

# Person-centred Quality, Provider Involvement and Family Planning Continuation in India

Nadia Diamond-Smith (✉ [Nadia.diamond-smith@ucsf.edu](mailto:Nadia.diamond-smith@ucsf.edu))

University of California, San Francisco <https://orcid.org/0000-0002-8711-3029>

Beth Phillips

University of California San Francisco

Patience Afulani

University of California San Francisco

Aradhana Srivastava

Public Health Foundation of India

Ginger Golub

Innovations for Poverty Action

May Sudhinaraset

University of California Los Angeles

---

## Research

**Keywords:** Family Planning, India, Person-Centered Care

**Posted Date:** July 30th, 2020

**DOI:** <https://doi.org/10.21203/rs.3.rs-49054/v1>

**License:**   This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

---

# Abstract

*Background:* Quality of care of family planning provision has many dimensions, and measuring and understanding these different components is challenging. Furthermore, understanding which components are most important for women's experiences and method continuation is essential for improving the quality of care provision.

*Methods:* We use longitudinal data from India to explore the impact of different measures of quality (provider preference, provider involvement, and a newly developed scale of person-centered care experiences) on method continuation. We also look at associations between the quality measures and discuss why different measures may be more salient in different contexts.

*Results:* We find that a woman's person-centered care experience is not associated with continuation in India. Providers having a strong preference is associated with continuation.

*Conclusions:* Certain measures of person-centered quality appear to impact family planning continuation, but the validated person-centered care measure is not. Socio-cultural factors such as power dynamics and gender norms likely impact expectations, and need to be considered in interpreting and choosing quality measures.

## Plain English Summary

Person-centered quality of care for family planning includes care that is respectful, women receiving information that they can understand, having their questions asked, and trusting their providers, among other component. High person-centered quality of care improves both the experience that women have, and also may lead to better outcomes. However, we need more information about what pieces of quality of care for family planning are important and if they are associated with women continuing their family planning method.

We collected two rounds of data from India to explore the impact of different measures of quality (provider preference, provider involvement, and a newly developed scale of person-centered care experiences) on whether women continued their family planning method.

We find that the newly developed scale of woman's person-centered care experiences is not associated with continuation in India. Providers having a strong preference about what method women use is associated with continuation.

Some measures of person-centered quality appear to impact family planning continuation, but the validated person-centered care measure is not. Socio-cultural factors may impact women's experiences.

## Background

Quality of care is assumed to matter for women taking up a family planning method and continuing with it. Few studies have, however, rigorously assessed what aspects of quality determine family planning continuation. A recent systematic review of interventions focused on person-centered care for family planning found that most interventions were successful in increasing client knowledge about family planning and overall experience, but results were mixed for family planning uptake and continuation <sup>1</sup>. One challenge with understanding the impact of person-centered care on outcomes is measurement, especially when aiming to compare across countries or studies. No study to date has used a validated person-centered quality of care scale to measure women's experience and examined its associations with family planning continuation across two different populations.

Person-centered family planning care (PCFP) refers to care that is, according to the Institute of Medicine, "respectful of, and responsive to, individual patient preferences, needs and values" related to family planning services <sup>2</sup>. Recently, a validated measure of PCFP was developed to provide a comprehensive and cohesive tool for researchers interested in examining the impacts of PCFP on health outcomes and interventions <sup>3</sup>. The scale was validated in Kenya and India and includes constructs related to dignity and respect, autonomy, privacy/confidentiality, health communication, social support, supportive care, trust, and health facility environment. The study identified two subscales for the PCFP scale: 1) "autonomy, respectful care, and communication" and 2) "health facility environment" <sup>3,4</sup>. This scale provides a useful tool for research on PCFP outcomes.

Previous studies have largely overlooked the role of women's healthcare experiences on their family planning use and continuation. Some studies have, however, examined perceived quality of family planning care, as well as individual domains of PCFP, and family planning continuation. It should be noted here that method continuation is not necessarily the best measure of a "good", person-centered, family planning related outcome. On one hand, discontinuation, particularly within a relatively short period, might indicate inadequate assessment of method fit before a woman is started on a particular method. However, because some methods may not be the right fit for specific women or women's desire to delay pregnancy might change, switching or discontinuing may be a more appropriate person-centered outcome measure. This being said, for the purposes of this analysis, we focus on continuation given the relatively short follow up time (8-10 weeks) and common use of this measure in the literature as an indicator of family planning "success."

