

**Title:** The impact of kin on female fertility: a systematic review

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### **Abstract**

Fertility decline is still a puzzle. A recent body of work has suggested that changes in kin networks may help explain changing reproductive behaviour. As countries modernise, kin networks break down and association with non-relatives becomes more common. This reduces both the practical support available to mothers in raising children, and affects reproductive norms. A previous review demonstrated that kin, particularly maternal kin, clearly have a beneficial impact on one aspect of female reproductive behaviour: the survival of her children. This paper presents the results of a systematic review of all studies which have investigated the impact of kin on female fertility: including age at first birth, length of birth intervals, total fertility and fertility preferences. Systematic reviews have been developed to introduce rigour into the review process with the aim of making reviews transparent and replicable. The results of this review supports the hypothesis that kin are important for fertility behaviour, since the presence of kin frequently, though not universally, influences fertility. The precise effects of kin vary between categories of kin and between different environments, however. A woman's parents-in-law tend to speed up her reproductive output; whereas a woman's own parents are about equally likely to speed up and slow down her reproduction. For example, the presence of a woman's father is protective against very early childbearing (teenage pregnancy) in developed countries, but tends to result in earlier first births in developing country contexts. This review confirms that kin matter for female fertility behaviour, but that the precise nature of this influence is variable. Broadly speaking, however, the presence of kin is more likely to promote than restrict childbearing, suggesting that the loosening of kin ties associated with modernisation may be a plausible explanatory factor in the fertility decline.

### *Extended abstract*

Why fertility declines, and why it has declined to such low levels in certain parts of the world, is a puzzle. The reasons for changing fertility patterns are still not fully understood, despite the importance to social policy-makers of understanding the factors which affect population ageing and population change. A recent body of work in this area has suggested that changes in kin networks may provide part of the explanation for changing reproductive behaviour. As countries modernise, kin networks break down and association with non-relatives becomes more common. This reduces both the practical support available to mothers in raising children (which in traditional societies comes largely from relatives), and affects reproductive norms, since kin have been shown to express more pro-natal attitudes than non-kin.

This paper presents the results of a systematic review of all studies which have investigated the impact of kin on female reproductive behaviour: this includes age at first birth, reproductive rate, total fertility and fertility preferences. A previous review demonstrated that kin clearly have an impact on one aspect of female fitness: the survival of her children. This review demonstrated that in virtually all studies which have investigated this issue, the presence of at least one category of kin, apart from the mother, improved child survival rates (Sear and Mace 2008). This review also found considerable variation between populations in which kinds of kin mattered for child survival, but the most consistently beneficial kin were maternal grandmothers and elder siblings of the child. This review aims to assess the published literature on the impact of kin on female fertility outcomes, to determine whether kin are also important in affecting this aspect of female fitness. This literature on fertility

outcomes suggests that, in contrast to child survival, affinal kin may be more important in affecting female fertility.

## Background

There is a large body of literature attempting to understand why fertility has declined worldwide over the last 150 years and, recently, why fertility should have fallen to such low levels in more developed countries (MDCs: Caldwell 1982; Cleland and Wilson 1987; Turke 1989; van de Walle 1992; Pollak and Watkins 1993; Bongaarts and Watkins 1996; Kirk 1996; Mason 1997; McDonald 2000; Bulatao and Casterline 2001; Kohler *et al.* 2002; Billari *et al.* 2007). Despite the volume of this research, the reasons for fertility decline and very low fertility are still not entirely understood, though there are two influential schools of thought which argue that changing economic circumstances (which influence the costs and benefits of children) and changing social norms surrounding reproduction are perhaps the most important factors in promoting fertility decline (Cleland and Wilson 1987; Becker 1991; Robinson 1997). In recent years, a body of work has begun to emerge which suggests that changing kin networks and patterns of kin association might prove to be part of the explanation for declining fertility, since changing patterns of association between kin affects both the costs and benefits of children and reproductive norms (Turke 1989; Newson *et al.* 2005).

