

# Kinship Networks and Contraceptive Choice In Nang Rong, Thailand

By Jenny Godley

**Context:** *The cultural determinants of contraceptive choice are usually poorly measured, and the mechanisms through which they operate to influence individual behavior are often inadequately understood.*

**Methods:** *Data from a 1994 household survey in 51 villages in Nang Rong, a rural district in northeastern Thailand, and a village survey in all villages in the district were used to examine the effects of kinship networks on women's contraceptive choice and the mechanisms through which kinship networks affect contraceptive choice. Multinomial regression analysis was conducted on a sample of 1,563 nonsterilized, nonpregnant women aged 18–35 who had been married 10 years or less, and microsimulations were performed to illustrate the results of varying numbers and types of kinship ties on contraceptive use levels.*

**Results:** *Extended kinship ties affect contraceptive choice. The more external kinship ties households have, the more likely women in those households are to use modern forms of temporary contraception. For example, if all households in a village had no kinship ties with other households in the village, 35% of women would use the injectable and 33% no method; in contrast, if all households had five extended kinship ties with other households in the village, 41% of women would use the injectable and 25% no method. Extended kinship ties outside the village also affect contraceptive use: If all households had only two extended kinship ties outside the village, 28% would use the pill, 36% the injectable and 33% no method, whereas if all households had eight such ties, 33% would use the pill, 38% the injectable and 27% no method. Village-level patterns of extended kinship ties also affect contraceptive choice. If all villages were to average just one extended kinship tie outside the village per household, 23% of women would use the pill, 26% the injectable and 43% no method, while if all villages averaged three such ties per household, 31% of women would use the pill, 38% the injectable and just 28% no method.*

**Conclusions:** *Kinship ties at both the household and the village level affect contraceptive choice. Policymakers and program planners should be aware of the effects of patterns of migration and subsequent networks of extended kin on the distribution of information about and the acceptance of modern forms of contraception.*

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A challenge for current work on contraceptive choice is to understand cultural effects. While demographers have produced increasingly refined microeconomic models of contraceptive choice, these models often are incomplete. Much of the variation in contraceptive choice remains unexplained. Cultural and ideational factors often are not measured in microeconomic models; such factors may operate both at the individual and at the community level to influence contraceptive choice.

Theoretical insights into the significance of community, along with methodological advances in statistical techniques, have led

to the development of multilevel models of contraceptive choice. Researchers are now able to capture some of the variation in the effects of individual-level variables across communities.<sup>1</sup> However, much of this work still relies on economic assumptions. Community-level characteristics are hypothesized to affect the costs and benefits of different contraceptive methods, but there are no analyses of cultural effects on contraceptive use.<sup>2</sup> Alternatively, local context may be thought of in an anthropological sense, with community-level characteristics representing the local norms, values and cultures that surround and thereby influence fertility behavior.<sup>3</sup>

To understand the mechanisms through which individuals are affected by local culture and their social surroundings, researchers analyzing contraceptive choice have begun to incorporate social network analysis into their work.<sup>4</sup> It is a tool developed by sociologists to measure an individual's direct and indirect connections to others and thus to locate individuals within the structure of local social relations. Network analysts examine many different kinds of relationships, including friendship and kinship ties, and assess the impact of these relationships on individual behavior.<sup>5</sup> Decisions about contraceptive behavior, for example, are not made by isolated individuals (or even by isolated couples); these individuals are embedded within multiple networks of relations with other people.

Most of the sociological literature that examines the effects of social networks on fertility behavior suggests that networks influence behavior through interpersonal communication. One body of demographic research focuses on the role of social networks in encouraging behavioral conformity within small local communities. Ethnographic research in The Gambia and Thailand, for example, demonstrates that community members—both relations (kin) and those who are unrelat-

Jenny Godley is a doctoral student in the Department of Sociology and a predoctoral trainee at the Carolina Population Center, University of North Carolina, Chapel Hill, NC, USA. The author would like to acknowledge the contributions and assistance of colleagues from the Institute for Population and Social Research at Mahidol University, Thailand, and from the Carolina Population Center at the University of North Carolina at Chapel Hill. In particular, thanks to Barbara Entwisle, Ronald R. Rindfuss and Katherine Faust for comments on earlier drafts of this paper, and thanks to Richard O'Hara and Erika Stone for technical assistance. Support for this research came from National Institute of Child Health and Human Development Grant R01 HD25482, and from a William N. Reynolds Fellowship at the University of North Carolina, Chapel Hill.

ed (nonkin)—influence behavioral norms surrounding both contraceptive use and discontinuation.<sup>6</sup> Social networks thus are seen as conservative cultural forces that transmit values and reinforce norms through interpersonal communication.