A number of studies have found that perceived quality of family planning care is associated with family planning client satisfaction, use and/or continuation <sup>5-10</sup>. One study in Egypt tested a client-centered communication model among 31 urban, family planning clinics to ascertain feasibility and acceptability among providers and clients <sup>9</sup>. Through analyzing audio-recordings of clients and providers interacting in these models, the researchers document that those interactions in the client-centered model (where all statements made by provider were client-centered) yielded higher client satisfaction. The researchers did not test these models, however, for associations with family planning use or continuation. In Bangladesh, Koeing et al conducted prospective study involving 7800 women of reproductive age, who were surveyed

after seeking care at a family planning facility. They found that women who perceived higher quality of care were more likely to adopt a method and continue to use that method than those women who gave a low quality score<sup>10</sup>. Specific dimensions of quality of care were not assessed.

No study to date has used a comprehensive person-centered family planning care scale to explore the association between quality and family planning use. Several studies, using a variety of different indicators, have shown that a few dimensions of person-centered care are associated with family planning uptake and continuation<sup>5,7-9,11</sup>. For example, in the Philippines, researchers longitudinally assessed the quality of care received during new client family planning visits<sup>6</sup>. They developed a family planning quality index scored by client responses to 24 questions, of which six questions are similar to those found in the PCFP validated scale. Respondents were then classified as having received care of low, medium or high overall quality, according to their index score. Following the cohort up at 16 months, and after controlling for sociodemographic characteristics, the research team found that the quality of care received at the time a woman adopted a family planning method influenced her family planning use at follow-up. Another study from Egypt that examined quality of care and family planning continuation found better quality associated with higher likelihood of still using a method at follow-up. Despite a very limited measure of quality with only one PCFP-related item (presence of female doctor), the multi-level, clustered model analyses revealed that lack of female doctors at health facility are associated with a high risk of family planning discontinuation<sup>7</sup>.

Two recent studies from the United States and Nigeria also document that certain aspects of quality during family planning visit are associated with family planning continuation<sup>5,8</sup>. Dehlendorf et al longitudinally followed a cohort of family planning users over 3 years in San Francisco Bay Area of California and documented that perceived and observed interpersonal quality of care were strongly associated with higher likelihood of continued family planning use. In particular, two quality measures from the validated 4 Habits Coding Scheme employed during researcher coding of audio-recorded patient-provider encounters were specifically associated with family planning continuation: “invests in the beginning” and “elicits the patient’s perspective”<sup>5</sup>. A recent study in Nigeria examined sociodemographic and quality of care predictors of continuation of Sayana Press, at 3 months among a convenience sample of urban Nigerian users<sup>8</sup>. Measuring quality of care using a three-dimensional scale that include items related to information given, interpersonal and choice, the researchers document an association between higher quality counselling and method continuation. Specifically, their results indicate that women who rated their initial counselling as high were more likely to still be using the injectable at three months. Of note, one indicator that stood out in this study was the provider’s level of involvement in a woman’s decision about which method to adopt—a commonly used quality indicator. Most past studies have considered high scores on provider involvement as being indicative of provider pressure, and thus a sign of low person-centred quality of care<sup>4</sup>. However, in this study, women reported high levels of provider involvement alongside high rankings for other quality indicators, suggesting that they viewed this as a marker of high quality of care<sup>8,12</sup>.

While these studies use some PCFP-related items, a comprehensive approach is needed to fully understand the relationship between PCFP and family planning outcomes. Our study adds to the evidence on the association between person-centered quality and family planning outcomes, such as continuation, using a validated measures of person-centered quality, along side other measures previously used to understand the client's experiences, namely, provider involvement and provider strength of preference.

