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## Sabine Rohrmann discusses the link between eating processed meat and early death risk

Posted by Biome on 23rd May 2013 - [5 Comments](#)



Processed meat has been on the watch list of health advisers and campaign groups for a long time. Results from the European Prospective Investigation into Cancer and Nutrition (EPIC) [study published in \*BMC Medicine\*](#) now clearly show that people who eat a lot of processed meat are at greater risk of an early death. EPIC is the one of the largest studies on diet and health that has ever been carried out, and involves over half a million people in ten European countries. The findings have attracted a great deal of media attention, including TV and radio news, and *The Guardian* conducted a [poll of their readers](#) to ask whether people would cut down on eating sausages and burgers as a result of the new data. 47% voted that they were put off, while 53% said they would not change their habits. Here we talk to Sabine Rohrmann (University of Zurich), lead author of the meat and mortality study, about their findings.

### 1. What is EPIC, and how do the results of this study build on other results obtained from EPIC investigations?

EPIC is a large European cohort study that is being conducted in 10 European countries that recruited more than 500,000 participants between 1992 and 2000 (depending on the study center), and these participants were followed-up over time. The main aim of EPIC is to investigate the relationships between dietary and lifestyle factors and the risk of cancer as well as cause of mortality. The prospective nature of the EPIC study makes it possible to investigate the occurrence and etiology of other chronic diseases such as diabetes (within the so-called 'InterAct' project) or cardiovascular disease (within the 'EPIC-Heart' project). In the study we published in [BMC Medicine](#), factors associated with premature deaths were evaluated.

In EPIC, we have previously reported that eating a large amount of processed and red meat was associated with an increased risk of colorectal (J Natl Cancer Inst. 2005, 97:906-916) and gastric non-cardiac cancers (J Natl Cancer Inst. 2006, 98:345-354). More recently, an analysis carried out within the InterAct project

showed that high consumption of total and red meat was linked to an increased risk of diabetes mellitus (Diabetologia 2013, 56:47-59). Thus, our evidence on mortality is consistent with previous observations in our study as well as others studies and supports the role of processed meat consumption in the etiology of some chronic diseases.

**2. Your results show an association between the consumption of processed meat – but not red meat – and premature mortality risk. Studies in America find a similar association with red meat consumption. Can you explain this discrepancy in findings?**

One explanation for these differing associations might be due to differences in meat classification. For example, in a study by Sinha and colleagues (Arch Intern Med. 2009, 169:562-571) ‘red meat’ also included processed meat made from red meat such as bacon, hamburgers and so on. In contrast, in our study ‘red meat’ includes only unprocessed red meat. Additionally, compared to European habits, in the US red meat is often grilled or barbecued, thus leading to higher contents of heterocyclic amines and polycyclic hydrocarbons.

**3. How were confounding factors (such as other lifestyle choices) controlled for in the investigation?**

In our analysis, potential confounders such as age, recruitment center, smoking habits and indicators of socio-economic status were included in the statistical models. In this way, the component of meat/mortality association that originates from correlation between meat intake and potential confounding factors is removed. More, in a stratified analysis, we examined whether associations were different in subgroups of our study population. This revealed the presence of an association between processed meat consumption and mortality in current and former smokers but not in people who have never smoked. This means that in our study the association might be the result of residual confounding by smoking, which was not fully eliminated through the inclusion of variables on smoking habits in our models.

**4. Where do you think this research is going next?**

A relationship between processed and red meat consumption and mortality, as well as incident diseases like cancer and heart disease, has been consistently observed in several large cohort studies. A further key step will be to know more about the underlying causes of these associations. The intake of saturated fat, the addition of salt or nitrite and nitrate to meat products, or different practices of meat preparation and/or processing, such as smoking, but also grilling and barbecuing, could explain part of the observed associations. More research is needed to explore all these elements in more in detail, and also to investigate the interactions between different foods.

**5. Do you think the results of your study, together with the wide media coverage, will influence people’s dietary choices?**

Our study is one of several showing an association between processed meat consumption and mortality, but the evidence is not entirely conclusive. With more evidence accumulating, summary evaluations of available literature, such as the one conducted by the World Cancer Research Fund for diet, obesity and cancer, will allow for more complete assessments of these associations. This will ultimately contribute to developing appropriate public health recommendations.

**6. Do you think publishing in an open-access journal helped to increase the coverage your publication received?**

Open-access journals make scientific publications accessible to a broader audience, providing the opportunity to read the original research, beyond the information provided by the media. It remains an open question how many of the journalists, scientists and policy makers take the time and to read the original manuscript.

[More about the author\(s\)](#)

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Sabine Rohrmann is Head of the Department of Epidemiology and Prevention of Cancer at the University of Zurich, where she has worked since 2010. She has over 10 years of experience in clinical epidemiology, and is currently one of the leading scientists contributing to the European Prospective Investigation into Cancer and Nutrition (EPIC) study in association with the German Cancer Research Center, Heidelberg.

Research article



[\*\*Meat consumption and mortality - results from the European Prospective Investigation into Cancer and Nutrition\*\*](#)

Rohrmann S, Overvad K, Bueno-de-Mesquita HB, Jakobsen MU, Egeberg R, Tjønneland A, Nailler L, Boutron-Ruault MC *et al.*

*BMC Medicine* 2013, 11:63

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Great article. It is true that processed Meat is dangerous. Atherosclerosis is My greatest fear

- *crizaldo*

No doubt...Great Article

- *Dr Martín Varela Vindas MD PhD*

The real common factor is the obesity.Mortality in 2 groups,with and without obesity.Best regards.Dr Martin [Varela-Vindas.docmartinvarela@yahoo.com](mailto:Varela-Vindas.docmartinvarela@yahoo.com)

- *mdicarlo*