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Couple Characteristics and Contraceptive Use among Women and their Partners in Urban Kenya

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Abstract

Background—Few studies have used couple data to identify individual- and relationship-level characteristics that affect contraceptive use in urban areas. Using matched couple data from urban Kenya collected in 2010, this study determines the association between relationship-level characteristics (desire for another child, communication about desired number of children and FP use) and contraceptive use and intention to use among non-users.

Methods—Data were collected from three Kenyan cities: Nairobi, Mombasa and Kisumu. Baseline population-based survey data from the Measurement, Learning & Evaluation Project were used to identify 883 couples (weighted value=840). Multivariate regressions used the couple as the unit of analysis.

Results—Almost two-thirds of couples currently used contraception. Adjusting for individual- and environmental-level characteristics, couples who desired another child were less likely to use contraception than couples wanting more children. In addition, couples where both partners reported communicating with each other regarding desired number of children and FP use were more likely to use contraception compared to couples that did not communicate. Analyses testing the association of relationship-level characteristics and intention to use contraception, among non-users, resembled those of current contraceptive users.

Conclusion—Couple-level characteristics are associated with current contraceptive use and future intent to use. Couples that discussed their desired number of children and FP use were more likely to use contraception than couples that did not communicate with each other. FP programs should identify strategies to improve communication in FP among couples and to ensure better cooperation between partners.

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Background

In 1994, participants at the International Conference on Population and Development (ICPD) were encouraged to think of new ways to improve family planning (FP) in the developing world. It was emphasized through the ICPD's Program of Action that the active participation of both men and women was essential to reducing unmet need for FP^{1,2}. As a result, men's role in FP has been highlighted at various public health conferences and in messages from donor agencies, governments and the media. This is particularly important because, in certain societies, the man's consent is required to make reproductive health decisions^{3,4} and a lack of male involvement places the heavy burden of reproductive health decision-making solely on the woman⁵. Husbands' opinions on FP use may therefore result in additional barriers to use. For example, analysis of the 1992 Morocco Demographic and Health Survey (DHS) data found that husbands' fertility desires had a significant effect on women's contraceptive use after adjusting for the women's own fertility desires⁶. Hence, men's involvement in FP programs and policies is necessary in order to increase contraception uptake⁷.

It is important to interview both spouses in order to identify the FP needs of couples and account for the different attitudes, views and needs of both partners. In a study conducted in rural India, spouses gave highly (97%) consistent responses on reproductive health events such as their current use of contraception, but fewer spouses had similar attitudes towards contraception (84% concurrent responses) and fertility desires (88% concurrent responses)⁸. Unfortunately, both spouses are not always interviewed; many studies purported to be on couples include the partner's perceived responses with the assumption that the surveyed person is fully aware of their partner's thoughts and desires. For example, DHS data obtained from 35 countries included only the wives' responses to measure the couples' approval/disapproval towards contraceptive use⁹. Since a woman may not know her partner's attitudes and desires, information from both partners is needed to produce a more precise understanding of husband-level factors affecting contraceptive use. Therefore, we aim to determine the effects of couple characteristics on contraceptive use among married/cohabiting couples in three urban centers of Kenya: Nairobi, Mombasa and Kisumu. The hypothesis is that if both spouses do not desire another child within the next two years, the couple is more likely to use contraception. Furthermore, if both partners acknowledge communicating about the desired number of children and using FP, these couples are more likely to be using contraception, as better communication increases partner support in using contraception to space/limit childbearing.

Social Ecological Theory

In order to identify factors affecting couples' contraceptive use behavior, it is imperative that we utilize an easily comprehensible, inclusive, and relevant theory. One such theory, the Social Ecological Theory, examines the effects of multiple levels and contexts on an individual's behavior^{10,11}. This theory suggests that an individual's behavior is associated with at least three spheres of influence: individual characteristics, interpersonal features and environmental factors.

Several demographic studies have identified individual-level traits or sociodemographic characteristics that affect contraceptive use, most notably formal education¹²; however, the findings on the relative importance of the husband's versus the wife's education are inconsistent^{13,14}. A study from Nepal, conducted by Gubhaju, determined that the husband's education has a greater influence than the wife's education on contraceptive use, especially in relation to male-controlled methods such as male sterilization and condom use¹³. On the other hand, a Bangladesh DHS study showed that both partners' education levels are significant determinants of reported contraceptive use¹². In contrast, another study from Bangladesh showed that the wife's education is more strongly predictive of contraceptive use than the husband's preference for additional children, i.e. as a wife's education level increases, the husband's preference for more children has less effect on the woman's decision to use contraception¹⁴. Unlike the previously mentioned Nepali study conducted by Gubhaju, analysis of data from 14 sub-Saharan African (SSA) countries revealed that a woman's education is a stronger predictor of contraceptive use than her husband's education^{13,15}. This difference in findings between South Asia and SSA might reflect differences in the gender context across the two regions. Since larger proportions of SSA women live alone and raise their children singlehandedly as compared to women in Asia¹³, the African woman's education level may be a greater predictor of contraceptive use than her partner's¹⁶. Other individual-level factors associated with contraceptive use include spousal age difference, religion and parity. Two studies conducted in Ghana using couple-level data concluded that a smaller age difference between spouses and adherence to different religions (such as, Christian and Muslim) increased contraceptive use^{17,18}. We note that studies primarily analyzing national-level data across countries have found that both spouses' education levels, ages, religious affiliations and current parity all affect their contraceptive use¹⁷⁻²⁰. However, less has been done to examine these associations specifically in urban settings as the individual-level traits or sociodemographic characteristics of urban residents can be different from the national average.