## Methods

### *Setting*

This study uses data from women who adopted a modern family planning method from health facilities in Uttar Pradesh, India. The study is part of a five-year reproductive health quality improvement project in the India and Kenya. Ethical review and approval of all study documents was provided by the respective research institutions in each country and coordinating US-based university.

In India, the study was administered in nine peri-urban secondary level government health facilities across two districts in Uttar Pradesh. The study sites ranged from a 30-bedded Community Health Centers to a four bedded Primary Health Centers. All are government health facilities and provide free family planning services including pills, condoms and IUDs. Women who adopted sterilizations were dropped from this analysis. Facilities in India had low family planning case loads ranging from 7 to 166 cases per month based on health system data for the facilities from July-September 2017 (Ministry of Health and Family Welfare, Government of India, 2017).

### *Surveys*

The family planning client survey included questions on demographics, birth history, and current family planning method, in addition to the PCFP indicators. Data were collected and stored on tablets using the SurveyCTO platform, and uploaded on the same day to a secure/encrypted server upon obtaining internet connection. Data collection was monitored through a range of quality assurance checks throughout the survey, including interview observations, high frequency checks, backchecks and spot checks by field supervisors.

A team of six female enumerators underwent a one-week training on the study topic, quantitative data collection methods, best practices for surveying, informed consent and recruitment, and the survey tool itself. Then, the team went to the field for piloting for one week in Kenya and two days in India.

Recruitment procedures and eligibility criteria are thoroughly described in the recent PCFP validation paper <sup>3</sup>. To summarize, the eligibility criteria were women who had obtained a modern family planning method at the facility on the day of recruitment aged 18-49 years. This criteria excluded women coming in for a new pill pack due to the limited interaction that may be involved, but included women starting pills as a method or starting a new type of pills.

Survey data was collected between September 2016 and March 2017 in a phased manner across the nine selected facilities. Based on available government family planning service data, the target sample size was set at 88 women per facility. However, the actual user numbers were much lower than indicated in the available secondary data. Despite extending the data collection timeline and near-universal enrolment of all eligible women at each facility, a much lower family planning sample was achieved in India than initially anticipated. No refusals or drop-outs occurred during the survey. All interviews were conducted in Hindi, and in a secluded space within the facility. Per the recommendation of local partners, no incentive was given in India. At the end of the interview, women were requested for brief, follow-up phone survey at six weeks post baseline. All respondents agreed to the follow-up survey. A total of 225 women were interviewed in the baseline, of which 179 women were also followed up after 6 weeks (loss to follow-up was due to wrong numbers or women not answering the phone after multiple attempts).

### *Variable construction*

*Dependent variable:* The primary outcome of interest in this analysis is whether women were still using the family planning method that they adopted at baseline at the follow-up interview. All women in the sample adopted a method at baseline. The follow-up question simply asked if they were still using the method they adopted at baseline (with no information about stops/starts). Women who had switched to another method (N=8) were dropped from the analysis. We use data from follow-up interviews conducted at 6 weeks.

*Independent variable:* Three main quality indicators are examined for their association with method continuation in this analysis. The first is a binary variable on whether a woman reported that her provider was involved the right amount (compared to the provider being involved too much or too little), henceforth referred to as the provider being sufficiently involved <sup>5,8</sup>. The second quality indicator is a binary variable created from a question on whether the woman felt that her provider had no, slight, moderate, strong or extremely strong preference for what family planning method she adopted. The binary grouped moderate/strong/extremely strong preference together, with the comparison group of no/slight preference <sup>6</sup>.

The third quality variable examined is a summary score of the Person-Centered Family Planning Scale (PCFP). The development and validation of the scale in India and Kenya is described in detail elsewhere <sup>3</sup>. The two domains identified were “Autonomy, Respectful Care and Communication” (ARCC) and “Health Facility Environment” (HFE). Example items from the ARCC domain includes trust in her provider, whether the providers introduced themselves, whether the provider called the woman by her name, whether she received respectful care, and whether she was involved in her care. Sample questions from the HFE domain included whether the facility had water, was safe, free from bribes, and had clean facilities. The PCFP scale has 22 items in India, with 17 items in the ARCC subscale and 5 items in the HFE model. A summary PCFP score was created using the validated scale <sup>3</sup>.

