Intrahousehold influence on contraceptive use among married Indian women: Evidence from the National Family Health Survey 2015–16

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ABSTRACT

Background: India, where more than one married woman of reproductive age often live in the same household, provides an ideal setting to promote family planning through intrahousehold influence.

Objectives: This study examined the association between use of modern contraceptives by young married women, and other married women living in the same household.

Methods: We included 31,361 currently married women of 15–24 years from women data of the National Family Health Survey 2015–16. Each of these women was living with another married woman within the same household, who was also interviewed. From each household, we labeled the woman with the shortest marital duration as the Index Woman. The second woman in each household was either labeled as Peer or Other or Elderly (had married within 5 years or 5–19 years after or 20 or more years after the marriage of Index women, respectively). The association between use of modern contraceptives by Index Women and the second woman in the household was examined using logistic regressions—controlled for the background characteristics of Index Women.

Results: Index Women had 2.9 times adjusted odds (95%CI 2.5–3.3) of using modern contraceptives if living with Peers, who were also using modern contraceptives. Similarly, when the second women using modern contraceptives, an Index Woman had 1.7 times adjusted odds for using modern contraceptives (95%CI 1.5–1.9) if living with Elderly, and about 2.5 times adjusted odds if living with Other women (95%CI 2.1–2.8). The association between contraceptive use by an Index Woman and the second woman in the household remained significant even after controlling for background characteristics, showing the independent effect of intrahousehold influence on contraceptive use.

Conclusion: The conclusive evidence of positive intrahousehold influence on contraceptive use of Index Women will encourage program managers to promote intrahousehold communication to increase use of family planning.

Introduction

Family planning is a highly cost-effective means to achieve Sustainable Development Goals (SDGs), as it provides a number of benefits for the investment made. Voluntary family planning can bring a variety of transformational benefits to women, families, communities, and countries (Starbird, Norton, & Marcus, 2016, FP2020). Realizing this potential, Family Planning 2020 (FP2020, FP2020), a global partnership, was formed to work toward empowering women and girls, by investing in right-based family planning; and expanding access to information, services, and supplies to those who want to have control on whether, when, and how many children they would have (FP2020, 2019).

As a commitment to FP2020, the Government of India is working toward expanding the range and reach of contraceptive options at all levels, enhancing its supply chain system, and increasing awareness and generating demand for family planning services (Government of India, 2017). However, in spite of all these efforts, Track20 (www.track20.org) estimates showed that the prevalence of contraceptive use in India did not increase much in the last five years—from 52% in 2014 to 54% in
Earlier studies have identified a number of determining factors of voluntary family planning at different levels; ranging from individual-level factors, such as level of education (DeRose & Ezeh, 2010), fertility preferences (Forrest, Arunachalam, & Navaneetham, 2018), male child preference (Arkiassamy, 2002; Chacko, 2001), and exposure to media (Sengupta & Das, 2012); household or family-level factors, like spousal communications on family planning (Acharya & Surender, 1996; Char, Saavala, & Kulmala, 2010), and autonomy (Reed et al., 2016; Singh et al., 2019); community-level factors, like caste (Bhargava, Chowdhury, & Singh, 2005), religion (Pinter et al., 2016; Sk, Jahangir, Mondal, & Biswas, 2018), and cultural norms related to family planning (Elfstrom & Stephenson, 2012; Ghosh & Siddiqui, 2017; McNay, Arkiassamy, & Cassen, 2003); and system-level factors, like access to the health facility (Ghule et al., 2015; Hall, Stephenson, & Juevkar, 2008), availability of method (Dixit, Dwivedi, & Gupta, 2017; Ross & Hardee, 2013), cost (Ginsor & Cooper, 2004), etc.