This kin influence hypothesis (Newson *et al.* 2005) requires empirical evidence that kin do exert a significant influence on reproductive behaviour. This empirical evidence has been steadily growing, and supports the hypothesis that changing associations with kin may have influenced both the initiation of the fertility decline, and the progression to extremely low fertility in MDCs today. The loosening of kin ties which is associated with modernization could affect economic decisions surrounding parenthood, since economic support and help with childcare are frequently provided by relatives, in both traditional and modern societies (e.g. Kohler and Hammel 2001). A number of recent studies have demonstrated that the presence of certain relatives improves child health and well-being in traditional societies (thereby suggesting relatives help out with childcare and provisioning children: e.g. Sear *et al.* 2000; Adams *et al.* 2002; Sorenson Jamison *et al.* 2002; Aubel *et al.* 2004; Hadley 2004; Beise 2005; Gibson and Mace 2005; Sear and Mace 2008; Sear *et al.* in press). Research in MDCs has also shown that kin, particularly grandparents, still have important roles to play in the lives of children, including performing childcare (Wilson 1986; Pope *et al.* 1993; Euler and Weitzel 1996; Spence *et al.* 2001; Pollet *et al.* 2006; Pollet *et al.* 2007). Kin have also been shown to influence attitudes around childbearing by transmitting information and norms which encourage certain kinds of reproductive behaviour (Axinn and Fricke 1996; Adongo *et al.* 1997; Madhavan *et al.* 2003; Newson *et al.* 2005; Wusu and Isiugo-Abanihe 2006). In particular, individuals appear to express more pro-natal attitudes to their relatives than to non-relatives (Newson *et al.* 2007). Loosening of kin ties could therefore also influence fertility decline by resulting in changes in social norms surrounding reproductive behaviour, and there are a handful of studies which have now demonstrated a direct impact of the presence of kin on female fertility rates (Nath *et al.* 2000; Sear *et al.* 2003; Tymicki 2004).

## Methods

This research aims to test this kin influence hypothesis by performing a systematic review of all the literature which has investigated the impact of kin on reproductive behaviour. This includes the impact of the presence of particular categories of kin on both fertility outcomes (total number of children born, age at first birth and the timing of subsequent births), and also on attitudes towards fertility (desired or ideal family size and the costs / benefits of having children). EPPI-Reviewer, a web application developed by EPPI-Centre at the Institute of Education, London is used to manage this systematic review. Literature reviewing, on the whole, is not a systematic process, i.e. it does not contain a methodology which can be

replicated by other researchers; it may cover only a sample of all relevant literature; and the 'results' must be taken at face value. The systematic review process has been developed in order to introduce rigour into literature reviews. Systematic reviews start with an explicit statement of the research question, and explicit inclusion and exclusion criteria for the literature to be reviewed. The process of the review is standardised, proceeding through a standard set of steps. A synthesis of results is then produced, including an assessment of the quality of the studies reviewed. A systematic review is therefore transparent, replicable, updateable and accountable (Mulrow 1994; Oakley *et al.* 2005; Petticrew and Roberts 2006).

#### *Literature not included*

There are many bodies of literature which relate to the broad topic of kin and fertility which we have not included in this review. Firstly, we restrict our analysis to fertility outcomes and preferences, so that we have not included any data on the influence of kin on other reproductive behaviours, such as contraceptive use, union formation, reproductive success (which is a composite of fertility and child survival) or non-marital births (a composite of union formation and fertility behaviour). We also exclude studies on the effects of a woman's partner. Obviously, a woman needs to have a partner at some stage during the process of producing a child, but there is a substantial body of literature on reproductive decision-making within couples, and how much influence men have over their partner's fertility decisions. This literature is also large and complex, and needs a separate review to deal with it appropriately. Similarly, we exclude data on polygyny and fertility, though again a large literature exists on this topic – co-wives are not strictly kin to the woman, and are the result of her partner's reproductive decisions. We also do not include any of the large literature on the intergenerational transmission of fertility: most of this literature correlates the size of a woman's natal family with the number of her own children. We are interested in whether women have kin around them at the time they are reproducing, rather than in childhood. Finally, we exclude the handful of studies which have investigated the impact of kin on male fertility behaviour.

#### *Literature included*

We have included all studies which have looked at the impact of named relatives directly, plus those which have used more indirect means to analyse the relationship of kin presence to fertility. The former include studies which have correlated the presence of particular family members on fertility outcomes – these family members include mothers, fathers, mothers-in-law, fathers-in-law, parents, parents-in-law, and we have termed these 'specific' kin. The latter include studies which have investigated non-specific indicators of kin presence – these include living with the extended family vs in a nuclear family (which largely reflects the presence of a woman's parents-in-law in the household); intact vs non-intact families (which correlates with the absence of the father in the household, though does not precisely map onto father presence); contact with natal kin.

The effects of kin are measured in various ways: whether the relative is still living or not, whether the relative lives with the index woman, degree of contact with kin.

Fertility outcomes include age at first birth and teenage pregnancy (which we have included as an indicator of the timing of fertility), length of birth intervals, total number of children produced, and stated fertility preferences.