The Social Ecological Theory also posits a role for relationship-level factors on contraceptive use. Besides determining the effects of individual traits on contraceptive use, some research has been conducted to identify the effects of relationship-level factors, such as the husband and wife's fertility desires and reported communication, on contraceptive use²¹⁻²⁵. Some couple studies conducted in Nigeria and Pakistan noted that women tend to use contraception when their husbands are satisfied with the number of children they have^{23,25}. Another study using Kenya 1989 and 1993 DHS data found that women were twice as likely to use contraception if their husband truly desired no more children than when they alone felt so (39.2% vs. 23.2%)²¹. Other studies conducted in Kenya and Asian countries have shown that in cases where women do not desire additional children in the near future whereas their partners want more children, there was more reluctance among women to use FP. For example, in a study of couples in the Nairobi slum of Baba Dogo and the rural area of Chwele in western Kenya, a lack of partner agreement on fertility desires was cited by the women as a major barrier to contraceptive use²². In cases where women used contraception discreetly, their partners often considered it a sign of disrespect and held them in contempt²². Similarly, analysis of data from five Asian countries suggested that women do not use contraception if their husbands desire more children²⁴. Other couple-level

studies present opposite findings where the wives' fertility preferences are more predictive of use than their husband's reported preferences^{19,21,26,27}. For example, a recent study of 238 married/cohabiting couples in Kwa Zulu Natal, South Africa noted that the wives' fertility preferences were key determinants of use, while the husbands' desires were not a significant factor²⁶. Given these inconsistencies, more couple-level analyses are needed to study the association of both spouses' fertility desires and perceptions of ideal family size on contraceptive use.

Beyond fertility desires, another dimension of relationship-level factors that affect contraceptive use is couple communication. Several studies conducted across Africa and South Asia have suggested that communication about fertility and contraception between spouses is important as it encourages contraceptive use and results in smaller family sizes^{25,28-36}. For example, a study of the Kenya 1993 DHS data from 1257 couples found that couples where both partners reported discussing FP were more likely to be ever-users of FP though the relationship may go in the other direction with ever users more likely to discuss FP³⁷. The association of couple communication and contraceptive use, after adjusting for individual- and environmental-level characteristics within a more defined context, such as an urban setting, remains uninvestigated.

Based on the Social Ecological Theory, environmental factors have also been identified as affecting contraceptive use. Few studies have looked at the effects of household characteristics and community factors on women's contraceptive use, without adjusting for other characteristics. Most research done in this regard has focused on the association of household wealth and women's contraceptive use using national level data for developing countries and often adjust for urban versus rural differences. These studies have shown that women residing in poorer households are less likely to use contraception than richer women^{38,39}. Poor women have the lowest contraceptive use resulting in the highest unmet need, unwanted pregnancies and hence fertility rates⁴⁰⁻⁴². Few studies have examined the impacts of community factors, such as neighborhood type (e.g., slum or non-slum), on women's contraceptive use^{43,44}. Furthermore, few studies to date have included both spouses' characteristics and determined the effects of household characteristics (e.g., household wealth) and community factors (e.g., neighborhood type) together on couple's contraceptive use, within and across different urban settings. As we have noted above, there is increased literature exploring the effects of individual characteristics on contraceptive use; however, the effects of characteristics relating to couple communication and couple desires, after adjusting for environmental factors, on contraceptive use among couples living in these ever-expanding urban centers have not been jointly studied. Hence, the objective of this paper is to determine the association of relationship-level characteristics on contraceptive use among couples living in urban Kenya.

Methods

We utilized baseline survey data from the Measurement, Learning & Evaluation (MLE) Project, in Kenya, collected as part of the evaluation of interventions to increase contraceptive prevalence among urban populations, especially the urban poor. The MLE project is the evaluation component of the Urban Reproductive Health Initiative (Urban RH

Initiative) which aims to improve the health of the urban population, with special attention to the urban poor, in Kenya, Nigeria, Senegal, and Uttar Pradesh, India. In Kenya, the Urban RH Initiative, called Tupange, is assisting the Kenyan government revitalize its urban FP programs.

The MLE Project in Kenya collected population-level data between September and November 2010 from women in Nairobi, Mombasa, Kisumu, Machakos and Kakamega and from men in Nairobi, Mombasa and Kisumu. Prior to sample selection, the 2009 census sampling frame was used to classify all primary sampling units (PSU) in the three study cities as predominantly formal (non-slum) or informal (slum). Households were classified as informal if built on land that the government had not allocated for housing and formal if built on land allocated for housing. Representative samples of women and men were then selected and interviewed using a two-stage sampling method. In the first stage, random samples of PSUs were selected to represent the cities' populations, with half selected from the formal settlement strata and the other half from the informal settlement strata using probability proportional to population size. In the second stage, all the households from each selected PSU were listed. From this list, a random sample of 30 households was chosen for household and female interviews. In half of these selected households in Nairobi, Mombasa and Kisumu, men were also interviewed. All eligible women aged 15-49 and men aged 15-59 were invited to participate in a pencil-and-paper interviewer-led survey covering basic sociodemographic characteristics, reproductive health and FP use. For this analysis, we only focus on the women's and men's data from Nairobi, Mombasa and Kisumu.