Among all, household-level factors were least researched. Several important findings may be noted from available literature on household-level factors. For example, a multilevel analysis by McNay et al. (2003) found that among uneducated women in India, contraceptive use was also influenced by several factors besides their socio-economic conditions and were beyond their control—such as contraception use of others (McNay et al., 2003). In India, intrafamilial influences, mostly consisting of spousal communications, and interactions with mothers-in-law and other women in the family, play an important role in women’s acceptance of family planning; especially, in rural areas where extended and joint families are more prevalent (IPS and ICF, 2017). The importance of spousal communication has been indicated in many studies (Kumar, Kalia, Goel, & Sharma, 2016; Prata et al., 2017; Sarwatay & Divatia, 2016). These studies showed that typically key reproductive decisions are taken jointly by Indian couples; like the number and timing of pregnancy, gap between pregnancies, choice and use of contraceptives, abortion and unintended pregnancies, etc. Few studies, however, found that the husband was the key decision-maker for family planning (Kumar et al., 2016; Raj et al., 2016). Some researchers have also studied the influence of other members in the extended family on the use of family planning methods; for example, in a qualitative study, Char et al. (2010) explored the role of mothers-in-law (MIL) in the use of contraceptives among young couples, and found that although MIL did influence a couple’s decisions on some reproductive choices such as the number of male children they would prefer, or the timing of sterilization; yet, they could not influence the couple’s decision on the use of reversible contraceptive methods to a large extent (Char et al., 2010).

The intrahousehold influences on family health behaviors are intuitive. Women from the same household share a common home environment, generally have a similar cultural and socioeconomic background, get information from similar sources, and possibly utilize health services from the same facilities. A quantitative study from Uttar Pradesh on social networking demonstrated that young married women have very limited social interactions outside their homes, and the power dynamics within the household limit their ability to interact on more private matters like reproductive health, fertility, and family planning (Anukriti, Herrer-Almanza, Pathak, & Karra, 2019). However, India has a dearth of quantitative studies that are representative of the population, and which examine the influence of contraceptive use of one woman on another woman in the same household. The current study attempts to fill this literature gap.

This study hypothesized that in a similar socio-ecological context, a young married woman would be more likely to use a modern contraceptive if there was another user in the household. In this paper, the hypothesis has been examined empirically using a nationally representative dataset.
or others), religion (Hindu, Muslim, or others), and wealth index of the household (poorest, poorer, middle, richer, or richest). The selection of covariates was based on previous literature, and the predictors showed bivariate association with dependent variables as well.

**Statistical analysis**

At first, the associations of the contraceptive use among Index Women and the second woman were examined by bivariate analyses. As a second step, the strength of the associations were assessed using multivariate logistic regressions. In total, six regression models were calculated—Model-1 and -2 for those women living with a Peer; Model-3 and -4 for those women living with an Other woman; and Model-5 and -6 for those women living with an Elderly woman. In all logistic regressions, the dependent variable was the use of modern contraceptives by Index Women. Model-1, -3, and -5 are unadjusted models, which examined the association of contraceptive use of Index Women, and of the second woman in the family (Model-1 for Index Women living with a Peer, Model-3 if living with an Other woman, and Model-5 if living with an Elderly woman). Model-2, -4 and -6 are adjusted models, which assessed the associations of modern contraceptive use by Index Women and the second woman in the family, controlled for the background characteristics of Index Women (Model-2 for Index Women if living with a Peer, Model-4 if living with an Other woman and Model-6 if living with an Elderly woman). All analyses were conducted using the Stata statistical software (version 13).

**Results**

**Background characteristics of Index Women**

About three-fifths of the Index Women had secondary education, 13% had higher secondary education, and 13–15% had no education (Table 1). More than 70% of the Index Women who were living with a second woman were aged 20–24 years. About 45–48 percent of the Index Women had no children and about 3 percent had three or more children. Around two-thirds of the Index Women did not have any male children, 25–28% had one male child, and less than 0.5% had three or more male children. A slightly higher proportion of Index Women (19%) who were living with an Elderly woman or an Other woman (19%) were from ‘poorest’ households, than those women who were living with a Peer (13%). Furthermore, a higher proportion of Index Women (23%) who were living with an Elderly woman belonged to the scheduled caste community, than women who were living either with a Peer (18%) or with an Other woman (21%). Overall, all three groups of Index Women showed similar characteristics, making them comparable.
Contraceptive use and intrahousehold influence

The relationship between the Index Woman and the second woman’s use of modern contraceptives is presented in Fig. 2. Only 9–12% Index Women living with a second woman who did not use modern contraceptives, used modern contraceptives themselves. The use of modern contraceptives among Index Women increased to 20–28% percent if the second woman was also using them. The prevalence of modern contraceptive use among Index Women was the highest (28%) if the second woman in the household was a Peer user, followed by if she was Other (23%), and if she was Elderly (20%).