### *Socio-demographic covariates*

We included the following variables: age, marital status, education, parity, household wealth, caste, and religion. The inclusion of these covariates was motivated by our theoretical framework and previous findings about factors associated with family planning continuation and women's experiences of quality. Age was modeled as a continuous variable. Education was grouped into three groups (no school/primary, secondary/vocational, college or above). Parity was grouped into 4 groups: 1 child, 2 children, 3 children and 4 or more (no women had no births). A wealth quintile variable was constructed by making a quintile of women's reports of their total household income. A variable for caste was included which was a binary with low caste groups (Scheduled Caste, Tribe and Other Backward Caste) compared to high caste groups ("General" category). A binary variable was created for religion, with the dominant religion (Hindu) compared to all other minority religions.

### *Analyses*

First, we describe the three quality variables and socio-demographics by method continuation status (Table 1). We then explore the correlation between the three quality measures (Table 2). Next, three separate Penalized maximum likelihood regression models are run, first without controlling for potential confounders and then controlling for socio-demographic variables, looking at the association between the three quality measures and family planning continuation (Table 3a and 3b). Penalized maximum likelihood regression models (using firthlogit) were necessary because discontinuing was a relatively rare event, and the overall sample sizes were also fairly small. Finally, we explore if there are differences in the associations with family planning continuation by PCFP sub-scale, again using a penalized maximum likelihood regression (Table 4). All analyses are run using STATA 15.

**<Place table 1 and table 2 here>**

## **Results**

Mean age was about 26 years (Table 1). In terms of education, 18.3% had no school or only primary education, most had post-primary/secondary (53.5) and 28.2% college or more. All of the sample was married. Most women were in the dominant, low caste groups (77.8%) and in the primary religion (Hindu, 94.3%). About a third (29.5%) had 1 living child, 30.7% 2 children, 23.9% 3 children and about 16% 4 or more. The majority of women received IUD (87.2%), with 13 (7.6%) receiving condoms and 4 (2.3%) oral contraceptive pills.

### *Socio-demographic characteristics by continuation status*

Discontinuation within 6 weeks was fairly low, with 11.6% discontinuing (Table 1). Women with post-primary education represented largest proportion of family planning continuers. A greater proportion of discontinuers were low caste women, compared to continuers. Few differences by age, religion or wealth emerged.

### *Quality measures by continuation status*

As can be seen in Table 1, women who reported that the provider was sufficiently involved were more likely to have continued (46.4% compared to 34.2%). On average, more women in India, (61.2%) said that they wished their provider had been more involved (only 1.3% desired them to be less involved).

On average, a much high proportion of women in India reported that the provider had a strong or very strong preference for what method they choose, with 94.1% of women who continued and 82.1% of women who discontinued reporting moderate/strong/extremely strong preference (Table 1). Overall, only 11% of women in India reported that the provider showed no/slight preference.

The mean PCFP score was similar between women who continued and discontinued in India (57.9 and 58.4, respectively) (Table 1). For the sub-scales, there was a small difference in mean scores for the HFE subscale (11.3 among continuers and 10.7 among discontinuers). Continuers had a slightly lower mean score on the ARCC subscale (46.6 compared to 47.7).

### *Correlation between quality indicators*

In India, provider involvement and provider preference were significantly correlated (Table 2). PCFP was not associated with either other quality outcome.

### *Quality and continuation: three different measures*

After controlling for the socio-demographic factors, only the provider having a moderate/strong/extremely strong preference for a specific method was associated with increased odds of a woman continuing her method at 6 weeks (OR=4.11,  $p<0.05$ ) (Table 3). There was no association between either subscale and continuation in India (data not shown).

**<Place table 3 here>**

## **Conclusions**

This study shows the associations between women's reports on three measures of person-centered family planning and method continuation in two settings. It extends our understanding of how different aspects of quality are associated with method continuation. We find that when other factors are accounted for, scores on the recently validated PCFP scale are not associated with continuation. On the other hand, provider preference is associated with continuation. Overall, our results suggest that certain aspects of PCFP impact a woman's likelihood of continuing her method.

