



nederlandse zuivel organisatie

An analysis of Swedish research into the relationship between milk consumption, bone fractures and mortality

The results of two long-term studies by Swedish researchers were published on October 29, 2014 in the *British Medical Journal*. These studies attempted to determine whether or not there is a link between milk consumption and mortality risk or the incidence of bone fractures. The two studies looked at Swedish women (started at the end of the 1980s) and at Swedish men (begun in 1997) in a few regions of Sweden.

The method

The method used in these studies is essentially as follows. Using questionnaires, the researchers attempted to draw a picture of the lifestyles and eating habits of the participants. From these questionnaires, the frequency and quantity of dairy products consumed by the participants were estimated. Over a certain period of time, it was determined how many participants contracted a disease or died (from multiple causes) or broke a bone. For the women, the period was an average of 20 years, for the men 11 years. The participants were categorized by their amount of dairy consumption, and the clinical picture and/or mortality rate was established per category. At the outset of the studies, the women consumed an average of around 240 grams of milk (slightly more than 1 glass), and the men around 290 grams (1.5 glasses). The mortality rate among the women was about 25%, and 22% for the men. The women experienced more bone fractures (28%) than the men (12%).

These types of studies are sensitive to many factors that can easily be interpreted in different ways. The researchers also admitted this. In addition, the study does not answer the question as to whether or not the effect observed was caused by the variable (in this case, milk consumption), which means well-controlled studies are necessary.

What connections were found?

For the women, the relative risk of death was higher when more milk was consumed: compared to less than 1 glass (200 g), the risk was 21% for 2 glasses and 93% for 3 or more. For the men, a marginally higher risk was observed: 10% for more than 3 glasses per day.

In the men, there was no link found between milk consumption and bone fractures. The women had a 16% higher chance of bone fractures when consuming more than 3 glasses of milk per day; looking at hip fractures alone, the risk was 60%. Surprisingly, fermented dairy products like yogurt, cheese and soured milk were found to have a protective effect.



How did the researchers attempt to explain the results?

Referencing animal models for aging, the researchers suspect that galactose, which is present in lactose, is the cause behind early death. They also found indications of a possible connection between stress indicators (oxidation, infection), although this was not seen in both genders at the same levels, and an inconsistent effect was found within the fermented dairy category.

Strengths and weaknesses of the study

The study's positive points were its number of participants, its duration, and the wide distribution of milk consumption.

The study has a number of important limitations:

- the estimate of dairy consumption was done at the beginning of the study by the participants and could be inaccurate;
- lifestyle factors and/or changes (e.g. smoking) could interfere with the analysis;
- there is insufficient knowledge of the types of physical activities (important to bone strength) practiced among the groups;
- before 2006, Swedish milk was enriched with vitamin A; consuming too much vitamin A can possibly increase the risk of fractures. The question is how representative of other populations the results of this Swedish cohort are;
- the researchers pay too little attention to the fact that fermented dairy can still have relatively high levels of lactose, and therefore galactose; according to the analysis, these fermented products would have a protective effect;
- the translation of the effects of galactose in animal models to the human situation is speculative;
- there could be reverse causality here, meaning that women who know they have a higher risk of osteoporosis drink more dairy for its calcium content, thus thinking that they are preventing bone fractures. The research cannot discount this as the reason behind their results.

Conclusion

This study must be seen in light of previous studies which conclude that there is no association between milk and dairy and mortality. The study provides insufficient basis to change the current recommendations for milk consumption, e.g. milk as a source of nutrients important for bone health.