A second body of work addresses the role of social networks in the diffusion of information on contraception. Most of this research focuses on the role of social networks in encouraging the spread of new information about family planning and the adoption of new methods of contraception. Many diffusion researchers incorporate social network concepts into their analyses in an attempt to measure directly the channels of communication through which innovations are spread.<sup>7</sup> One of the earliest family planning programs, implemented in Taiwan in the early 1960s, contained a field experiment to test the diffusion of family planning ideas. Results indicated that interpersonal communication was an important factor contributing to the diffusion of family planning within Taiwanese townships.<sup>8</sup>

Since the 1960s, research on the diffusion of information about contraceptives has been conducted as part of the evaluation of family planning programs.<sup>9</sup> In many areas of the world, preexisting social groups have successfully disseminated information about new methods of contraception; for example, women's groups have helped spread such information in Cameroon,<sup>10</sup> as have peer and family groups in Bangladesh.<sup>11</sup> However, the biggest flaw of most of these studies is that they contain information on only limited, select networks (such as women's groups), which may be selective with regard to behavioral innovation. Women participating in women's groups, for example, may be predisposed to use new contraceptive methods. Therefore, it is not clear whether these groups are actually influencing behavior.

Thus, while there is a growing consensus among demographers that including measures of social networks may improve models of contraceptive choice, there is little agreement about which networks matter, how they operate or how to measure their effects. Researchers tend to assume that networks both encourage behavioral conformity and facilitate the diffusion of new information, but often they can test only one of these assumptions with their data. Studies of the effects of interpersonal communication on contraceptive use often fail to account for other informational networks (such as those involving medical practitioners) that may affect choice.<sup>12</sup> Fur-

thermore, many of these studies ignore the cultural and historical meanings attached to a given contraceptive method.

Here, a unique data set is used to examine the direct and indirect effects of social networks (specifically, networks of extended kin, measured through sibling connections among households) on contraceptive choice at both the individual and the community level. The hypothesis is that networks of extended kin operate to influence contraceptive choice both through interpersonal communication and through the structuring of local culture.

### The Thai Context

In the past, Thai villages were fairly tightly bounded social communities. Traditional village life was relatively isolated, generating a common community culture and encouraging behavioral conformity.<sup>13</sup> Over the past 30 years, though, rapidly changing economic and technological conditions have led to increased circulation of people, goods and ideas. Many villagers now migrate for education, commerce and labor. Through remittances and upon their return, these migrants may introduce new information, ideas and behaviors to their local communities. Although Thai villages still function as important social units,<sup>14</sup> many observers of Thailand see a cultural transition taking place in Thai villages as residents increase contact with the "modern" world beyond village boundaries through migration and television.<sup>15</sup>

Despite increased rural-to-urban migration, the extended family remains important in rural Thailand. Villages are bound together through extended kinship relations, as adult siblings of both sexes often remain in the same village as their parents and maintain close contact with each other.<sup>16</sup> Extended kinship relations among households, particularly among those containing siblings and siblings-in-law, remain a key aspect of the social context of villages.<sup>17</sup> Women especially rely on kin for advice and support.<sup>18</sup> Relations with extended kin who live outside the village are also important.

Thailand is a particularly interesting country within which to examine contraceptive choice. It is in the last phase of the demographic transition, and most urban and rural Thai women report using modern methods of contraception. In rural areas, practicing contraception is considered "modern" and is seen as a sign of progress. During the 1970s and 1980s, the main proximate factor leading to the sustained fertility decline in Thailand was the

rapid increase in contraceptive prevalence.<sup>19</sup> Thailand's national family planning program is extensive, and contraceptive methods are distributed throughout rural communities.

Sterilization is a popular form of contraception for women who have finished childbearing. At earlier stages of their reproductive careers, though, Thai women often use temporary methods to space or limit births. Women in Thailand using temporary methods of contraception have two historically popular methods (the pill and the IUD) and one newly introduced method (the injectable) from which to choose.\* The social pressures that affect choice operate differently for various methods. We can hypothesize about the mechanisms through which social networks have an impact on contraceptive choice by examining which methods are affected.

Recent analyses of contraceptive choice in Thailand have focused on method mix and on the effects of local context on method choice. In 1984, 54% of married women aged 15–49 in Nang Rong, a small district in northeastern Thailand, reported using a modern method of contraception. Interestingly, researchers found a significant homogeneity of contraceptive choice within villages.<sup>20</sup> While individual attributes (such as age and education) explained much of the variation in temporary method choice among women in Nang Rong, local conversational networks also appeared to play an important role in women's choices.

Researchers have hypothesized that these village patterns may reflect a propensity toward conformity of behavior within villages. During qualitative field work conducted in 1991, focus-group research confirmed that women did indeed discuss contraceptive decisions.<sup>21</sup> Discussions about contraception among women were extremely common, and tended to be confined to groups of intimates within the village. Thus, researchers concluded that the process of information acquisition based on local conversational networks encouraged village women to adhere to historically popular patterns of contraceptive use.