A total of 5774 women and 2503 men were interviewed across the three cities. This represents a response rate of 82.4%, 84.9%, and 82.5% for women in Nairobi, Mombasa, and Kisumu, respectively, with a weighted mean of 83.1%. For men, the corresponding response rates were 70.0%, 70.1%, and 53.7% in Nairobi, Mombasa, and Kisumu, respectively, with a weighted mean of 65.6%⁴⁵. For this analysis, a couples' dataset was created with the male partner identified as the household's head and the female partner as the spouse of the head of the household resulting in a maximum of one couple per household. As shown in Table 1, 2452 women and 1079 men were dropped from the analysis as they were not legally married or cohabiting, *i.e.*, living together in the same household as a couple; 61 women and 16 men were dropped as they were not full-time residents of the home; 1515 women were dropped as their homes were not selected for male interviews; 306 women were dropped as they were not designated as the spouses of the heads of their households; and 64 men were dropped as they were not noted as the heads of their households. Another 557 women were dropped from the analysis as their male partners had not completed the interview and 461 men were dropped because their wives had not completed the interview. After the data had been sorted in this way, a total of 883 couples were identified, resulting in a representation of 840 couples after applying women-level population weights. Hence, the weighted sample of 840 couples represents married/cohabiting male heads of the household and their wives across the three cities of Nairobi, Mombasa and Kisumu who completed the interview. F-tests were performed to determine if the sub-sample of women with completed interviews of both partners were similar to the sub-sample of married/cohabiting women whose partners were identified as the head of the

household but who did not complete the survey. The null hypothesis for the tests was that the characteristics of the subsample of 840 women were similar to that of the sub-sample of married/cohabiting women whose partners did not complete the interview. The p-values from the F-tests show that we failed to reject the null hypothesis, indicating that the sub-sample of married/cohabiting wives who matched for this study have characteristics similar to the sub-sample of married/cohabiting women who did not match (see Appendix 1).

We obtained ethical clearance from the University of North Carolina at Chapel Hill Institutional Review Board (UNC IRB) and the Kenya Medical Research Institute (KEMRI) to conduct the surveys. This secondary data analysis was exempted by the UNC IRB.

Variables

The first outcome of interest is current contraceptive use as reported by the woman. Current contraceptive use includes all modern and traditional methods, i.e., pills, injectables, IUD, implants, condoms, sterilization, Standard Days Method, Lactational Amenorrhea Method (LAM), emergency contraception, calendar method and withdrawal. The women's reported contraceptive use was used for this analysis because some men may have other partners and they may vary their FP use patterns with these different partners^{46,47}. Therefore, men's reported contraceptive use may not accurately reflect the couple's use. The second outcome of interest is intention to use contraception (intends vs. does not intend), among women currently not using contraception.

The primary independent variables of interest were relationship-level characteristics representing couple interactions. A relationship-level characteristic, desire for another child, was determined by asking each spouse the following question, "Would you like to have another child?" This variable has been classified as: both spouses want another child, both spouses do not want another child, and one spouse only wants another child. A second relationship-level characteristic was communication between spouses in the prior six months on their desired number of children. Each spouse was asked the following questions, "Have you and your spouse/partner discussed the number of children you would like to have, in the last six months?" Based on their positive or negative response, this variable is classified as: both spouses agree to discussing desired fertility, both spouses agree to not discussing desired fertility, and spouses had discordant responses. A third relationship-level characteristic was communication between spouses on FP use, in the past 6 months. Each spouse was asked the following question, "Have you and your spouse/partner discussed the use of a family planning method, in the last six months?" This variable is classified as: both spouses agree to discussing FP use, both spouses agree to not discussing FP use, and spouses had discordant responses. Table 2 describes the categorization and distribution of these variables for husbands and wives.

We also analyzed other individual-level characteristics and community factors. The individual-level characteristics included the spouses' ages, education levels and religions. The number of living children as noted by the wife was also included, as husband's reported parity may not reflect the true number of children the couple have. The community-level factors included neighborhood type and household wealth, with neighborhood type capturing place-based poverty and household wealth being an indicator of asset-based

poverty⁴⁸. Household wealth was created by constructing a linear index from 21 asset ownership indicators*, using principal components analysis^{48,49}. The wealth index variable was measured in tertiles and the population was assigned to three categories: poor, intermediate and rich. The city of residence was adjusted as a community-level variable, *i.e.*, Nairobi, Mombasa and Kisumu, also described in Table 2.

Analysis plan

We present descriptive analyses of the responses given by husbands and wives to each question/variable individually to compare the frequency of concordant responses and to quantify agreement between the partners' responses using percentage agreement⁵⁰. The differences in the statistical significance of the couple's joint characteristics are also determined using the F-test.

