

Researchers identify association between reproductive factors and risk of death

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Reproductive factors in women, such as a later starting age of menstruation, having children, breastfeeding and use of oral contraceptives, are associated with a reduced risk of death, according to research published in the open access journal *BMC Medicine*. A better understanding of how these factors can influence long-term health could help in the development of clinical strategies to improve women's health.

Previous studies have looked at individual [reproductive factors](#) and their associated risk of all-cause [death](#) and disease-specific deaths. However, as these factors are intricately linked, several reproductive characteristics have now been investigated together in relation to risk of all-cause death as well as death from cancer and circulatory system diseases.

Researchers analyzed data from 322,972 women from 10 countries that participated in the observational European Prospective Investigation into Cancer and Nutrition (EPIC) cohort study. At the start of the study, participants completed questionnaires and interviews about diet, lifestyle characteristics and medical history to capture baseline characteristics. Each woman was followed for an average of 12.9 years. In this time there were 14,383 deaths overall, this included 5,938 deaths from cancer and 2,404 deaths from circulatory system diseases.

It was found that women who gave birth early (aged 20 years or less) or later in life (aged 31 years or more) had a higher risk of death compared to those who gave birth when aged 26 to 30 years old. It was also found

that there was a [reduced risk](#) of death in women who had breastfed compared to those who did not. As this study was observational it was not possible to conclude that these factors were the reason that risk was reduced.

Women that started menstruating at age 15 or older had a reduction in risk of death compared to those that started when they were less than 12 years old. A reduced risk of death was also seen in women who had ever taken oral contraceptives if they had never smoked or were former smokers.

The risk of death from cancer was lower in women who had given birth compared to those that had not. Among women who had given birth, there was a lower risk of death in women that gave birth to two or three children in comparison to those who had one. Women that had ever taken oral contraceptives who were never or former smokers had a reduced risk of dying from cancer compared to those that had not.

When looking at risk of death from circulatory diseases, it was found that the following characteristics were associated with a reduction in risk: having given birth, breastfeeding, and starting menstruation at age of 15 or older compared to those that started when they were less than 12 years old. A sub-analysis found a link between women that have given birth and breastfed and a reduced risk of death from ischemic heart disease.

Lead author, Melissa Merritt from Imperial College London, says: "We observed, after controlling for other factors known to influence risk of death - such as body mass index, smoking habits and physical activity levels - that several reproductive factors were associated with a significantly lower risk of death. Many of these associations were also apparent when we considered cause-specific deaths from total cancer and [ischemic heart disease](#). These common reproductive factors may

influence the long-term health of women."

The researchers suggest that hormonal mechanisms may explain the association of a reduced risk of death with breastfeeding, having given birth and using [oral contraceptives](#), as these factors are associated with changes in hormone levels. Due to the observational nature of this study, however, it is not possible to conclude that these various reproductive factors are the cause of the reduction in risk that has been seen. Further studies are needed to confirm these findings and clarify the mechanisms that link these risks, which could then help in the development of new strategies to improve the long-term health of [women](#).

More information: Melissa A. Merritt et al. Reproductive factors and risk of mortality in the European Prospective Investigation into Cancer and Nutrition; a cohort study, *BMC Medicine* (2015). [DOI: 10.1186/s12916-015-0484-3](#)

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