By 1994, 73% of married women of reproductive age (15–49) in Nang Rong were using modern methods of contraception. Although the prevalence of female sterilization increased over the decade, the largest increases occurred for

\*The condom, withdrawal and other methods are also available, but only 47 women reported use of these methods in 1994.

temporary contraceptive methods. In 1994, 46% of married women of reproductive age (64% of all contraceptive users) were using temporary methods. Village-level patterns of contraceptive use had lost some of their distinguishing features by 1994. One possible explanation why women within each village used a greater variety of methods is that information about modern forms of contraception (including the injectable) had become more widely available by 1994.<sup>22</sup>

Interestingly, patterns of choice within villages in 1994 remained correlated with 1984 village-level patterns. This finding suggests that even though a more diverse array of contraceptive options was available in 1994, there still may be a tendency to choose historically popular temporary methods of contraception. Although more information about different methods of contraception is available throughout Nang Rong now than in the 1980s, internal tendencies to behavioral conformity may still function in certain villages. This article examines the role that networks of extended kin may play in encouraging such conformity.

## Methodology

### Data

The effects of social networks on contraceptive behavior are examined here using 1994 data on contraceptive choice in Nang Rong. The data come from a collection of ongoing research surveys of social, economic and environmental change in Nang Rong. In 1994, the Institute for Population and Social Research of Mahidol University collaborated with the Carolina Population Center of the University of North Carolina at Chapel Hill on a household survey in 51 villages in Nang Rong and a survey in all villages in the district (310).<sup>\*</sup> These data have been collected in what has historically been the least-developed part of Thailand, and one that has seen the most rapid social and economic changes over the past 20 years.<sup>23</sup> Two unique aspects of the data are particularly important for this analysis: the availability of complete sibling network data in all sampled vil-

lages in 1994, and the availability of contraceptive choice data for all eligible women.

### Sample

The dependent variable of interest for this analysis is a cross-sectional measure of women's choice as reported at the time of the 1994 survey. The independent variables of interest (social ties to siblings) were also measured during the household survey in 1994. The focus here is on women married 10 years or less, and thus in the early stages of family formation.<sup>†</sup> These women tend to use temporary methods of contraception to space or limit births; the analysis, therefore, examines only choice of a temporary contraceptive. Pregnant women are also excluded from the analysis, as they are not currently making contraceptive decisions. The sample is limited to recently married women aged 18–35, as these are women for whom we have both contraceptive and sibling data.

There were 1,563 recently married, non-sterilized, nonpregnant women aged 18–35 in the 1994 sample. Of these women, 31% (479) had chosen the pill, 3% (47) the IUD and 37% (580) the injectable; 29% (457) were not practicing contraception.

### Kinship Network Measures

Researchers collected comprehensive data on adult sibling ties for all households in the sample villages in Nang Rong in 1994. Within each household, for all individuals aged 18–35, interviewers gathered data on siblings residing in the same household, and on the residence, age and gender of each sibling not living in the household. These thorough data enable researchers to examine several aspects of adult kinship ties. First, sibling connections between all individuals in the household and all other households in the village can be evaluated. Second, connections from households to places outside the village (to other villages in Nang Rong and to other districts and provinces in Thailand, for example) can be examined. Finally, the structure of the kinship network within each village, including the di-

rect and indirect connections between households, can be explored.

The focus in this article is on all sibling ties within each household, not just on the sibling ties of the focal women in the sample. Examined from this angle, each sibling tie links an entire household to another entire household. Sibling ties are thus used to construct household networks of extended kin. Extended kinship network ties between households can then be examined both as properties of individual households and as aggregate properties of villages.<sup>‡</sup>

### Household and Village Measures

Two separate sets of variables are used to examine kinship ties: household ties; and aggregate measures of average household ties within villages (Table 1).<sup>§</sup>

The upper section of Table 1 describes the measures of household kinship ties. On average, sample households have 10.1 sibling ties. This household total may seem high for a country in the final stage of the demographic transition; however, it is important to remember that Thailand's fertility has declined rapidly over the past 20 years. While most adults of childbearing age in Thailand today may plan to have no more than two children, their parents generally had far higher fertility rates. In the context of improved mortality, many of the previous generation survived to adulthood. Thus, households containing 18–35-year-old adults in 1994 can be expected to have a high number of sibling ties.

The upper panel of Table 1 also breaks down the sample's sibling connections by residence. It is still common for some adult siblings to live together (2.4 on average), even though all of the sample households contained married couples. Most of the sample's siblings, however, lived outside the household. On average, two siblings resided within the same village as the respondent's household, two lived in other villages in Nang Rong and three were in other provinces. (Only a few households had siblings residing in other districts.)

Geographically, these designations represent increasingly distant locations. The

\*The 1994 survey is a follow-up to a 1984 household survey conducted by the Institute for Population and Social Research of Mahidol University. By 1994, some of the original 51 villages had been divided into more than one village for administrative purposes. For this analysis, the original 51 village boundaries have been maintained.

†Sensitivity tests were conducted using lengths of marriage from three to 10 years; results are not sensitive to the choice of 10 years or less to represent "recently married."

‡Unfortunately, the data do not contain comprehensive information on the contraceptive use of all women

in every household, and there is no information on contraceptive use in households outside the sample villages. Thus, it is not possible to examine directly the contraceptive use patterns of all women in an extended kinship network.

