOES AND MORTALITY
FACT CHECK

Potatoes USA

Q: Does consuming french fries increase your risk of death?

A: A single study found an *association* between frequent consumption of French Fries (> 3 times per week) and increased risk of "all cause mortality."[1]

CONTEXT

A recently released study in the *American Journal of Clinical Nutrition* examined the association between the frequency of potatoes consumed either fried or un-fried and "all cause mortality" (i.e., dying from any and all causes) using a 70-item food frequency questionnaire (FFQ) which contained two potato items (fried and un-fried potatoes), The results indicated that there was no association between the frequency of consuming un-fried potatoes and mortality; however, there was a statistically significant association between frequent consumption (> 3 times per week) of fried potatoes and an increased risk of death from any and all causes.[1]

FACTS

The study suffers from a number of methodological weaknesses and analytical flaws that severely impact the validity of the study as well as the generalizability of the results.

- **The study population is not representative of the general population.** The subjects for this study were taken from the Osteoarthritis (OA) Initiative cohort, which is a multi-center longitudinal study that includes individuals who either have OA of the knee or are at high risk for OA of the knee. Given that this is a very specific, unique population, the results cannot be generalized to other populations — healthy or otherwise.
- **The methods utilized to assess dietary intake (including intake of potatoes) were unsatisfactory.** The Block Brief 2000 food frequency questionnaire (FFQ) was used in this study. This FFQ contains 70 food items (about have as many as standard FFQs used in epidemiological research),[2] including two potato items: (1) Fried potatoes including French fries, hash browns and fried potatoes and (2) Un-fried potatoes including baked, boiled, mashed and potato salad. There was no indication of amounts consumed, just frequency of consumption. There were initially 9 frequency choices-- from never to > 4 times per week; but, the authors chose to collapse them into 5 because there were too few responses on the extremes of frequency. The five categories were (1) less than or equal to 1 times per month, (2) 2-3 times per month, (3) 1 time per week, (4) 2 times per week and (5) greater than or equal to 3 times per week. This FFQ was administered only once at baseline and ascertained potato intake over the previous year. A single FFQ administered at one point in time cannot take into account possible changes in dietary intake over those subsequent eight years. [2,3]
- **There was a lack of statistical control for key confounding variables.** The only variables that were statistically controlled for were: age, BMI, adherence to a Mediterranean diet, physical activity, depression, smoking, alcohol consumption, education, ethnicity, and "variables pertaining to physical health status" (which are not clearly defined). While these are a good start, they are certainly not an exhaustive list of all possible confounding variables (particularly related to diet) and certainly not all of the dietary and lifestyle factors that could be associated with death from "all causes." For example, the authors did not adjust for other nutrients, foods or food groups that have been shown to be associated with poor health outcomes, (and are often consumed by those who consume fried potatoes), such as saturated fat, trans fat, sodium, fast food, processed meats, sugar-sweetened beverages, etc.[4-7] Simply adjusting for adherence to a Mediterranean diet score is not adequate to adjust for these other nutritional factors and residual confounding cannot be ruled out. There is also no indication of how physical activity was measured. And, while the authors do mention controlling for "variables pertaining to health status" these were self-reported (which likely resulted in misclassification and confounding) and appeared to be limited to heart attack, heart failure, stroke, diabetes and cancer which is a very limited list of diseases/conditions that could potentially contribute to mortality. They also did not measure risk factors for disease (e.g., blood lipid levels, blood pressure, glucose tolerance, and inflammation).
- **The data fails to demonstrate a dose-response relationship.** There is no evidence of a dose-response pattern among consumers of un-fried potatoes. Furthermore, there is no monotonic trend between increasing fried potato intake and risk of total mortality. The relative risk (RR) for fried potato intake (2-3 times per month) is clearly stronger than the next category (1 per week). Residual confounding likely impacted the study results.

- **The study does not account for specific causes of death.** There is no indication of what the subjects actually died from. Without knowing the causes of death, any associations to dietary factors are meaningless. This is particularly relevant given the cohort studied, who likely suffers a higher of incidence musculoskeletal complications than the general public.

  As a cross-sectional, epidemiological study, these data can only suggest an association; they cannot show cause and effect.

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