

# **The Evolutionary Demography Of The Family: A Review Of The Effects Of Kin On Child Mortality And Female Fertility Rates**

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## **Extended abstract**

Kin play an important role in most people's lives. In all societies, traditional and modern, family members interact frequently and provide support for one another. The effects of kin on demographic patterns has, however, been relatively little explored, at least until recently. Much of the current surge of interest in whether and how kin interactions affect demographic patterns stems from evolutionary research. Kin relationships form a core part of evolutionary work, since kin have a shared interest in promoting their lineage survival. Such relationships have become an area of interest in evolutionary demography because empirical research on this subject is being used to explore explanations for the evolution of human life history patterns. It has been suggested that the unusual features of human female life history – short inter-birth intervals, late start and an early end to reproduction – can be explained by the role of kin in helping mothers to raise children. For example, much research on the effects of grandmothers on reproductive outcomes stems from an interest in the evolution of menopause. One explanation for this phenomenon is the 'grandmother hypothesis', which states that menopause evolved because it benefits older women to invest in their existing children and grandchildren rather than continue to have children of their own. Empirical research, which is able to quantify the effects of kin on demographic outcomes such as child mortality and female fertility rates, is now being used to inform evolutionary models of how life history characteristics, such as menopause, evolved.

Here I review the evidence that kin have a role to play in women's reproductive lives by collating empirical research on the impact of kin on demographic outcomes. Specifically, I have collected evidence on the impact of kin on child survival, and on women's fertility patterns. Most of these data are drawn from traditional societies where fertility and mortality rates are still high enough to detect variation due to the presence or absence of kin. Many studies stem from the evolutionary literature, which largely consists of anthropological studies of small-scale traditional societies. But this evidence is supplemented by a number of studies from the demographic literature, particularly from historical demography.

The evidence for the impact of kin on child survival is clear: in almost every study which has looked for the effect of family members on child survival, at least one family member (apart from the mother) has an impact on child survival rates. Grandmothers appear to be particularly useful in improving child survival, though maternal grandmothers may be somewhat more consistently beneficial than paternal. Older sibling 'helpers-at-the-nest' also appear to improve child survival rates. Fathers have surprisingly little effect on child survival, with only a third of studies showing any beneficial effects. Other kin, such as grandfathers, uncles and aunts, do not show any consistent effects on child survival, and may occasionally even be detrimental to a child's survival chances. Overall, this review suggests that while help from kin in raising children may be a universal feature of human childrearing, who helps is dependent on ecological conditions. It also highlights that kin interactions are not always co-operative as, in a handful of cases, the presence of kin increases, rather than decreases, child mortality rates.

Research on the effects of kin on fertility outcomes is less well developed, but there are some studies which have also examined the effects of kin on women's reproductive rate and age at first birth. These studies indicate that different categories of kin play different roles

in the lives of women. Whereas a woman's own female kin (particularly her mother) seem to be often beneficial in terms of raising children successfully to adulthood, they appear to have less of an effect on her fertility. Male kin and affinal kin may be more important in affecting fertility outcomes. Mothers-in-law seem to be important for a woman's reproductive rate, by increasing her rate of giving birth. Fathers are found to have an effect on age at first birth, as their presence may lower the age at which women enter into childbearing.

While the effects of kin on child survival are likely to be brought about by direct helping behaviour from relatives, including both direct childcare and lifting some of the mother's energetic burden by helping out with domestic or subsistence tasks, fertility effects may be due to social facilitation (fathers arranging their daughters' marriages) or social pressures (on women to have many children from their in-laws). It is also worth noting that increasing a woman's reproductive rate may not necessarily be beneficial to the woman herself, as it may increase the risk of maternal depletion. Such effects from in-laws may be an attempt to increase the fitness of their own lineage, at the expense of relatively expendable daughters-in-law, who are not genetically related to them.

Overall, this review clearly demonstrates the importance of kin in affecting demographic outcomes. But it also demonstrates the variability of these effects. Different relatives affect different demographic outcomes, and the effect of different categories of kin varies between populations according to environmental conditions. It further highlights that kin interactions can be competitive as well as cooperative, because the interests of family members, while often similar, are not always in harmony. This research needs to be extended by exploring the impact of kin on demography, particularly on fertility, in a wider range of populations, so that similarities and differences in the effects of kin can be confidently identified. The next step is then to analyse this variation and explain it within an evolutionary demography framework.