Intergenerational Influences on Fertility in Thailand

Introduction

Human reproduction is unique compared to our closest living relatives because of short birth intervals and an extended period of offspring dependence, which leads to multiple dependent offspring of differing ages (Kramer, 2005). While non-human primates typically do not begin another bout of reproduction until the previous offspring is an independent food producer, human females supplement the needs of many offspring. To support many dependent offspring, humans may cooperatively breed, allowing females to receive help from other individuals (Hrdy, 1999). Evidence suggests that helpers include fathers (Lovejoy, 1981; Kaplan et al., 2000), grandparents (Sear et al., 2003; Tymicki, 2004), older siblings (Kramer, 2005) and other kin (reviewed by Sear & Mace, 2008). This help may allow human females to have shorter birth intervals than would be otherwise predicted given offspring's long period of dependence on adults (Hawkes et al., 1998).

In natural fertility populations, alloparents may have been critically important in allowing parents to obtain the necessary calories and care required for their growing brood of children. In modern populations, there is evidence that kin may still play an important role in fertility decisions, even though fertility can be controlled by contraceptives and the timing of births can be chosen based on individual circumstances. A number of recent studies have demonstrated that the presence of certain relatives improves child health and well-being in traditional societies, which suggests that relatives help out with childcare and provisioning children (reviewed in Sear and Mace, 2008). Research in more developed countries has also shown that kin, particularly grandparents, still have important roles to play in the lives of children, including performing childcare (reviewed in Coall and Hertwig, 2010). Kin have also been shown to influence attitudes around childbearing by transmitting information and norms, which encourage certain kinds of reproductive behavior (Axinn and Fricke 1996; Adongo et al. 1997; Madhavan et al. 2003; Newson et al. 2005). In particular, individuals appear to express more pro-natal attitudes to their relatives than to non-relatives (Newson et al. 2007).

Hypotheses

The goal of this paper is to ask two questions. First, how do kin influence fertility in Thailand? Second, which factors may mediate the effect of kin influence on fertility? There are three hypotheses that may explain the pathways by which kin influence fertility in Thailand.

Hypothesis 1: Kin reduce the costs of reproduction

In many societies today, childcare is incompatible with work. Women either need to find someone to care for their children while they work (which may involve high costs) or they need to give up their job. When kin members provide childcare, women may be able to achieve higher fertility (Bereczkei, 1998; Thompson, 1965). Alternatively, having additional resources may allow a woman to forgo employment and focus on providing childcare for her offspring. In Ethiopia, evidence shows that mothers visit their daughters homes and relieve them of strenuous household labor (Gibson & Mace, 2005). When women have the opportunity to focus on childcare it may allow women to lengthen breastfeeding duration. Additional resources may improve the health of offspring. In food stressed environments, additional resources can lead to beneficial effects on child weight, height, and health. Evidence has shown that maternal grandmothers may have a beneficial effect on child height (Gibson & Mace, 2005) and improve nutrient intake (Sharma & Kanani, 2006). Grandmothers have also been show to play a vital role in recognizing illness and ensuring medical treatment (Douglass et al., 2007).

Hypothesis 2: Kin influence contraceptive uptake

If kin influence fertility outcomes in non-natural fertility populations, it is likely to be mediated through the contraceptive use. In Gambia, there was no evidence that living with parents or in-laws had a significant effect on contraceptive use (Mace & Colleran, 2009). Among the Pimbwe, there was no influence of patrilineal kin on use of contraceptives and a slight effect of siblings in increasing the likelihood of using contraceptives (Borgerhoff Mulder, 2009).

Hypothesis 3: Individuals can marry at a younger age if they live with family postnuptially

Age at marriage has a direct effect on fertility if there is little sexual activity outside of marriage. Individuals in pre-industrial western Europe reduced fertility by delaying marriage and in turn, age at first birth for both men and women, which had the direct effect of reducing the number of years that women could conceive (Coale, 1986). If couples need the funds to set up their own household, it may delay marriage and in societies where reproduction is rare outside of marriage, it likely delays reproduction. Following Morgan and Rindfuss (1984), residence decisions are expected to casually influence age at marriage, since the type of postmarital residence will influence when an individual can get married. Research shows that patrilocal postnuptial residence is associated with an earlier age at first marriage as compared with matrilocal or neolocal residences (Morgan & Rindfuss, 1984).