§The intensive data collection during the 1994 survey yielded complete information on sibling ties within each of the survey villages. This complete census of household kinship connections permitted the examination of the overall structure of the kinship network within each of the 51 villages. Using sibling data from the household

questionnaire, sociomatrices were produced showing the interrelationships of all households within each village through sibling ties. The sociomatrices were used to examine the interconnectedness of all households in each of the villages. Analyses were done using UCINET IV (source: Borgatti S, Everett M and Freeman L, *UCINET IV Version 1.0 Reference Manual*, Columbia, SC, USA: Analytic Technologies, 1992). There was little variation in village density (.01 for most villages); thus, density measures were not included in models of contraceptive choice.

high number of siblings residing in other provinces probably represents migration to Bangkok. Many people from Nang Rong migrate to Bangkok, where people go for work and education.\* One way to conceptualize the different location of siblings who live outside the household is to think of those who live in the same village as close ties and those who live further away as distant ties.

The bottom section of Table 1 describes the measures of average household kinship ties within villages. These measures were constructed using all households in all villages (N=7,336) in Nang Rong, not just the households containing members of the study sample. Thus, these village-level measures can be considered indicators of the social structure of the entire village, in terms of exposure to outside influences. In most villages, the average number of total siblings per household is five.<sup>†</sup> Most of these ties are outside the household, with an average of one within the village and three outside the village. However, villages vary in the composition of their average sibling ties. A village with a higher value in terms of average kinship ties outside the village has experienced more migration, and its residents have, in general, more exposure to the outside world.<sup>‡</sup>

### Sample Characteristics

Previous analyses of contraceptive choice in Nang Rong have shown both individual- and community-level characteristics to be important determinants of contraceptive choice.<sup>24</sup> Individual-level variables included in this analysis consist of age and education, both of which have been shown to have an effect on women's contraceptive choice in previous analyses. The average age of women in the sample was 26 (standard deviation, 4.09). The average number of years of education is six (standard deviation, 2.12), which reflects the low level of education in rural areas of Thailand.

Village-level variables included in the analysis consist of the number of households in 1994 and the distance to the nearest health clinic in 1993. There were 144 households per village in 1994 (standard deviation, 41); this measure is included as

a control for the intra-village social tie variables. The mean distance to the health center was 3,925 meters (standard deviation, 2,257), which is important because both the injectable and the pill are available at reduced cost at the health centers. Thus, controlling for other independent variables, an increase in distance is expected to have a negative effect on pill and injectable use. Conceptually, distance is included in the analysis to control for access to contraceptives.

The results section focuses solely on the influence of the variables measuring sibling ties. However, each of these individual- and village-level independent variables described above is included in the analysis, and complete results are shown in Table 5.

### Analyses

Five multinomial logistic regression models were executed using STATA to examine the effect of kinship networks on women's contraceptive choice, and to test hypotheses concerning the mechanisms through which kinship networks affect contraceptive choice. First, whether household sibling ties have any effect at all on contraceptive choice was examined. Next, the differential effects of local and distant household sibling ties on contraceptive choice were analyzed. Then, the contextual effects of average household kinship ties on contraceptive use at the village level were examined,<sup>§</sup> as were the differential effects of average local and distant household ties on contraceptive choice. Finally, a village-level measure of television exposure was added to the model. (All of these results were corrected for village-level residuals using the cluster design in STATA.)

Microsimulations were used to illustrate the results from the four main mod-

**Table 1. Mean number (and standard deviation) and minimum and maximum values of household kinship ties and village-level average kinship ties, Nang Rong, Thailand, 1994**

Kinship ties	Mean	Minimum	Maximum
<b>Household†</b>			
Total no. of siblings	10.09 (3.98)	0	26
Within household	2.43 (1.10)	0	9
Outside household			
Within village	2.03 (2.32)	0	15
Other villages in Nang Rong	1.82 (2.33)	0	14
Other districts in Buriram	0.89 (1.59)	0	11
Other provinces in Thailand	2.93 (2.56)	0	15
<b>Village-level average‡</b>			
Total no. of siblings	5.15 (1.00)	2.89	7.00
Within household	1.35 (0.28)	0.69	1.99
Outside household			
Within village	1.03 (0.47)	0.24	2.04
Other villages in Nang Rong	0.81 (0.30)	0.25	1.54
Other districts in Buriram	0.46 (0.20)	0.19	1.06
Other provinces in Thailand	1.49 (0.37)	0.79	2.41

†Study sample consists of nonsterilized, nonpregnant, recently married women aged 18–35 (N=1,563). ‡All households in all sample villages (7,336 households in 51 villages).

els. Such microsimulations enable the reader to examine the effect of varying only the variable of interest, while maintaining all other variables as they appear in the data set.