We would have expected that PCFP would be associated with continuation given the past literature. For example, a study in Kenya examining similar items found that providers giving information on side effects, seeking client preferences, interpersonal treatment of clients, and assisting with method selection were all significantly associated with an increased likelihood of current modern contraceptive use among family planning clients in five urban Kenyan cities <sup>11</sup>. The effects in this study were more pronounced among younger and less educated women in their urban Kenya sample <sup>11</sup>.



In India, our findings indicate that strong provider preference is associated with continuation. While not exactly the same outcome, other studies in India have shown discrepant results, where provider and client preferences were not aligned. Specifically, a study from the Indian Council of Medical Research (ICMR) Task Force (2000) found from observations of patient-provider interaction during family planning visits at government facilities that while providers preferred Norplant for 35% of women, only 5% of clients preferred and accepted Norplant, and 60% of clients accepted IUD <sup>13</sup>.

The rationale behind the inclusion of the question on provider preference in a set of questions about person-centered quality was to assess provider pressure. A strong body of work in the US has used this measure and interpreted clients reporting that the provider had a strong preference as a sign of poor quality of care <sup>5,14</sup>. One study assessed predictors of implant discontinuation within first six months following insertion among family planning clients in three American cities and found that perceived pressure by a healthcare provider to choose an implant significantly predicted early implant discontinuation <sup>14</sup>.

The cultural context may, however, explain the finding in India that women both wanted their providers to be more involved, and that having a provider with a strong preference for what method they adopted was associated with increased odds of method continuation. For example, it is possible that women in India want their providers to give them more advice, tell them which method they think is “right” for them, and therefore such involvement makes women feel more confident in their method choice and thus are more likely to continue. Women wanting their providers to be more involved and to express strong preferences could also be related to a societal “respect” for people who are older or of a higher social class, as is traditional in India and other Asian countries <sup>15,16</sup>. Our findings are consistent with the previously cited study in Nigeria, where women who reported high ratings among other quality indicators also reported that the provider had a strong preference, suggesting that strong provider preference was an indicator of good quality <sup>8</sup>.

Additionally, given India’s history of restrictive family planning programs, it is possible that women have developed cultural health capital strategies that focus less on interaction with doctors and more on providers telling women what to do <sup>17</sup>. India has a long history of coercive family planning programs, and it continues to be heavily target and incentive based <sup>18</sup>. This, combined with more recent evidence of women being sterilized or inserted with PPIUCDs without their knowledge or consent, highlights that the meaning and impact of “strong” provider preference is important to understand <sup>19,20</sup>. Considering the socio-cultural dynamics in India, especially related to hierarchies by caste, socioeconomic status, gender, and in this case, occupation (physician/nurse interacting with a woman who is most likely a poorly educated housewife), women might feel more pressured to remain on a method if their provider showed a strong preference. In this case, “provider preference” would be an indicator of poor quality, using the framework of interpreting provider pressure and bias for specific methods.

As with other studies, this study has a number of limitations. The method mix is limited in India, with most women relying on sterilization. These women were dropped from our analysis, thus restricting our

sample in India. Long acting contraceptives are limited to IUD – that is the only option given to women at India government health facilities– women who continue then are those who genuinely want to space births, and are supported by their partners/families. Additionally, many women in our sample were postpartum, thus there was high reliance on IUDs. Because of the limited sample size, we are also unable to stratify by method. Additionally, we only follow up women 6-8 weeks after they have received their family planning method. It would be interesting to see if method continuation occurred after six months or longer. Third, while we include three measures of quality, other quality measures might also be important, including counseling quality and clinical quality. Finally, sample sizes, especially among discontinuers, were small, and longer follow-up may have led to larger samples. Our analysis accounted for this rare event, but larger samples could have been beneficial.

Additionally, we are unable to account for other factors that contribute to discontinuation such as availability, side effects, and partner acceptance.