Methods

Data are derived from the Thailand Demographic and Health Survey (DHS), a nationally representative household survey which includes data on a wide range of areas including fertility, health and contraceptive use. The U.S. Agency for International Development (USAID) funds the Monitoring and Evaluation to Assess and Use Results Demographic and Health Surveys (MEASURE DHS) (www.measuredhs.com). Interviews were conducted in 1987 on 6,775 ever-married women between 15 and 49 years old. The Thailand dataset contains supplemental questions related to postmarital residence that are not asked in the standard DHS questionnaire. Kin influence is measured by the number of years a woman lived with either her parents or her in-laws following marriage.

Several different statistical methods were used to determine if and how kin influence fertility in Thailand. Discrete time event history analysis was used to test the relationship between postnuptial residence and the likelihood of progressing to each birth. Multilevel modeling was used to test the effects of residence with kin on offspring survivorship (Rasbash et al., 2011). A Cox proportional hazard model was used to analyze breastfeeding duration. Multivariate analyses were conducted to analyze offspring weight/height, respondent's BMI, and age at marriage. Logistic regression was used to analyze binary dependent variables, such as whether a respondent worked after marriage, recent offspring illness, and treatment of such illness. Ordinal logistic regression was used to model the number of children born before the start of contraceptive use. Finally, structural equation modeling (SEM) was conducted (AMOS v.19) to model wealth (as measured by multiple indicators) and estimate the direct and indirect effects of kin availability, proximate mechanisms and control variables on fertility outcomes (Kline, 2005).

Results

Do kin influence fertility in transitioning Thailand?

Living patrilocally significantly increases the likelihood of progressing to first, second, third and marginally, fourth and higher births. This means that respondents are more likely to have children when living with paternal kin and therefore have, on average, shorter birth intervals. In contrast, living matrilocally has no significant

impact on progression to any birth other than the first. Living matrilocally or patrilocally has no significant effect on offspring mortality.

How do kin influence fertility in Thailand?

Hypothesis 1: Kin reduce the costs of reproduction

Living with kin may allow a woman to reduce the time spent working and provide her the opportunity to spend more time with her children in direct childcare. Analyses show that after controlling for education and region, women who lived with kin after marriage (both maternal and paternal kin) were less likely to be employed. There is also marginal evidence that women who live with paternal kin terminate breastfeeding more rapidly than they do when living with maternal kin or neolocally. While kin may influence the available resources for grandoffspring, there is no significant difference in living with kin on the height and weight of interviewee's children, the likelihood of recently having an intestinal illness, or the rate of being treated for such an illness. Additionally, there is no significant difference in weight (or likelihood of being underweight) for women living with or without kin.

Hypothesis 2: Kin influence contraceptive uptake

An ordinal logistic regression analysis was conducted to determine if postnuptial residence has a significant effect on when women began using contraceptives. The dependent variable is an ordinal variable representing how many children a woman had when she began using contraceptives censored at 4 (for women who began contraceptives after more than 4 children) and those women never using contraceptives being represented as 5. The results show that living with kin for less than five years is not significantly different than living neolocally on the number of children born before the start of contraceptives. For individuals living with kin more than 5 years, living with maternal kin has a marginal effect ($p < 0.08$) and living with paternal kin has a significant effect (0.03). Women have a higher likelihood of having more children before contraceptive use begins if they live with kin for more than 5 years and are less likely to use contraceptives before their first child is born.

Hypothesis 3: Individuals can marry at a younger age if they live with family postnuptially

Conducting a t-test, individuals who choose a neolocal postnuptial residence pattern have a significantly older average age of first marriage compared with both matrilocal ($t_{5049}=10.474$, $p<0.001$) and patrilocal ($t_{4044}=10.302$, $p < 0.001$) residence patterns. The difference between the groups is approximately one year, with individuals in a neolocal residence pattern marrying at an average age of 20.57, while those in patrilocal and matrilocal residence marrying at an average age of 19.22 and 19.37 years old, respectively.

Complete model

A structural equation model was developed to test potential pathways of kin influence on fertility. The model shows that living patrilocally increases fertility by shortening time from marriage to first birth, and decreasing average birth intervals. These effects are mediated through correlations between paternal residence and lower age at marriage, and delayed contraceptive use. Living matrilocally also reduces age at marriage and shortens time from marriage to first birth, but has no effect on overall number of children born. This suggests that paternal kin do not influence just one part of the fertility pathway, but have influence throughout the causal pathway, resulting in overall higher levels of fertility.

Conclusion

This research shows that in this population living with paternal kin (particularly for more than five years) has a positive effect on total children born and living children, while living with maternal kin has no significant effect on number of living children. These effects are mediated through correlations between paternal residence and lower age at marriage, and delayed contraceptive use.

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