For the multivariate analyses, the couple is the unit of analysis. The multivariate analyses that test the association between couple interactions (*i.e.*, desire for another child, partner discussion on the desired number of children and discussion of FP use in the prior six months) with contraceptive use adjust for the couples' individual-level characteristics (*i.e.*, age, education, religion, parity) and environmental factors (*i.e.*, household wealth, type of residence and city of residence). Three models of multivariate analyses are calculated – model 1 only includes the variables describing couple interactions, model 2 adds to model 1 the couples' individual-level characteristics and model 3 further includes the addition of environmental factors. Notably, when models were analyzed using only the women's demographic characteristic, the model fit was much lower than when couple-level variables were used. Hence, in this analysis, we focus on couple-level characteristics.

We used Stata 12 software for all statistical computations⁵¹. All analyses were further conducted after population weights were applied to represent the married/cohabiting urban population of the three cities involved and svy commands were used to adjust for the complex sampling design.

Results

Characteristics of women and their partners

Table 2 presents the overall distribution of the key individual, couple and community-level characteristics for this analysis. Wives were generally younger, with over a quarter (27%) of the women being between 15 and 24 years old, while only 9% of men were within that age range. With regards to education, husbands were generally more educated as 71% have received at least some secondary education, compared to only 57% of wives. In general, the majority of the spouses adhered to the same religion with 74% agreement. Less than a quarter were Catholic, two-thirds Protestant and approximately 10% were Muslim or belonged to other faiths. There was 76% concordance between spouses on the reported number of living children they have. A little over 10% did not have any children while the

*The 21 assets included owning a vehicle, computer, TV, bicycle, clock, refrigerator, electric stove, mosquito net, VCR, iron, sofa, torch; having domestic help; the number of rooms in the house; whether the house has a separate kitchen, electricity, toilet, home insurance, and the types of floors and walls.

remaining half had 1-2 children and a third had three or more children. There was generally good agreement between husbands' and wives' responses to their desire for another child, as documented by a 73% agreement score. About half (53%) the wives desired another child while a greater percentage (63%) of husbands wanted the same. In addition, about 50% of the wives stated that they had discussed the number of children they would like to have with their partner in the prior six months while a higher (67%) percentage of husbands stated the same. Furthermore, less than half (46%) of the wives stated that they had communicated with their partner regarding FP use while about two-thirds of the husbands reported discussing FP use with their wife. About one-quarter (24%) of all couples were living in informal housing. Three-quarters (76%) of the couples resided in Nairobi, one-fifth (19%) in Mombasa and 4% in Kisumu. There was low (25%) agreement between spouses on the current contraceptive method being used. More wives stated that they were using pills (16% versus 15%) and other modern methods (9% versus 7%) as compared to their husbands. On the other hand, 13% of husbands reported using condoms as compared to 5% of wives; 11% of husbands reported using traditional methods as compared to 6% among wives. Among non-users of contraception, husbands (23%) were more often unsure about future intention to use FP than wives (11%).

Characteristics of couples

For the analyses that follow, the couple is the unit of analysis. In Table 3, we present the percentage of couples using FP by the characteristics of the couples. Overall, 60% (507) of couples were using contraception, as reported by women. Around two-thirds of couples used FP if both partners were Protestant or belonged to different religions (usually one partner being Protestant) whereas a significantly smaller percentage of the Catholic couples (50%) and Muslim couples (37%) were currently using contraception. Couples with no living children were significantly less likely (24%) to use contraception than couples with one or more living children (>60%), as reported by the women. Couples where both partners did not desire another child were more likely to use contraception than couples where one/both spouses desired another child; this difference was significant. Couples where both partners agreed to having discussed their desired number of children had a higher probability of contraceptive use than couples where both partners did not report discussing fertility desires; however, this difference was not statistically significant. On the other hand, couples where both spouses agreed to discussing FP use had a significantly higher likelihood of using contraception (73%) than couples where one/both partner(s) did not agree to discussing FP use with their spouse (58%); this difference was statistically significant. The poor, as defined by being in the lowest wealth tertile were significantly less likely to use contraception than those living in richer households; 50% of poor couples used contraception versus 68% among the rich households. Further, Nairobi-based couples were significantly more likely to use contraception (63%) followed by couples in Kisumu (55%) and Mombasa (52%).

Multivariate findings

In Table 4, the multivariate logistic regression odds ratios and 95% confidence intervals are presented for the analysis of couples' relationship-level characteristics and women's contraceptive use. The analysis shows that the couples in which both spouses desire another

child are less likely to use contraception than couples where both partners do not want another child; this finding is significant across all three models. Similarly, couples where only one spouse wants another child are significantly less likely to use contraception than couples where both spouses do not desire another child. Couples where both partners said they had discussed FP use with their spouse have 4 times greater odds of using FP than couples where both spouses said they had not discussed FP with each other and also 2 times greater odds of using FP if at least one partner reported discussing FP use with their partner ($p < 0.01$). The three models produced similar results for these key couple-level variables with the exception of having discordant fertility desires that is not significant in Model 2 and Model 3.