Other limitations include biased estimates due to underreporting of poor care, as has been observed in other studies. Women may underreport due to social desirability or because of low expectations and acceptance of poor standards. There are also limitations from loss to follow-up in the follow-up surveys. Those who did not respond at the follow up may have done so because they had discontinued their method and did not want to report it. Finally, these data are not representative India or the districts in which data was collected, as they are based on convenience sampling approaches. However, these limitations are balanced by the strengths of this study, in that it uses a recently validated scale to measure PCFP and utilizes longitudinal data to avoid recall or other forms of bias.

The quality of care that women receive during their family planning visit impacts their method continuation. Person-centered care and experiences related to the role of providers appear to increase method continuation, although differences exist between contexts. We must think carefully about the measures that we are using to try to assess person-centered quality and client-provider interactions—especially considering how women in different settings might experience good quality differently than we may hypothesize based on our expectations of quality coming from a “western” framework. Taking this one step further, we then must situate how women are answering quality measures within the broader socio-cultural context including women’s status in society, power dynamics especially between providers and clients, and the overall structure of how care is provided. This intersectionality is especially true to measures related to the role of providers in women’s decision-making about method choice and uptake.

## **Abbreviations**

ARCC – Autonomy, Respectful Care and Communication

HFE – Health Facility Environment

ICMR - Indian Council of Medical Research

IUCD - An intrauterine device

PCFP - Person-centered family planning care

PPIUCD - Post Partum IUCD

## Declarations

### ***Authors contributions:***

NDS led the analysis and manuscript preparation, and conceptualized the study. BP participated in data analysis and manuscript writing. AF and GG participated in data interpretation, manuscript editing. AS participated in the design and oversight of the data collection, and participated in data interpretation and paper writing. MS co-conceptualized the study and contributed to manuscript writing and data interpretation.

### ***Ethics approval and consent to participate:***

Ethical review and approval of all study documents was provided by the respective research institutions in each country (PHFI in India) and coordinating US-based university (UCSF). Verbal or written consent, depending on the literacy of the participant, was collected before enrollment.

### ***Consent for publication:***

The consent indicated that findings would published without any identifying information.

### ***Availability of data materials:***

The dataset used is available from the corresponding author on reasonable request.

### ***Competing interests:***

We declare we have no competing interests

### ***Funding:***

This study was funded with support from the Bill and Melinda Gates Foundation and the David and Lucile Packard Foundation.

### ***Acknowledgements:***

We would like to thank the generous support of the Bill and Melinda Gates Foundation and the David and Lucile Packard Foundation. We would also like to thank Kelsey Holt for reviewing this paper and providing technical expertise on the analysis. We would also like to thank the participants and discussant

in the session entitled “Measurement Approaches and Innovations in Family Planning” at the Population Association of America meeting, 2019.

## References

1. Diamond-Smith N, Warnock R, Sudhinaraset M. Interventions to improve the person-centered quality of family planning services: a narrative review. *Reprod Health*. 2018;15(1):144. doi:10.1186/s12978-018-0592-6
2. Oneview. The Eight Principles of Patient-Centered Care. Oneview: Articles. <https://www.oneviewhealthcare.com/the-eight-principles-of-patient-centered-care/>. Published May 15, 2015. Accessed November 30, 2018.
3. Sudhinaraset M, Afulani PA, Diamond-Smith N, Golub G, Srivastava A. Development of a Person-Centered Family Planning Scale in India and Kenya. *Stud Fam Plann*. August 2018. doi:10.1111/sifp.12069
4. Sudhinaraset M, Afulani P, Diamond-Smith N, Bhattacharyya S, Donnay F, Montagu D. Advancing a conceptual model to improve maternal health quality: The Person-Centered Care Framework for Reproductive Health Equity. *Gates Open Res*. 2017;1:1. doi:10.12688/gatesopenres.12756.1
5. Dehlendorf C, Henderson JT, Vittinghoff E, et al. Association of the quality of interpersonal care during family planning counseling with contraceptive use. *Am J Obstet Gynecol*. 2016;215(1):78.e1-78.e9. doi:10.1016/j.ajog.2016.01.173
6. RamaRao S, Lacuesta M, Costello M, Pangolibay B, Jones H. The Link between Quality of Care and Contraceptive Use. *Int Fam Plan Perspect*. 2003;29(2):76-83. doi:10.2307/3181061
7. Ali MM. QUALITY OF CARE AND CONTRACEPTIVE PILL DISCONTINUATION IN RURAL EGYPT. *J Biosoc Sci*. 2001;33(2):161-172. doi:10.1017/S0021932001001614
8. Liu J, Shen J, Diamond-Smith N. Predictors of DMPA-SC continuation among urban Nigerian women: the influence of counseling quality and side effects. *Contraception*. May 2018. doi:10.1016/j.contraception.2018.04.015
9. Abdel-Tawab N, Roter D. The relevance of client-centered communication to family planning settings in developing countries: Lessons from the Egyptian experience. *Soc Sci Med*. 2002;54(9):1357-1368. doi:10.1016/S0277-9536(01)00101-0
10. Koenig MA, Hossain MB, Whittaker M. The influence of quality of care upon contraceptive use in rural Bangladesh. *Stud Fam Plann*. 1997;28(4):278-289.
11. Tumlinson K, Pence BW, Curtis SL, Marshall SW, Speizer IS. Quality of care and contraceptive use in urban Kenya. *Int Perspect Sex Reprod Health*. 2015;41(2):69-79.
12. Dehlendorf C, Levy K, Kelley A, Grumbach K, Steinauer J. Women’s preferences for contraceptive counseling and decision making. *Contraception*. 2013;88(2):250-256. doi:10.1016/j.contraception.2012.10.012