## Results

### Household Kinship Ties

Initial results indicate that household kinship ties do indeed affect contraceptive choice, after the analysis is controlled for the effects of other explanatory variables in the data set. Simply looking at the effect of total household ties, without examining the type or distance of the tie, yields a significant result. To explicate these pure effects of household-level ties on temporary method choice, predicted probabilities based on microsimulations conducted in STATA are examined. In these microsimulations, the value of total household siblings from zero to 16 are manipulated,<sup>\*\*</sup> while allowing each case in the data set to have its actual value on all other variables (Table 2, page 8).

These simulations clearly demonstrate that, with other explanatory variables controlled, household kinship ties have a positive effect on the use of the modern methods of temporary contraception. If all households had no sibling ties (in other words, if none of the household members

\*There is obviously some selectivity in terms of who leaves the village. Characteristics of families, such as their "modernity," may encourage both outmigration and the use of modern forms of contraception. Unfortunately, this selection bias cannot be addressed with the Nang Rong data.

†The village-level sibling tie measures are significantly lower than the household-level measures. This is not surprising, given that the household-level measures were

constructed using only sample households (containing women aged 18–35). The village-level sibling tie measures were constructed using all households in order to better reflect the social composition of the entire village.

‡Migration in Northeast Thailand is circular, often related to the local rice harvest. Thus, the kinship ties outside the village will not remain constant from year to year. In this cross-sectional analysis, only data on social ties and contraceptive choice from one point in time, 1994,

are used. However, ongoing data collection in Nang Rong will enable researchers to examine how the patterns of kinship ties change over time, both at the household and at the village level.

§Results for each of these models are available from the author upon request.

\*\*Sixteen was chosen as the highest number of siblings, as it represents the 75th percentile of the distribution of the number of household sibling ties.

**Table 2. Percentage of women predicted to use a temporary contraceptive method, by method, according to number of household kinship ties**

Number of ties	Pill	IUD	Injectable	None
0	25.0	2.4	30.1	42.5
4	27.3	2.7	33.1	36.9
8	29.6	2.9	35.9	31.6
12	31.7	3.1	38.5	26.7
16	33.6	3.3	40.7	22.4

aged 18–35 had siblings), we could expect 25% of women to use the pill, 30% to use the injectable and 43% to use no method. By contrast, if all households had 12 extended kinship ties (which is close to the real mean of 11 siblings outside the household), 32% would use the pill and 39% the injectable, and the proportion using none would drop to 27%. The effects of the number of kinship ties on contraceptive choice are modest, yet measurable.

As a means of further exploring the mechanisms through which kinship ties affect choice, the household kinship ties are broken down into sibling ties within the household, sibling ties to other households in the village and sibling ties to households outside the village.\* Results from this analysis indicate that siblings within the household have no effect on temporary method choice. Rather, it is kinship ties to other households in the village and kinship ties outside the village that affect choice. Table 3 presents microsimulations based on these results. The number of household kinship ties to other households within the village varies from zero to five; the number of household kinship ties outside the village ranges from two to eight.† (Each case in the data set is allowed to have its actual value on all other variables for these microsimulations.)

When the effects of other explanatory variables are taken into account, kinship ties to households within the village are seen to affect the choice of both the IUD and the injectable. If all households had no kinship ties to other households within the village, we could expect 3% of women sampled to use the IUD, 35% to use the injectable and 33% to use no method. By contrast, if all households had five extended kinship ties within the vil-

\*For these analyses, sibling ties to other villages in Nang Rong, other districts in Buriram and other provinces in Thailand are combined into one variable, “sibling ties outside the village.” Creating one variable eases interpretation and does not affect the results; the effects of the more specific categories were consistent and similar.

†Once again, the values selected for the microsimulations are based on the sample distribution of the independent variable of interest.

lage, 4% of women sampled would use the IUD and 41% the injectable, while only 25% would use no method.

Furthermore, kinship ties that extend outside the village affect the choice of the pill and the injectable also once other explanatory variables are taken into account. If all households had only two extended kinship ties outside the village, 28% of sample women are predicted to use the pill, 36% to use the injectable and 33% to use no method. By contrast, if all households had eight extended kinship ties outside the village, 33% of women sampled are predicted to use the pill, 38% to use the injectable and only 27% to use no method.

**Village-Level Average Kinship Ties**

For the final three analyses, village-level measures of average kinship ties among households are introduced into the models. Initial results indicate that village averages of total kinship ties affect contraceptive choice, controlling for all other explanatory variables. Once the average number of kinship ties at the village level is introduced into the model, the effect of household-level kinship ties in the village on IUD use, and the effect of household-level kinship ties outside the village on injection use, disappear (not shown). The effects of household-level kinship ties outside the village on pill use and the effect of household-level kinship ties within the village on injectable use remain, however. With these household-level effects controlled for, the average total number of kinship ties at the village level has a positive effect on both pill and injection use.

In a further examination of the mechanisms through which village-level kinship ties affect choice, the effects of village-level average kinship ties were broken down into village-level average kinship ties within the village and average kinship ties outside the village. Results from this analysis indicate that it is the average kinship ties outside the village that affect both pill and injectable use.

Once again, predicted probabilities based on microsimulations conducted in STATA are examined. In these microsimulations, the value of the village average kinship ties outside the village from one to three are manipulated, while each case in the data set is allowed to have its actual value on all other variables.