Regardless of their background characteristics, when the second woman in the household was using modern contraceptives, the prevalence of the same among Index Women was substantially higher, compared to when the second woman was not using a modern contraceptive (Table 2). Moreover, for all background characteristics, the contraceptive use among Index Women living with a Peer user was consistently higher than among those Index Women living with an Elderly, or an Other woman, who was also using a modern contraceptive.

Regression analyses of the intrahousehold influence

Results from multivariate logistic regression models are presented in Table 3. The unadjusted models show that odds of an Index Woman using a modern contraceptive method was almost 3.9 times higher if she was living with a Peer user, 3.0 times higher if living with an Other user, and 1.7 times higher if she was living with an Elderly user. When the regression models were adjusted with the background characteristics of the Index women, the odds for an Index woman to use a modern contraceptive method remained significantly high if she was living with another user in the same household. Model-2 shows that the odds of an Index Woman using a modern contraceptive method was 2.9 times higher if she was living with a Peer user. Similarly, the odds were 1.7 and 2.5 if she was living with an Elderly, or an Other modern contraceptive user, respectively.

The regression models, which are adjusted for background characteristics of Index women, consistently show higher pseudo-$R^2$ value than the unadjusted models for contraceptive use among Index Women. The $-2\log$-likelihood value for Model-2, -4, and -6 are significantly lower than for Model-1, -3, and -5, respectively. These findings consistently show better prediction power of those regression models which included the contraceptive use of the second women, along with the background characteristics.

Discussion

This study found that the presence of a modern contraceptive user in the household positively influences the use of modern contraceptives among young married women. The odds of contraceptive use among Index Women were higher if the second user of modern contraceptives was a Peer, as compared to when the second user was an Elderly, or an Other woman. The influence of modern contraceptive use by the second woman in the household was not affected by the other determinants of modern contraceptive use by Index Women, showing an independent effect of intrahousehold influence on contraceptive use.

As mentioned earlier, women from the same household share a common social ecology, have similar sources of information, and utilize similar health services. Having all these in common, it is expected that the contraceptive use of married women influence the use of modern contraceptives by younger Index Women, who are newer members of the household.

The intrahousehold influence of a Peer contraceptive user on a young married woman has been studied for the first time; therefore, researchers of this study could not compare these result with earlier studies. Influence of Elderly contraceptive users on contraceptive use of Index Women, however, was comparable among mothers-in-law and daughters-in-law. In this context, results of this study corroborated the results of earlier studies (Char et al., 2010). Contrary to common belief, this study revealed that Peer contraceptive use influenced contraceptive use among Index Women more than contraceptive behaviors of Elderly women, like mothers-in-law. A young married woman was found more likely open to discussions on issues of modern contraceptive use with a married woman of similar age than with an older woman in the
Table 2
Proportion of Index Women using a modern contraceptive method in comparison to their background characteristics, according to use of any modern contraceptive method by the other women living in the same household (Peer, Other, or Elderly).