Couples where both spouses had received some secondary education or more had 2 times greater odds of using contraception, than couples where both partners had received only primary education. Models 2 and 3 also show that the odds of using contraception among couples for which both partners are Protestant is almost 3 times greater than the odds of using contraception if both partners are Muslim. Further, couples with partners belonging to different religions also have more than a 2.5 times greater odds of using contraception than couples in which both partners are Muslim. Couples with no children were significantly less likely to be using contraception than couples with three or more children. Furthermore, couples from rich households had 2 times the odds of using contraception than couples from poor households.

We repeated multivariate analyses to determine the odds of intention to use contraception among couples currently not using contraception. Table 5 presents the multivariate logistic regression odds ratios and 95% confidence intervals for the analysis of couple characteristics on the couple's intent to use contraception, as reported by the woman. Similar to Table 4, we present three models. Based on Model 1, women have lesser odds of intending to use contraception if both partners desire to have another child in the near future. Couples where only one partner reported communicating about desired family size with their partner had 2.5 times greater odds of having an intention to use contraception than couples where both partners had not communicated with each other on family size. Also, couples where both spouses agreed to discussing FP use had 6 times greater odds of intending to use FP than couples where both partners reported not discussing FP with each other. Hence, it appears that the effect of couple characteristics on women's intention to use contraception presented in Table 5 is similar to the effect of couple characteristics on contraceptive use models in Table 4.

Discussion

In this study, we performed a detailed couples-level analysis of the insufficiently studied urban populations of Kenya. The most recent Kenya DHS shows that one-fifth (20.2%) of urban women aged 15-49 have an unmet need for contraception, about half of which is for spacing (10.7%) and the other half for limiting (9.5%)⁵². We undertook a couples-level analysis and systematically examined the roles of fertility desires, communication between the partners regarding fertility desires, the partners' ages, education levels, religions and parity on FP use. The analysis also adjusted for environmental factors such as household

wealth, neighborhood type and city of residence. The study went one step further by interviewing a large number of urban women and men and generating valuable couples' data on 883 couples. Finally, we determined the impacts of couple characteristics on couples' intentions to use contraception.

Our analysis showed that almost 60% of the couples interviewed reported current contraceptive use. In addition, the distribution of the relationship-level characteristic of the desire for another child showed that husbands generally desired more children than their wives, a finding documented in previous studies^{19,53}. Less than two-thirds of both spouses, within a couple, reported talking about desired number of children and FP use with their spouse. Multivariate analyses found that both partners' desire to not have another child is a strong motivator to be a current user of contraception or intend to use contraception in the near future. These findings support earlier DHS analyses conducted in Kenya where women were more likely to use contraception if both spouses desired fewer children²¹. These findings also supported our hypothesis that both spouses' desire not to have another child is associated with contraceptive use. This suggests that as couples have more information and access to FP services around them, their fertility desires change leading to increased couple-level FP use. Our analyses also showed that communication among partners about FP use had a significant effect on current use and future intent to use. Similar findings were noted in the analysis of data from couples across Kenya where higher proportions of ever-use of contraception was noted among couples that reported spousal communication³⁷. The findings also support our hypothesis that contraceptive use and intention to use is higher among couples where both partners report communicating about FP.

Our analysis of other individual-level characteristics showed that 90% of the urban Kenyan women were married to men with similar or higher education levels, a finding consistent with previous studies conducted in Central Asia and the Middle East⁵⁴. Further, our bivariate and multivariate analyses indicate that couples where both partners had more than a primary education were more likely to use contraception compared to couples with only primary education. A previous couple study from Nepal noted that husbands' formal education had a greater influence on contraceptive use than wives' education¹³. After adjusting for other factors, religion also has a significant impact on contraceptive use. The evidence suggests that contraceptive use is high when both spouses are Protestant, and is consistent with increased acceptability of contraception in the Protestant community¹⁸. Discordant couples in which the partners adhere to different religions were more likely to use contraception than couples where both partners were Muslim/followers of other non-Christian faiths, as also noted in other couple studies from Ghana^{17,18}. Couples with fewer living children were less likely to use contraception, similarly noted in other couple studies^{19,55}.

In summary, we note that our findings on the effect of couple- and individual-level characteristics on contraceptive use are consistent with most other studies, but add important new insights relating to the urban setting. By accounting for the characteristics of the husband and the wife in an urban environment, we have highlighted that couples' desire to not have another child and better spousal communication have important effects on couples' contraceptive use and intention to use.

Our study is limited by its use of cross-sectional data; we cannot establish temporality or causality regarding the effect of spousal communication or any other variables on contraceptive use. Furthermore, the survey may suffer from recall bias; for example, participants may not recall discussing the desired number of children in the prior six months. Social desirability may have occurred since participants may wish to look modern by stating they are using contraception. However, the prevalence of contraceptive use among our survey respondents is similar to the DHS results. Furthermore, participants were asked to describe several other characteristics regarding their use hence reducing the likelihood of this bias. There is also the possibility of potential interviewer bias since reporting of reproductive health practices or discussions around FP are generally private matters. To mitigate this potential bias we utilized well-trained interviewers who ensured that the interviews were conducted privately. It is also noteworthy that the key independent variables of communication between partners regarding desired number of children and FP use in the prior 6 months may be correlated or possibly endogenous. The correlation tests showed a 33% correlation between the two variables; we determined that the variables are independent enough to be included as separate variables in the multivariate analyses models.