These simulations clearly demonstrate that average extended kinship ties outside the village have a positive effect on the use of the pill and the injectable (Table 4). If all villages had an average of just one extended kinship tie outside the village per

**Table 3. Percentage of women predicted to use a temporary contraceptive method, by method, according to number of household kinship ties within the village and outside the village**

Number of ties	Pill	IUD	Injectable	None
<b>Within village</b>				
0	30.1	2.5	34.8	32.6
1	30.5	2.7	36.0	30.8
3	31.0	3.2	38.3	27.5
5	31.4	3.6	40.5	24.5
<b>Outside village</b>				
2	27.5	3.2	35.9	33.4
4	29.2	3.1	36.7	31.0
6	30.9	3.0	37.3	28.8
8	32.7	2.9	37.9	26.5

household, we could expect 23% of women to use the pill, 26% to use the injectable and 43% to use no method. By contrast, if all villages had an average of three extended kinship ties outside the village per household, 31% would use the pill, 38% would use the injectable and the proportion using none would drop to 28%. Thus, when other explanatory variables are taken into account, it appears that in villages with higher average numbers of extended kinship ties outside the village, women are more likely to use modern methods of temporary contraception.

**Discussion**

Within villages in Nang Rong, extended kinship ties among households clearly affect the choice of temporary contraceptive methods of recently married women who are at the early stages of family formation. Not only does the number of ties affect women’s propensity to use modern methods, but the type and location of the extended kinship ties have differential effects on the temporary methods individual women choose.

**Household Kinship Ties**

To interpret the results regarding the differential effects of household kinship ties both within and outside the village on temporary method choice, it is important to remember the historical context of the availability of temporary methods of contraception in Nang Rong. The injectable

**Table 4. Percentage of women predicted to use a temporary contraceptive method, by method, according to village-level average of household kinship ties outside the village**

Number of ties	Pill	IUD	Injectable	None
1	23.1	7.5	26.0	43.4
2	27.5	4.7	32.3	35.5
3	31.3	2.8	38.1	27.8

is the newest method of temporary contraception available. If diffusion of information about the method is an important factor in its use, this could explain the relationship between kinship ties to households both inside and outside the village and increased injectable use. Use of the pill, an older and more established method, requires a more consistent cash flow (because it must be purchased every month). Thus, economic resources may be important for pill use. Kinship ties to households outside the village increase pill use. These ties may be facilitating interpersonal communication leading to pill use, but they may also be important for providing access to economic resources needed to purchase this method.

While the IUD was the historically popular temporary method in Nang Rong, its popularity has faded dramatically since the introduction of the injectable. Kinship ties to households within the village appear to encourage IUD use; it is possible that such ties are creating pressure to conform to local behavioral patterns. As a test of this conformity hypothesis, measures representing the proportion of village women using each method of contraception in 1984 were utilized as a proxy for behavioral norms within the village. These measures were interacted with the measures of household level kinship ties within the village. None of these interaction terms were significant when included in the model.\* These null results suggest that kinship ties to households within the village neither increase nor decrease a woman's propensity to follow local behavioral norms. Instead, the effect of kinship ties within the village on IUD use may operate in the same way as the effect of kinship ties within the village on injectable use, through information flow.

In conclusion, in the Nang Rong context, there is no direct evidence that household kinship networks operate by encouraging behavior that conforms to village norms. However, interpersonal communication through household kinship networks, both within and outside the village, may facilitate the spread of information and resources, which both encourage and enable the use of modern forms of temporary contraception.

#### Village Kinship Ties

Village-level kinship ties also affect the use of modern methods of contraception in the Nang Rong context. In particular, village-level average extended kinship ties outside the village increase both pill and injectable use. These results indicate that

**Table 5. Coefficients from multinomial logistic regression analyses of sibling ties and temporary method choice, without and with the effects of television exposure (N=1,563)**