| Characteristics of Index Women | Use of modern contraceptive method by Index Women |
|-------------------------------|-----------------------------------------------|
|                               | Living with Peer | Living with Other Women | Living with Elderly |
|                               | Peer woman not using a modern contra-captive method | Peer woman using a modern contra-captive method | Other woman not using a modern contra-captive method | Other woman using a modern contra-captive method | Elderly woman not using a modern contra-captive method | Elderly woman using a modern contra-captive method |
| Education                     | N = 5,942 | N = 1,937 | N = 4,402 | N = 3,874 | N = 6,156 | N = 9,050 |
| Illiterate                    | 8.2 | 23.3 | 6.3 | 22.7 | 6.7 | 14.7 |
| Primary                       | 7.1 | 29.9 | 6.4 | 26.5 | 10.5 | 20.8 |
| Secondary                     | 10.1 | 29.0 | 9.5 | 21.5 | 14.2 | 19.6 |
| Parity                        | 8.6 | 27.6 | 11.1 | 24.2 | 12.1 | 19.5 |
| Number of male children       | N/A | N/A | N/A | N/A | N/A | N/A |
| 0                             | 3.7 | 9.7 | 4.6 | 6.7 | 5.1 | 6.9 |
| 1                             | 11.6 | 31.8 | 11.0 | 22.1 | 15.3 | 22.4 |
| 2                             | 26.1 | 45.4 | 16.3 | 53.4 | 23.9 | 47.5 |
| 3+                            | 20.0 | 46.8 | 27.6 | 48.5 | 24.8 | 41.6 |
| Number of children relative to ideal family size | N/A | N/A | N/A | N/A | N/A | N/A |
| Less than ideal               | 6.4 | 20.5 | 7.0 | 13.6 | 8.3 | 11.7 |
| Equal to ideal                | 26.8 | 48.2 | 20.0 | 52.6 | 27.3 | 47.2 |
| More than ideal               | 25.1 | 50.0 | 15.5 | 48.5 | 22.1 | 45.5 |
| Wealth index                  | N/A | N/A | N/A | N/A | N/A | N/A |
| Poorest                       | 7.0 | 25.7 | 5.2 | 20.8 | 7.0 | 13.7 |
| Poorer                        | 7.7 | 24.2 | 6.9 | 20.3 | 10.2 | 19.4 |
| Middle                        | 9.6 | 28.1 | 9.5 | 22.9 | 16.6 | 17.9 |
| Richer                        | 10.9 | 29.8 | 14.4 | 23.0 | 15.6 | 20.8 |
| Richest                       | 10.7 | 30.7 | 9.5 | 25.6 | 16.0 | 23.6 |
| Caste                         | N/A | N/A | N/A | N/A | N/A | N/A |
| Scheduled caste               | 10.2 | 27.0 | 9.3 | 25.3 | 12.0 | 19.8 |
| Scheduled tribe               | 7.3 | 28.9 | 7.6 | 24.3 | 9.6 | 16.2 |
| Other backward classes        | 7.5 | 26.0 | 7.5 | 18.0 | 9.9 | 16.5 |
| Others                        | 12.7 | 31.9 | 11.4 | 26.9 | 18.3 | 25.7 |
| Religion                      | N/A | N/A | N/A | N/A | N/A | N/A |
| Hindu                         | 9.2 | 27.6 | 8.9 | 22.1 | 12.1 | 18.7 |
| Muslim                        | 8.8 | 30.4 | 8.5 | 22.5 | 12.3 | 21.0 |
| Others                        | 12.3 | 34.4 | 7.7 | 30.0 | 13.4 | 25.0 |
| Total                         | 9.2 | 28.3 | 8.8 | 23.0 | 11.7 | 19.6 |

In large joint families of India, more than two married women of reproductive age often live together in the same household, making the dynamics of intrahousehold influences more complex. This study, however, did not examine the influence those complex relationships had on contraceptive use. Examination of such associations requires more advanced statistical computation, which was outside the scope of this paper. Since this is a cross-sectional study, it could not estimate any temporal effect of contraceptive use of the second woman on the contraceptive use of Index Women. Also, NFHS did not collect data on family planning related communication among married women within a household, or communication with their husbands. Hence, this study could not control for such intrahousehold influences in its model. As well, the study could not provide insight on how these intrahousehold influences of the second woman on the Index Woman worked, as this required primary data which was not available in the NFHS datasets.