Conclusion

More studies need to focus on the needs of urban couples in order to determine their barriers to accessing FP services. A longitudinal study that follows couples through their reproductive cycles is needed to determine the specific challenges they face in deciding to use contraception and any barriers to FP services. A qualitative and/or a longitudinal study in urban settings would help better understand the timing of change in certain couple-level factors, for example, how changes in couples' fertility desires over time influence FP use (especially as one partner's desires change before the other's). Also, the study we conducted could be replicated in another setting with lower contraceptive prevalence to determine whether our results are reproducible or different depending upon the populations involved.

FP programs need to ensure that men are encouraged to be involved in FP decision-making, since couple communication is associated with contraceptive use. Through male motivation campaigns, the importance of involving men in FP decision-making can be brought to light⁵⁶. These male motivation campaigns can have several components. For example, men can be counseled and trained in interpersonal communication. At the same time, the campaign can work towards better couple communication by counseling and training both partners together in couple communication sessions. Multimedia advertising can make the public aware of the existence of such a program and also begin to highlight the importance of couple communication, thus encouraging men to participate in male motivation campaigns and couple communication sessions. Outreach health workers can be empowered to approach couples to teach them basic skills on how to better communicate on FP issues, address some of their concerns right away and encourage them to participate in the ongoing male motivation campaign⁵⁷. In addition, since the urban poor were less likely to use FP, outreach programs should target poor couples to communicate better and be more engaged together in decision-making. In this manner, the findings of this study can influence couples to use FP methods to space and limit the number of children they desire, across urban centers in Kenya and other regions.

This study predicts that efforts to involve men in FP decision-making and improve communication between partners on FP-related matters may increase contraceptive use and intention to use. Interventions that target urban couples and reduce their barriers to FP use will help ensure that all urban couples in Kenya and elsewhere are served by FP programs appropriately.

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Appendix

Appendix 1

Percentage distribution of sociodemographic characteristics of the subsample of interviewed women who were coupled with their husbands and the sub-sample of women whose husbands did not complete the survey, in urban Kenya

Characteristics	Sample		p-values
	Women in couples sub-sample (n=840)	Married women not included in couples sub-sample (n=530)	
Dependent variable Among all women			
Current family planning use			0.89
Yes	60.4	58.6	
No	39.6	41.4	
Among non-users	Women in couples sub-sample (n=333)	Married women not in couples sub-sample (n=221)	
Future intention to use contraception			0.91
Yes	36.7	39.2	
No	52.7	50.0	
Don't know	10.6	10.8	
Independent variables of interest	(n=840)	(n=530)	
Desire for another child			0.89
Yes	52.9	54.2	
No	47.1	45.8	
Discussed desired number of children with spouse in past 6 months			0.89
Yes	50.3	51.3	
No	49.7	48.7	
Discussed family planning use with spouse in past 6 months			0.90
Yes	45.8	47.3	

Characteristics	Sample		p-values
	Women in couples sub-sample (n=840)	Married women not included in couples sub-sample (n=530)	
No	54.2	52.7	
Other variables of interest			
Age			0.90
15-24	27.2	30.0	
25-34	48.2	46.3	
35+	24.6	23.7	
Education			0.70
None/some primary	15.2	18.0	
Primary complete	28.2	30.7	
Some secondary/more	56.7	51.3	
Religion			0.97
Catholic	21.8	22.2	
Protestant	68.9	67.7	
Muslim/other/none	9.3	10.2	
Number of living children			0.91
0	13.1	10.3	
1	28.5	27.7	
2	24.2	26.2	
3+	34.2	35.8	
Neighborhood type			0.63
Informal	24.0	27.0	
Formal	76.0	73.0	
Wealth			0.99
Poor	31.7	32.9	
Medium	35.8	34.5	
Rich	32.5	32.6	
City			0.63
Nairobi	76.3	76.0	
Mombasa	19.4	17.1	
Kisumu	4.4	6.9	

Note: p-values of the F-tests compare the sub-sample of married women included in the couple analysis to the sample of married women whose husbands were heads of households and did complete the survey

All percentages are weighted at the city level

* p 0.05

** p 0.01

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Table 1

Description of final sample size selected for this analysis from Nairobi, Mombasa and Kisumu

Categories	Women	Men
Participants who completed the interview	5774	2503
Response rates	83.1%	65.6%
Not married/cohabiting	2452	1079
Not full-time resident of home	61	16
Household not selected for male survey	1515	0
Not spouse/head of household	306	64
Households where spouse did not complete survey	557	461
Final sample who matched as a couple (unweighted)	883	883

Table 2

Percentage distribution and comparison of sociodemographic characteristics of married/cohabiting women and men using percentage agreement, in urban Kenya