Characteristic	Pill vs. nonuse	IUD vs. nonuse	Injectable vs. nonuse	Pill vs. IUD	Pill vs. injectable	Injectable vs. IUD
<b>WITHOUT TELEVISION</b>						
<b>Individual level</b>						
Age	0.302	0.927*	0.271	-0.625	0.032	-0.657
Age squared	-0.006	-0.016*	-0.006	0.010	-0.001	0.010
Education	-0.041	0.021	-0.064*	-0.062	0.023	-0.086
<b>Village level</b>						
Distance to health center (1993)	-0.00008*	0.0001	-0.00006*	-0.0002*	-0.00001	-0.0002*
No. of households	0.003	0.0005	0.002	-0.003	0.001	0.002
<b>Household kinship ties</b>						
No. of siblings in household	-0.013	0.097	0.063	-0.110	-0.075	-0.035
No. of siblings in village	0.064	0.109	0.084*	-0.045	-0.021	-0.025
No. of siblings outside village	0.059*	0.024	0.039	0.035	0.020	0.014
<b>Village-level kinship ties</b>						
Average no. of siblings within village	-0.142	0.751	-0.131	-0.893	-0.011	-0.882
Average no. of siblings outside village	0.387*	-0.275	0.424*	0.661	-0.037	0.699*
Constant	-4.914*	-17.017*	-4.267	12.103*	-0.646	12.750*
F (30, 21)	2.24					
Prob. >F	.0293					
<b>WITH TELEVISION</b>						
<b>Individual level</b>						
Age	0.305	0.969*	0.274	-0.664	0.030	-0.695
Age squared	-0.006	-0.016*	-0.006	0.010	-0.001	0.010
Education	-0.040	0.033	-0.062	-0.072	0.022	-0.095
<b>Village level</b>						
Distance to health center (1993)	-0.00007*	0.0001	-0.00006*	-0.0002*	-0.00002	-0.0002*
No. of households	0.003	0.001	0.002	0.002	0.001	0.001
% of households with television	-0.699	-7.061*	-1.353	6.362*	0.655	5.707*
<b>Household kinship ties</b>						
No. of siblings in household	-0.014	0.068	0.059	-0.082	-0.073	-0.009
No. of siblings in village	0.063	0.100	0.083*	-0.034	-0.020	-0.014
No. of siblings outside village	0.058*	0.013	0.037	0.045	0.021	0.024
<b>Village-level kinship ties</b>						
Average no. of siblings within village	-0.191	0.314	-0.232	-0.505	0.041	-0.546
Average no. of siblings outside village	0.394*	-0.217	0.439*	0.611	-0.045	0.657*
Constant	-4.431	-12.647*	-3.338	8.216	-1.093	9.309
F (33, 18)	2.98					
Prob. > F	.0084					

\*p=.05, two-tailed test. Notes: Coefficient estimates are reported. Analysis includes a correction for clustering at the village level.

in villages more exposed to the outside world, and perhaps to an urban lifestyle, women are more likely to use modern contraceptives. Exposure to "modern" culture (represented by village kinship ties outside the village, many of which are likely to be to urban centers such as Bangkok) encourages the use of modern methods of contraception.

The mechanisms through which this exposure to modernity affects contraceptive behavior are multiple and varied. Cultural change, transmitted through interpersonal communication, may facilitate changes in contraceptive behavior in many ways: Women may be exposed to more information about different methods; they may gain increased access to different methods; women may acquire economic resources with which to purchase methods; or there may be an increasing acceptability of modern health care.

In this analysis, it was not possible to

determine exactly the process through which village-level kinship networks affect contraceptive choice. (Qualitative research could usefully illuminate these mechanisms.) The effect of exposure to new information can be investigated further by an examination of the impact of exposure to television on women's choice of temporary methods. Table 5 shows the final multinomial regression results, first without a control for television exposure and then with such a control added. Results indicate that at the village level, the proportion of households with televisions had a negative effect on IUD use, but did not significantly affect use of either the pill or the injectable.

Thus, if television affects contraceptive use through the transfer of information, presumably it is through negative infor-

\*These results, not included in this text, are available from the author upon request.

mation about the IUD. Importantly, inclusion of the proportion of households with televisions did not affect the results concerning the effects of village-level kinship ties on use of the pill and the injectable. The multilevel kinship network effects remain strong, suggesting that these kinship ties may represent more than simply access to modern technology and information.

## Conclusion

An important and unique aspect of the Nang Rong data is that it contains data on social networks that are not directly linked to the contraceptive decision. Household kinship networks affect choice by facilitating interpersonal communication and by providing access to information and resources. Village kinship networks represent the cultural context within which these behavioral choices regarding modern methods of contraception are made. Thus, multilevel network models enable researchers to elucidate the multiple effects of extended kinship networks on contraceptive choice, expanding our understanding of the mechanisms through which social networks operate to affect contraceptive behavior. Further research could examine the effects of other types of social networks, such as labor exchange networks, on contraceptive choice.

While village-based family planning workers are highly effective in rural Thailand, policymakers must understand the changing cultural context of these villages. Family planning programs should be designed with an awareness of the effects of patterns of migration and subsequent (often geographically dispersed) social networks on access to information and resources that may affect contraceptive choice.

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## Resumen

**Contexto:** Por lo general no se miden bien los determinantes culturales que afectan la elección de anticonceptivos y con frecuencia no son

bien comprendidos los mecanismos que se utilizan para influenciar la conducta individual de las personas.

**Métodos:** Se utilizaron datos de una encuesta de hogares realizada en 1994 en 51 pueblos de Nang Rong, un distrito rural del noreste de Tailandia, y de una encuesta comunitaria de todos los pueblos del distrito, para examinar los efectos de las redes de parentesco con respecto a la elección de anticonceptivos por parte de las mujeres y los mecanismos a través de los cuales estas redes de parentesco afectan las preferencias por determinados métodos anticonceptivos. Se llevaron a cabo análisis de regresión multinomial en una muestra de 1.563 mujeres no esterilizadas, no embarazadas, de 18-35 años, que habían estado casadas 10 o menos años, y se realizaron microsimulacros para ilustrar los resultados de los diferentes números y tipos de relaciones de parentesco sobre los niveles de uso de anticonceptivos.

