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Cite this article: Helle S, Lummaa V. 2013 A trade-off between having many sons and shorter maternal post-reproductive survival in pre-industrial Finland. Biol Lett 9: 20130034. http://dx.doi.org/10.1098/rsbl.2013.0034

Received: 14 January 2013
Accepted: 4 February 2013

Subject Areas:
evolution, health and disease and epidemiology

Keywords:
cost of reproduction, disposable soma, longevity, sex ratio

Author for correspondence:

Evolutionary biology

A trade-off between having many sons and shorter maternal post-reproductive survival in pre-industrial Finland

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A bias in reproduction towards sons, which are energetically more costly than daughters, has been suggested to shorten parental lifespan, but previous results have been mixed. Reproductive costs should be most evident in low rather than high resource settings, and are not expected to be severe in men, because women pay higher direct costs of reproduction. We, therefore, used demographic data from pre-industrial Finland to investigate whether the number of sons and daughters born affected their parents' post-reproductive survival and whether this was related to parent's resource availability. Irrespective of access to resources, mothers, but not fathers, with many sons suffered from reduced post-reproductive survival, and this association decreased as mothers aged. Our results provide evidence that Finnish mothers traded long post-reproductive lifespan for giving birth to many sons.

1. Introduction

Reproduction and somatic maintenance are energetically costly, and thus a trade-off is expected between the allocation of resources to reproduction versus somatic maintenance and repair [1]. Consequently, high investment in reproduction should result in shorter lifespan. The severity of such trade-offs may, however, depend on sex, with one sex (typically females) bearing a higher energetic cost of reproduction [2] and also on resource availability, with survival costs of investing heavily in reproduction being particularly evi-