The findings of this paper have implications for the existing government programs, particularly in the 146 focus districts under the Mission Parivar Vikas, across seven high focus states (Ministry of Health and Family Welfare (MoHFW), 2016), where the Government of India introduced a five-pronged strategy to increase the use of contraceptives, including different promotional schemes. One of the promotional schemes Saas-Bahu Sammelan—a platform for mothers-in-law and their daughters-in-law—aims to bring about changes in attitudes and beliefs of reproductive and sexual health through interactive games, and by building on their experiences. The findings of this study confirm that such focus will be beneficial for programs like Mission Parivar Vikas. The findings further call for a focus on promoting intrahousehold communication between different generations of contraceptive users.

Over the last decade, many public health projects have been working through self-help groups (SHGs), to promote healthy behaviors by introducing them to Behavior Change Communication (BCC) (Mozumdar, Khan, Mondal, & Mohanan, 2018). Typically, one can utilize the convening of 10–12 women at an SHG meeting to promote discussion of different family health issues, including family planning. The public health projects anticipate that learnings imbibed at SHG meetings would eventually be disseminated among household members by way of intrahousehold communication. The findings of this study provide evidence regarding feasibility of using intrahousehold influence for contraceptive use, and will encourage program managers to promote family planning BCC through SHGs.

Conclusion

The study showcases the influence older modern contraceptive users have on young married women within the same household, and their

household. However, the current analysis did not examine the influence of Peers in the presence of Elderly or an Other woman in the same household.
Table 3
Unadjusted and adjusted models of logistic regressions showing determinants of modern contraceptive use among Index Women living with another woman in the household.

|                     | Living with a Peer | Living with an Other Woman | Living with an Elderly Woman |
|---------------------|--------------------|-----------------------------|-----------------------------|
| **Model-1**         | **Model-2**        | **Model-3**                 | **Model-4**                 |
| OR (95% CI)         | AOR (95% CI)       | OR (95% CI)                 | AOR (95% CI)                |
| Modern contraceptive use of: |                    |                             |                             |
| No 3.88 (3.42-4.40) | Ref.               | 2.86 (2.49-3.27)            | na                          |
| Yes                   | Ref.               | na                          | na                          |
| No 3.02 (2.66-3.42)  | na                 | 2.45 (2.14-2.81)            | na                          |
| Yes                   | na                 | na                          | na                          |
| No                   | na                 | na                          | Ref.                        |
| Yes                   | na                 | na                          | Ref.                        |
| No                   | na                 | na                          | 1.72 (1.56-1.88)            |
| Yes                   | na                 | na                          | 1.68 (1.51-1.85)            |