**Resultados:** Las relaciones de parentesco ampliadas afectan la elección de anticonceptivos. Cuantas más relaciones de parentesco externo tengan los hogares, mayores son las probabilidades de que las mujeres de esos hogares utilicen métodos modernos de anticoncepción temporal. Por ejemplo, si todos los hogares de un pueblo no tuvieran relaciones de parentesco con los otros hogares de ese lugar, el 35% de las mujeres usarían el inyectable y el 33% ningún método; en contraste, si todos los hogares tuvieran cinco relaciones de parentesco ampliadas con otros hogares del pueblo, el 41% de las mujeres utilizarían el inyectable y el 25% ningún método. Las relaciones de parentesco ampliadas fuera del pueblo también afectan el uso de anticonceptivos: si todos los hogares tuvieran solamente dos vínculos de relaciones de parentesco ampliadas fuera de su propio pueblo, el 28% usaría la píldora, el 36% el inyectable y el 33% ningún método, pero si todos los hogares tuvieran ocho vínculos familiares de este tipo, el 33% usaría la píldora, el 38% el inyectable y el 27% ningún método. La composición de las relaciones de parentesco a nivel del pueblo también afecta la elección de anticonceptivos. Si todos los pueblos tuvieran un promedio de solamente un vínculo de relación de parentesco ampliada fuera del pueblo por cada hogar, el 23% de las mujeres usaría la píldora, el 26% el inyectable y el 43% ningún método. En tanto, si todos los pueblos tuvieran un promedio de tres de este tipo de vínculo familiar por hogar, el 31% de las mujeres usaría la píldora, el 38% el inyectable y solamente el 28% ningún método.

**Conclusiones:** Las relaciones de parentesco a nivel de hogar y de pueblo afectan la elección de los anticonceptivos. Los encargados de formular políticas y los planificadores de programas deben estar alertas acerca de los efectos

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## Kinship Networks...

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tos que las tendencias de migración y de las subsiguientes redes de parentesco ampliado tienen con relación a la distribución de información sobre, y la aceptación de, métodos anti-conceptivos modernos.

### Résumé

**Contexte:** Les déterminants culturels du choix contraceptif font rarement l'objet de mesures adéquates et leurs mécanismes d'influence sur les comportements individuels sont souvent mal compris.

**Méthodes:** Les données d'une enquête-ménage menée en 1994 dans 51 villages de Nang Rong, un district rural du nord-est thaïlandais, et celles d'une enquête-village menée dans tous les villages du district ont servi à examiner les effets des réseaux de parenté sur le choix contraceptif des femmes et les mécanismes par lesquels ces réseaux affectent ce choix. Une analyse de régression multinomiale a été menée

sur un échantillon de 1.563 femmes non enceintes et non stérilisées âgées de 18 à 35 ans et mariées pendant 10 ans ou moins, et les effets de différents nombres et types de parenté sur les niveaux de pratique contraceptive ont été illustrés par microsimulation.

**Résultats:** Les liens de parenté étendue affectent les choix contraceptifs. Plus les liens de parenté externe des ménages sont nombreux, plus les femmes de ces ménages sont susceptibles de pratiquer une forme moderne de contraception réversible. Si, par exemple, aucun ménage n'avait de liens de parenté avec les autres ménages de leur village, 35% des femmes pratiqueraient la méthode injectable, et 33% ne pratiqueraient pas la contraception. En revanche, si tous les ménages avaient cinq liens de parenté étendue avec d'autres ménages du village, 41% des femmes auraient recours aux injectables, et 25% ne pratiqueraient aucune méthode. Les liens de parenté étendue extérieurs au village affectent aussi la pratique contraceptive. Ainsi, si tous les ménages n'avaient que deux liens de parenté étendue en dehors du village, 28% des femmes prendraient

la pilule, 36% auraient recours aux injectables et 33% ne pratiqueraient aucune méthode. Si, par contre, tous les ménages avaient huit liens de parenté extérieurs, 33% utiliseraient la pilule, 38%, les injectables, et 27% ne pratiqueraient aucune méthode. Les structures villageoises de parenté étendue entrent aussi en jeu dans le choix de la contraception. Si tous les villages présentaient, en moyenne, un seul lien de parenté externe au village par ménage, 23% des femmes choisiraient la pilule, 26%, les injectables, et 43% ne pratiqueraient aucune méthode, par rapport à 31%, 38% et 28%, respectivement, si la moyenne, pour tous les villages, était de trois liens de parenté extérieurs par ménage.

**Conclusions:** Les liens de parenté, au niveau des ménages comme à celui des villages, affectent les choix contraceptifs. Les responsables politiques et planificateurs de programme doivent tenir compte des effets des structures migratoires et des réseaux de parenté étendue qui en résultent sur la sensibilisation aux formes modernes de contraception et sur leur acceptation.