Characteristics	Wives (n=840)	Husbands (n=840)	Percentage agreement
Individual characteristics			
Age			55.7
15-24	27.2	9.0	
25-34	48.2	46.8	
35-59	24.6	44.2	
Education			55.3
None/some primary	15.2	8.8	
Primary complete	28.2	20.1	
Some secondary/more	56.7	71.2	
Religion			74.1
Catholic	21.8	23.3	
Protestant	68.9	66.4	
Muslim/other/none	9.3	10.3	
Number of living children (parity)			75.7
0	13.1	12.6	
1	28.5	24.7	
2	24.2	25.5	
3+	34.2	37.2	
Couple characteristics			
Desire to have another child			72.7
Yes	52.9	63.4	
No	47.1	36.6	
Discussed desired number of children with spouse, in the past 6 months			55.2
Yes	50.3	67.3	
No	49.7	32.7	
Discussed family planning use with spouse, in the past 6 months			57.2
Yes	45.8	67.2	
No	54.2	32.8	
Environmental characteristics			
Neighborhood type			
Informal		24.0	
Formal		76.0	
Household wealth			
Poor		31.7	

Characteristics	Wives (n=840)	Husbands (n=840)	Percentage agreement
Intermediate	35.8		
Rich	32.5		
City			
Nairobi	76.3		
Mombasa	19.4		
Kisumu	4.4		
Current contraceptive use, by method			24.6
None	39.7	31.6	
Injectables	23.5	23.0	
Pills	16.1	14.6	
Condoms	4.9	13.3	
Other modern	9.4	6.7	
Traditional	6.4	10.8	
Among non-users of contraception	(n=333)	(n=265)	
Future intention to use contraception			58.2
Yes	36.7	30.3	
No	52.7	46.5	
Don't know	10.6	23.3	

Table 3

Percentage distribution of characteristics of married couples, by current contraceptive use

Variables	Percentage using contraception (n=507)	Total (n=840)	p-value of F-test
Individual characteristics			
Age			0.61
Husband 15-34, wife 15-34	58.2	454	
Husband 35+, wife 35+	63.7	193	
Spouses belong to different age categories	62.1	193	
Education			0.18
Both completed primary/less	51.7	187	
Husband some secondary/more, wife primary/less	59.9	177	
Wife some secondary/more, husband primary/less	56.1	55	
Both had some secondary/more	64.9	421	
Religion			0.01 *
Both Protestant	64.2	457	
Both Catholic	49.6	96	
Both Muslim/other	37.4	56	
Spouses belong to different religions	62.7	231	
Number of living children, as reported by wife			<0.001 **
0	24.0	110	
1	61.7	240	
2	66.3	203	
3+	68.9	287	
Couple characteristics			
Desire to have another child			0.003 **
Both spouses desire another child	55.8	358	
Both spouses do not desire another child	73.4	221	
Only one spouse desires another child	55.5	261	
Discussed desired no. of children with spouse in last 6 months			0.39
Both spouses agree to discussing desired fertility	63.7	320	
Both spouses agree not to discussing desired fertility	62.0	172	
Spouses had discordant responses	56.4	348	
Discussed family planning use with spouse in last 6 months			<0.001 **
Both spouses agree to discussing FP use	72.9	291	
Both spouses agree not to discussing FP use	44.9	182	
Spouses had discordant responses	58.0	367	

Variables	Percentage using contraception (n=507)	Total (n=840)	p-value of F-test
Environmental characteristics			
Neighborhood type			0.38
Informal	57.2	202	
Formal	61.3	638	
Wealth			
Poor	50.4	266	0.01 *
Intermediate	37.4	301	
Rich	67.5	273	
City			
Nairobi	62.7	640	0.05 *
Mombasa	52.1	163	
Kisumu	54.8	37	

Note

†p 0.10

* p 0.05

** p 0.01

Table 4

Odds ratios (and 95% confidence intervals) from logistic regression analyses assessing the association between explanatory variables and women's reported current contraceptive use, n=840

Characteristics	Wife's current contraceptive use		
	Model 1	Model 2	Model 3
Primary characteristics of interest			
Desire to have another child			
Both spouses desire another child	0.37 (0.21, 0.65)**	0.57 (0.32, 0.99)*	0.54 (0.30, 0.98)**
Both spouses do not desire another child	1.00	1.00	1.00
Only one spouse desires another child	0.41 (0.24, 0.68)**	0.72 (0.35, 1.51)	0.75 (0.36, 1.58)
Discussed desired no. of children with spouse in the last 6 months			
Both spouses agree to discussing desired fertility	0.66 (0.30, 1.40)	0.68 (0.33, 1.42)	0.64 (0.31, 1.33)
Both spouses agree not to discussing desired fertility	1.00	1.00	1.00
Spouses had discordant responses	0.59 (0.28, 1.28)	0.55 (0.27, 1.09) [†]	0.55 (0.28, 1.11) [†]
Discussed family planning use with spouse in the last 6 months			
Both spouses agree to discussing family planning use	5.30 (2.75, 10.21)**	3.72 (2.00, 6.95)**	3.76 (2.00, 7.06)**
Both spouses agree not to discussing family planning use	1.00	1.00	1.00
Spouses had discordant responses	2.44 (1.46, 4.01)**	2.13 (1.30, 3.48)**	2.19 (1.33, 3.62)**
Other variables of interest			
Age			
Husband 15-34, wife 15-34		1.45 (0.71, 2.96)	1.72 (0.80, 3.70)
Husband 35+, wife 35+		1.00	1.00
Spouses belong to different age categories		1.56 (0.78, 3.12)	1.76 (0.86, 3.62)
Education			
Both completed primary/less		1.00	1.00
Husband some secondary/more, wife primary/less		1.39 (0.76, 2.55)	1.22 (0.65, 2.30)
Wife some secondary/more, husband primary/less		1.18 (0.41, 3.38)	1.13 (0.39, 3.33)