13. Baveja R, Buckshee K, Das K, et al. Evaluating contraceptive choice through the method-mix approach: An Indian Council of Medical Research (ICMR) Task Force study. *Contraception*. 2000;61(2):113-119. doi:10.1016/S0010-7824(00)00089-5
14. Kalmuss D, Davidson AR, Cushman LF, Heartwell S, Rulin M. Determinants of Early Implant Discontinuation Among Low-Income Women. *Fam Plann Perspect*. 1996;28(6):256-260. doi:10.2307/2136054
15. Claramita M, Nugraheni MDF, van Dalen J, van der Vleuten C. Doctor–patient communication in Southeast Asia: a different culture? *Adv Health Sci Educ*. 2013;18(1):15-31. doi:10.1007/s10459-012-9352-5
16. Gopichandran V, Chetlapalli SK. Trust in the physician-patient relationship in developing healthcare settings: a quantitative exploration. *Indian J Med Ethics*. 2015;12(3):141-148. doi:10.20529/IJME.2015.043
17. Sudhinaraset M, Treleaven E, Melo J, Singh K, Diamond-Smith N. Women’s status and experiences of mistreatment during childbirth in Uttar Pradesh: a mixed methods study using cultural health capital theory. *BMC Pregnancy Childbirth*. 2016;16:332. doi:10.1186/s12884-016-1124-4
18. National Health Mission. Record of Proceeding: Uttar Pradesh 2017-2018. 2017. <http://nhm.gov.in/nrhm-in-state/state-program-implementation-plans-pips/uttar-pradesh.html>. Accessed September 4, 2018.
19. Connelly M. Population Control in India: Prologue to the Emergency Period. *Popul Dev Rev*. 2006;32(4):629-667. doi:10.1111/j.1728-4457.2006.00145.x
20. Singh A, Ogollah R, Ram F, Pallikadavath S. Sterilization Regret Among Married Women in India: Implications for the Indian National Family Planning Program. *Int Perspect Sex Reprod Health*. 2012;38(4):187-195.

## Tables

Table 1: Method continuation by socio-demographic factors, N(%)

