Women's Social Networks, Communication, and Contraceptive Use in Rural Nicaragua

Anisha D. Gandhi, University of North Carolina, Chapel Hill, USA

Manali Nekkanti, San Francisco AIDS Foundation, San Francisco, USA

Introduction. The importance of social networks on women's contraceptive uptake and use has been described in settings with high, low, and transitioning fertility. Previous research has delineated how social learning (gleaning information from social ties) and social influence (adopting new attitudes or behaviors modeled by others) shape contraceptive use patterns, and how network composition factors, in turn, impact the relative effects of these processes (1-4). However, little is known about the dynamics of social networks and contraceptive use in Latin America. A study of women in rural Guatemala demonstrated that having kinship networks that extended to urban areas was significantly associated with contraceptive knowledge, but was not independently associated with contraceptive use (5). Furthermore, the data failed to capture whether information about contraception was actually disseminated within existing social networks, or whether the effect of such information was moderated by actual contraceptive behaviors of social contacts. This study seeks to explore and characterize the relationships between social network composition, communication about contraception, contraceptive knowledge, and current contraceptive use in a novel Central American context.

Study population and procedures. In comparison to other counties in the region, Nicaragua has experienced rapid fertility decline in recent decades; from 1980-2006, the total fertility rate decreased from 6.1 to 2.7 (6). However, contraceptive prevalence is persistently lower in rural areas and among young and undereducated women (6).

Data for this study are derived from a 2010 survey conducted in the municipality of El Sauce, Nicaragua. The municipality has a population of approximately 30,000, half of which resides in 21 rural communities surrounding the town of El Sauce. Of these 21 rural communities, 12 were randomly selected as sites for a community health assessment. With the assistance of local health technicians, a team of researchers from the University of North Carolina identified and visited each house within the selected communities.

From all women aged 15-49 present within the household, one was randomly chosen to participate in the study. Consenting individuals responded to an interviewer-administered 30-minute survey regarding their socio-demographic profile, contraceptive knowledge, and a number of individual and household health indicators. The validated survey instrument included items allowing characterization of the respondent's social network – a novel approach in this region. Subjects provided detailed information on up to five people who they could talk to about private or important matters.

Analytic Methods. Of the 224 participants (97% of the selected sample), our analyses focus on 170 women who were sexually active, not pregnant, and pre-menopausal, and thus were candidates for contraceptive use. Our key outcome of interest was current self-reported use of a modern contraceptive method (pills, injectables, intrauterine device, condoms, emergency contraception, or sterilization). Multivariable logistic regression was used to assess the relationship between current contraceptive use and 1) communication about contraception with social contacts; and 2) perception of social contacts' current contraceptive use. These exposures were defined based on responses to the following questions asked about each identified social contact : 1) "Have you talked to ___ about contraception or how to prevent pregnancy?" and 2) "Do you think ____ is using any method of family planning or something to prevent pregnancy?"

Age, education, poverty status, occupation, and parity were evaluated as potential confounders based on a priori hypotheses and were only removed from a saturated model if doing so effected less than a 10 percent change in the main effect estimate.

Results

Socio-demographic Profile. The average age of the women included in the final sample was 29, with 35 percent of the sample under age 25. Twelve percent of respondents had not received any formal education; in total, 61 percent had not completed primary school. Eleven percent of women had jobs outside the home; occupations included domestic work, teaching and social work. Fifty percent of women lived in conditions of poverty, as defined by having more than one unsatisfied basic need (7). Respondents had had an average of 2.8 births at the time of interview (range 1-10).

Family Planning Profile. Seventy-four percent of sexually active, non-pregnant and non-menopausal women were currently using a modern contraceptive method. Injectables (38%), female sterilization (28%) and pills (26%) constituted the vast majority of all contraceptive use. Nineteen percent of the sample had unmet need for contraception, exceeding the national average of eleven percent (6). Nearly half the respondents reported that at least once, their contraceptive method was not available at the nearest health center.