Characteristics	Wife's current contraceptive use		
	Model 1	Model 2	Model 3
Both had some secondary/more		1.56 (0.78, 3.12)**	1.72 (0.93, 3.19) [†]
Religion			
Both Protestant		3.10 (1.36, 7.07)**	2.70 (1.10, 6.58)*
Both Catholic		1.83 (0.73, 4.62)	1.60 (0.58, 4.40)
Both Muslim/other		1.00	1.00
Spouses belong to different religions		2.93 (1.21, 7.06)*	2.66 (1.02, 6.89)*
Number of living children, as reported by wife			
0		0.01 (0.033, 0.30)**	0.09 (0.030, 0.29)**
1		0.48 (0.23, 1.01) [†]	0.46 (0.21, 0.97)*
2		0.62 (0.32, 1.22)	0.60 (0.30, 1.19)
3+		1.00	1.00
Neighborhood type			
Informal			0.98 (0.60, 1.58)
Formal			1.00
Wealth			
Poor			1.00
Intermediate			1.28 (0.76, 2.15)
Rich			1.84 (1.04, 3.24)*
City			
Nairobi			1.00
Mombasa			0.88 (0.68, 1.12)
Kisumu			0.88 (0.75, 1.03)

Note

[†] p 0.10

* p 0.05

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Table 5

Odds ratios (and 95% confidence intervals) from logistic regression analyses assessing the association between explanatory variables and women's reported intention to use contraception, among non-users n=333

Characteristics	Couple intends to use contraception		
	Model 1	Model 2	Model 3
Primary characteristics of interest			
Desire to have another child	0.82 (0.12, 1.02)	0.12 (0.02, 0.78) [*]	0.17 (0.03, 0.81) [*]
Both spouses desire another child	1.00	1.00	1.00
Both spouses do not desire another child	0.43 (0.17, 1.53)	0.06 (0.03, 1.01) [†]	0.08 (0.04, 1.40)
Only one spouse desires another child			
Discussed desired no. of children with spouse in the last 6 months			
Both spouses agree to discussing desired fertility	1.78 (0.61, 5.18)	1.55 (0.49, 4.83)	1.48 (0.47, 4.67)
Both spouses agree not to discussing desired fertility	1.00	1.00	1.00
Spouses had discordant responses	2.76 (1.16, 6.57) [*]	2.52 (0.95, 6.63) [†]	2.31 (1.08, 6.08) [*]
Discussed family planning use with spouse in the last 6 months			
Both spouses agree to discussing family planning use	6.79 (2.14, 21.52) ^{**}	5.33 (1.66, 17.06) ^{**}	5.88 (1.93, 17.89) ^{**}
Both spouses agree not to discussing family planning use	1.00	1.00	1.00
Spouses had discordant responses	2.66 (1.00, 7.09) [†]	2.19 (0.71, 6.82)	2.36 (0.78, 7.12)
Other variables of interest			
Age			
Husband 15-34, wife 15-34			4.00 (1.03, 15.54) [*]
Husband 35+, wife 35+			1.00
Spouses belong to different age categories			2.54 (0.75, 8.63)
Education			
Both completed primary/less		1.00	1.00
Husband some secondary/more, wife primary/less		1.78 (0.82, 3.83)	1.75 (0.76, 4.07)
Wife some secondary/more, husband primary/less		0.26 (0.04, 1.50)	0.24 (0.04, 1.53)

Characteristics	Couple intends to use contraception		
	Model 1	Model 2	Model 3
Both had some secondary/more		0.88 (0.42, 1.85)	0.95 (0.41, 2.18)
Religion			
Both Protestant		2.62 (0.84, 8.12) [†]	2.15 (0.68, 6.80)
Both Catholic		4.18 (1.09, 16.10) [*]	2.99 (0.74, 12.10)
Both Muslim/other		1.00	1.00
Spouses belong to different religions		2.26 (0.74, 6.84)	1.68 (0.52, 5.38)
Number of living children, as reported by wife			
0		0.67 (0.20, 2.29)	0.72 (0.21, 2.50)
1		0.78 (0.23, 2.63)	0.82 (0.24, 2.80)
2		0.95 (0.32, 2.88)	1.00 (0.33, 3.07)
3+		1.00	1.00
Neighborhood type			
Informal			1.05 (0.55, 2.02)
Formal			1.00
Wealth			
Poor			1.00
Intermediate			0.78 (0.37, 1.66)
Rich			0.55 (0.19, 0.96) [*]
City			
Nairobi			1.00
Mombasa			0.78 (0.52, 1.17)
Kisumu			0.79 (0.60, 1.03)

Note

- [†] p 0.10
- ^{*} p 0.05
- ^{**} p 0.01