Background characteristics of Index Women

| Education           |          |          |          |
|---------------------|----------|----------|----------|
| Illiterate          | na       | Ref.     | na       |
| Primary             | na       | 0.92 (0.69-1.22) | na       | 1.11 (0.85-1.45) | na       | 1.38 (1.13-1.69) |
| Secondary           | na       | 1.28 (1.02-1.59) | na       | 1.21 (0.98-1.49) | na       | 1.53 (1.29-1.81) |
| Higher              | na       | 1.36 (1.01-1.82) | na       | 1.68 (1.27-2.22) | na       | 1.62 (1.32-2.00) |
| Parity              | na       | Ref.     | na       | Ref.         |
| 0                   | na       | 3.06 (2.51-3.74) | na       | 2.25 (1.86-2.74) | na       | 3.28 (2.87-3.74) |
| 1                   | na       | 3.28 (2.44-4.41) | na       | 3.49 (2.63-4.63) | na       | 5.09 (4.20-6.18) |
| 2                   | na       | 2.90 (1.80-4.66) | na       | 4.65 (3.04-7.12) | na       | 3.96 (2.86-5.49) |
| Number of male children |          |          |          |
| 0                   | na       | Ref.     | na       | Ref.         |
| 1                   | na       | 1.25 (1.06-1.48) | na       | 1.71 (1.45-2.02) | na       | 1.25 (1.12-1.39) |
| 2                   | na       | 2.00 (1.49-2.67) | na       | 3.14 (2.41-4.11) | na       | 2.16 (1.76-2.65) |
| 3                   | na       | 0.22 (0.06-0.85) | na       | 3.48 (1.19-10.15) | na       | 4.45 (1.81-10.95) |
| Number of children relative to ideal family size |          |          |          |
| Less than ideal     | na       | 0.42 (0.34-0.52) | na       | 0.49 (0.40-0.60) | na       | 0.49 (0.43-0.57) |
| Equal to ideal      | na       | Ref.     | na       | Ref.         |
| More than ideal     | na       | 1.04 (0.71-1.54) | na       | 0.67 (0.47-0.96) | na       | 0.93 (0.70-1.22) |
| Wealth index        |          |          |          |
| Poorest             | na       | Ref.     | na       | Ref.         |
| Poorer              | na       | 0.97 (0.74-1.27) | na       | 1.18 (0.94-1.48) | na       | 1.39 (1.18-1.63) |
| Middle              | na       | 1.13 (0.86-1.47) | na       | 1.50 (1.20-1.87) | na       | 1.50 (1.27-1.76) |
| Richer              | na       | 1.15 (0.88-1.51) | na       | 1.86 (1.47-2.34) | na       | 1.61 (1.37-1.91) |
| Richest             | na       | 1.34 (1.00-1.78) | na       | 1.69 (1.31-2.17) | na       | 2.19 (1.83-2.62) |
| Caste               |          |          |          |
| Scheduled caste     | na       | Ref.     | na       | Ref.         |
| Scheduled tribe     | na       | 0.83 (0.63-1.09) | na       | 0.93 (0.72-1.21) | na       | 0.84 (0.71-1.01) |
| Other backward classes |          |          |          |
| Others              | na       | 0.75 (0.62-0.91) | na       | 0.67 (0.56-0.80) | na       | 0.71 (0.63-0.80) |
| Religion            |          |          |          |
| Hindu               | na       | Ref.     | na       | Ref.         |
| Muslim              | na       | 1.02 (0.85-1.23) | na       | 0.94 (0.78-1.14) | na       | 0.98 (0.85-1.12) |
| Others              | na       | 1.26 (0.88-1.80) | na       | 1.10 (0.81-1.51) | na       | 1.09 (0.88-1.37) |
| Pseudo R²           | 0.064    | 0.171    | 0.043    | 0.185       | 0.010    | 0.152    |
| -2 * log likelihood | 6536.38  | 5781.87  | 7315.94  | 6220.29     | 14393.22 | 12319.96 |

Notes: OR = Odds-ratio, AOR = adjusted odds-ratio, OR and AORs in bold font are significant at p < 0.05, na = not applicable.

choices to use modern contraception. A Peer’s influence has been found to be stronger that that of an Elderly woman. The findings of the study are supportive of the current strategies employed under programs of the Indian government that promote family planning among young married women. Educating recently married, low parity women through other programs of the American people through the United States Agency for International Development (USAID) under the terms of cooperative agreement no. AID-OAA-A-13-00087. The contents of this manuscript are the sole responsibility of the Evidence Project and Population Council and do not necessarily reflect the views of USAID or the United States Government.

Ethical approval

The NFHS 2015–16 received ethical clearance from Ethical Review Board of the International Institute of Population Sciences, Mumbai, India. The survey interviewers obtained informed consent from each respondent before the interview and made their best effort to ensure privacy.

Declaration of competing interest

None of the authors have any conflict of interest on the content of this manuscript.
CRediT authorship contribution statement

Mukesh Ranjan: Conceptualization, Methodology, Formal analysis, Writing - original draft. Arupendra Mozumdar: Conceptualization, Methodology, Formal analysis, Writing - original draft, Writing - review & editing. Rajib Acharya: Conceptualization, Methodology, Writing - review & editing, Supervision, Project administration. Subrato Kumar Mondal: Resources, Writing - review & editing. Niranjan Saggurti: Conceptualization, Methodology, Project administration, Funding acquisition.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.ssmph.2020.100603.

Appendix 1. Odds ratios and 95% CI of modern contraceptive use of Index woman if the second women in the household also an user of modern contraceptive by different cut-offs for difference between duration of marriage of two women of same household

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