We restricted our analysis to those studies which collected quantitative data and performed statistical analysis to demonstrate correlations between a kin measure(s) and fertility outcome(s). Qualitative studies and those which presented only descriptive data are therefore excluded.

Only published material, excluding abstracts and conference proceedings, were included.

## Results & Conclusion

85 studies were found which correlated some measure of kin presence with a fertility outcome. Tables 1 and 2 show the percentage of these studies in which the presence of kin had a pro-natal, anti-natal or no effect on fertility (pro-natal is defined as an increase in total fertility or fertility preferences, shorter birth intervals or earlier age at first birth; anti-natal as a decrease in fertility or fertility preferences, longer birth intervals or later age at first birth). Table 1 shows the results for studies which looked at the presence of specific kin; table 2 the results for studies which looked at non-specific measures of kin presence. These tables show that the presence of kin is frequently, though not always, associated with a change in fertility. This influence is more likely to be a pro-natal effect than an anti-natal effect, though this does vary between categories of kin. A woman's in-laws (her husband's parents) are much more likely to be associated with pro- than anti-natal influence; her own parents are about as equally likely to increase and decrease her fertility.

The literature on the impact of kin on fertility outcomes needs careful interpretation. While the improvement of child survival is an unambiguous sign of a beneficial effect on a woman's fitness, influences on fertility outcomes may not have the overall effect of increasing her reproductive success. Increasing a woman's reproductive rate, for example, is not necessarily in her interests. Given the high physiological costs of reproduction for women, they must carefully allocate their energetic investment over their entire reproductive lives in order to produce the most surviving offspring. This may involve timing their reproductive bouts carefully, in order to avoid maternal depletion. This may explain why affinal kin (i.e. the husband's relatives) appear to be more likely to influence fertility outcomes than the woman's own kin, at least in conditions of resource scarcity. Since affinal kin are not genetically related to the woman, her own health and well-being is of secondary importance to the reproductive success of her husband.

Overall, this study provides support for the hypothesis that kin influence fertility, and that the loosening of kin ties associated with modernisation may be a plausible factor in explaining the fertility decline which occurred alongside modernisation.

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Table 1: studies which include measures of specific kin availability – percentage in which the presence of kin is correlated with an increase in fertility (pro-natal) a decrease in fertility (anti-natal) or no effect (none)

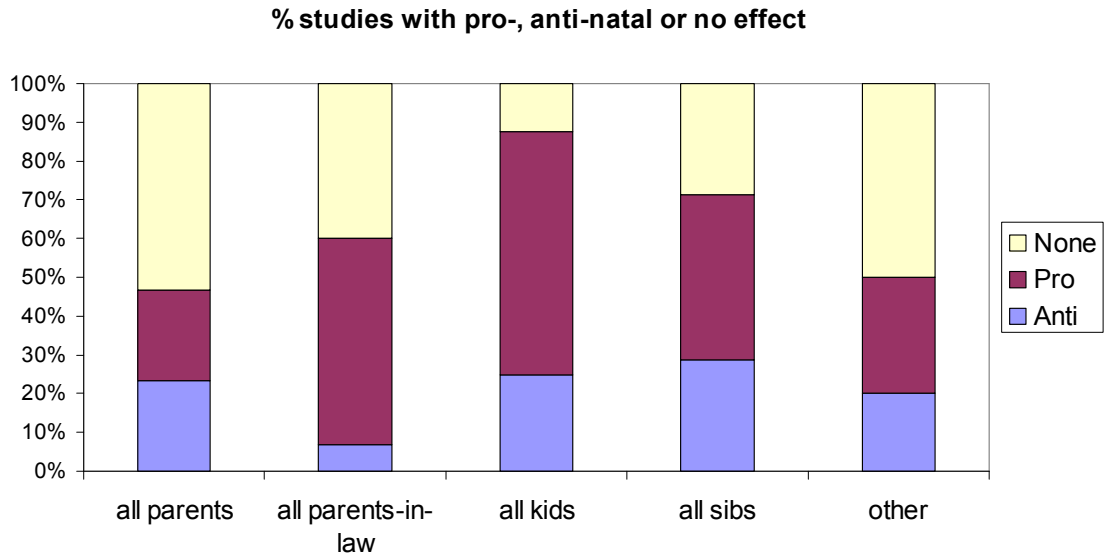


Table 2: studies which include non-specific measures of kin influence (living in extended versus nuclear family; contact with natal kin; living in intact versus disrupted family; all other studies) – percentage in which the presence of kin is correlated with an increase in fertility (pro-natal) a decrease in fertility (anti-natal) or no effect (none)