	Total	Continued Method at 6 weeks	Did not continue method at 6 weeks
Method use at endline	172	152 (88.4)	20 (11.6)
Provider sufficiently involved	65 (36.1)	52 (34.2)	13 (46.4)
Provider had a strong/very strong preference for what method I choose	166 (92.2)	143 (94.1)	23 (82.1)
PCFC score, mean (range)	58.14 (32-66)	57.98 (32-66)	58.42 (38-66)
PCFP subscale HFE mean (range)	11.26 (5-15)	11.34 (5-15)	10.74 (5-15)
PCFP subscale ARCC, mean (range)	46.89 (21-51)	46.64 (21-51)	47.68 (30-51)
Standardized PCFP score, mean	88.09	87.85	88.52
Family Planning method adopted at baseline			
IUD/Coil	150 (87.21)	125 (87.21)	25 (92.59)
Injection/Depo provera			
Implant			
Pill	4 (2.33)	3 (2.07)	1 (3.70)
Condom	13 (7.56)	13 (8.97)	0 (0)
Age (in years), mean (range)	25.56 (18-40)	25.41 (20-40)	25.74 (21-35)
Education			
No school/Primary	26 (18.3)	20 (16.7)	6 (27.3)
Post-primary	76 (53.5)	67 (55.8)	9 (40.9)
College or above	40 (28.2)	33 (27.5)	7 (31.8)
Caste			
Low Caste	40 (22.2)	30 (19.7)	10 (35.7)
High Caste	140	122 (80.3)	18 (64.3)

	(77.8)		
Religion			
Other	10 (5.7)	10 (6.7)	0 (0)
Hindu	166 (94.3)	139 (93.3)	27 (100)
Parity			
1	52 (29.5)	46 (30.9)	6 (22.2)
2	54 (30.7)	45 (30.2)	9 (33.3)
3	42 (23.9)	36 (24.2)	6 (22.2)
4 or more	28 (15.9)	22 (14.8)	6 (22.2)
Wealth Quintile			
Lowest	55 (34)	47 (34.3)	8 (32)
Low	28 (17.3)	26 (19)	2 (8)
Middle	21 (13)	17 (12.4)	4 (16)
High	22 (13.6)	17 (12.4)	5 (20)
Highest	36 (22.2)	30 (21.9)	6 (24)

\*p<0.1, \*\*p<0.05, \*\*\*p<0.01

Overall totals are for sociodemographic factors (row totals); Total are per each row (each sociodemographic factor) while continued/discontinued results are presented by column

Table 2: Correlation between quality indicators: PCFP, provider involvement, and provider preference (pwcorr)

	PCFP score	Provider involvement	Provider preference
PCFP score	1		
Provider involvement	-0.201*	1	
Provider preference	0.0141	0.0324	1

\*<0.05

Table 3: Penalized maximum likelihood regression (firthlogit) of association between 3 quality indicators and continuation, first without and then with controls for socio-demographics, OR (Standard Error)



Outcome: family planning continuation	PCFP score (continuous)		Provider sufficiently Involved		Provider had a strong Method Preference	
	0.984 (0.0294)	1.020 (0.0423)	0.600 (0.246)	0.707 (0.372)	3.535** (2.051)	4.108** (2.599)
Age (in years)		1.074 (0.112)		1.088 (0.118)		1.083 (0.118)
Education (compared to none/primary)						
Secondary		2.286 (1.433)		2.297 (1.446)		2.429 (1.562)
College or above		2.002 (1.430)		2.061 (1.478)		2.233 (1.625)
Wealth quintile						
Poor		0.861 (0.747)		0.905 (0.788)		0.732 (0.649)
Middle		0.504 (0.392)		0.527 (0.410)		0.501 (0.394)
Rich		0.537 (0.390)		0.600 (0.448)		0.458 (0.348)
Richest		0.834 (0.578)		0.819 (0.569)		0.895 (0.636)
Number of births (compared to 1)						
2 births		0.493 (0.359)		0.474 (0.349)		0.460 (0.357)
3 births		0.363 (0.323)		0.347 (0.312)		0.360 (0.331)
4 or more births		0.192 (0.210)		0.182 (0.200)		0.179 (0.201)
Low caste (compared to no caste)		2.491* (1.347)		2.505* (1.326)		2.303 (1.251)
Religion (Hindu compared to other)		0.524		0.588		0.599

		(0.777)		(0.880)		(0.887)
Constant	13.70	0.301	6.484***	0.734	1.727	0.224
	(24.23)	(1.253)	(1.769)	(2.138)	(0.925)	(0.671)
Observations	176	131	180	131	180	131

\*p<0.1, \*\*p<0.05, \*\*\*p<0.01

## Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [completedSTROBEcohortchecklist.docx](#)