Social Network Profile. Eighty-six percent of women named at least one person with whom they could talk regarding private or important matters, with an average of 1.5 contacts named. Forty-four percent of women named their partner within their social network; 51 percent named at least one family member. Only eight percent nominated a friend, colleague or neighbor. Given the dominance of partners and family members in women's networks, it is not surprising that the majority of social contacts nominated lived in the same household as the participant. However, 29 percent of women named at least one contact that lived in another community.

Less than half of all respondents had at least one contact they trusted to provide reliable information about health or medicine. However, a larger proportion (68 percent) had at least one contact they had talked to about contraception. Excluding respondents' partners, 28 percent of all respondents named at least one social contact they believed to be using some method of family planning.

Relationship between social networks and contraceptive knowledge and use. Contraceptive knowledge in this sample was high; 100 percent of women knew of at least one modern method, and 90 percent knew of at least five methods. However, the number of methods known increased significantly with an increase in the number of social contacts with whom the respondent had talked about contraception ($\beta=0.24$, $p<0.01$), and having any social contact (aside from one's own partner) using contraception ($\beta=0.4$, $p<0.05$).

In a multivariate model, current use of a modern contraceptive method was associated with having social contacts with whom the respondent had talked about contraception (OR 1.5, 95% CI 0.7-3.4). The association strengthened when the exposure was restricted to network contacts whom the respondent

trusted to provide reliable health information (OR 1.9, 95% CI 0.8, 4.4). In a separate model, current use of a modern contraceptive method was associated with having at least one social contact believed to be using contraception (OR 1.4, 95% CI 0.6, 3.7).

Discussion. These findings indicate that in our sample from rural Nicaragua, as documented elsewhere, women are engaging in dialogue regarding contraception with their social contacts, and that such communication in turn is associated with greater contraceptive knowledge. While some effects were not statistically significant given the limited power of this initial study, the data suggest that talking to social contacts who are trusted to have reliable health information may be a more salient correlate of current contraceptive use, relative to whether network contacts are using contraception themselves. This would be consistent with previous studies where social networks affected individual contraceptive use primarily through providing information or an opportunity for dialogue, rather than by modeling behaviors (2,4).

In analyses of cross-sectional data, it is impossible to distinguish the effects of selection – whether women who use contraception or have high levels of information about contraception are more likely to name and interact with others that share these characteristics. However, additional analyses will explore levels of homophily between women and their social contacts, and whether geographic or social density of networks modifies the association between women's contraceptive use and their social interactions regarding contraception.

References

1. Montgomery MR, Casterline JB. Social Learning, Social Influence and New Models of Fertility. *Pop Dev Rev*. 1996; 22S: 151-175.
2. Behrman JR, Kohler HP, Watkins SC. Social Networks and Changes in Contraceptive Use over Time: Evidence from a Longitudinal Study in Rural Kenya. *Demography*. 2002; 39(4): 713-38.
3. Kincaid DL. Social networks, ideation, and contraceptive behavior in Bangladesh: a longitudinal analysis. *Soc Sci Medicine.* 2000; 50: 215-231.
4. Valente TW, Watkins SC, Jato MN, et al. Social Network Associations with Contraceptive Use Among Cameroonian Women in Voluntary Associations. *Soc Sci Medicine*. 1997; 45(5): 677-687.
5. Lindstrom DP, Muñoz-Franco E. Migration and the Diffusion of Modern Contraceptive Knowledge and Use in Rural Guatemala. *Studies in Fam Plann.* 2005; 36(4): 277-288.
6. Vatsia U, Chowdhury S. Fertility Decline in Nicaragua, 1980-2006: A Case Study. The World Bank. Washington, DC, 2010.
7. Boltvinik, J. Poverty Measurement Methods: An Overview. SEPED Series on Poverty Reduction, Working Paper No. 3. United Nations Development Programme. New York, 2001.