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**Gender gap in the use of contraception: Evidence from India**  
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# **Gender gap in the use of contraception: Evidence from India**

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## **Abstract**

Given the background of disproportionate burden of contraception being borne by women, this paper aims to analyse the role of different factors in determining the use of contraception per se and the choice of method of contraception, among married couples in India. We specifically focus on the role of gender in affecting these contraception choices. The analysis is based on rounds 3 and 4 of nationally representative NFHS dataset, using multinomial logistic framework. Our main results suggest that couples in which women have relatively higher bargaining power, as indicated by education, employment, and participation in household decisions, prefer to choose reversible methods of contraception over permanent methods. More specifically, such couples tend to choose male methods of contraception over the female permanent method.

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## 1. Introduction

Use of contraception has enabled couples to achieve their ideal family size as well as composition. By reducing the incidence of sexually transmitted diseases the practice has also been able to improve reproductive health of females and males, both. Fertility choices in terms of use of birth spacing methods have also been found to have implications on child health outcomes (Maitra and Pal, 2008). Even as per the Sustainable Development Goals (SDGs), Target 3.7 calls for the countries to ensure universalisation of access to sexual and reproductive health care services. Further, use of contraception as well as the method of contraception is strongly related to the level of autonomy that women enjoy in making decisions about their fertility choices (Xu et al., 2011). It has been observed that the method of contraception can be interpreted as a manifestation of women's status in society. To be more precise, limited use of modern contraception entails to the presence of gender inequality (Serbanescu et al. 2004) and inability to negotiate otherwise (Bentley and Kavanagh, 2008). In fact, according to the findings of the State of World Population Report, 2021 published by UNFPA, only 55% of girls and women (for 57 countries of which the data is available) are empowered to make their own decisions with respect to health care, contraception, and sexual choices. In India, according to NFHS-4, only about 8% of the women decide independently about the use of contraception, while for nearly one in every ten women it is the husband who predominantly decides about the use of contraception. This highlights the lack of women's bodily autonomy. Therefore, in this paper, we examine whether the choices of adopting contraception and furthermore, that of method of contraception to be adopted, are related to the level of gender (in)equality. We use data from NFHS rounds 3 and 4 to answer this extremely pertinent research question which goes a long way in evaluating the extent of women empowerment in our society, and its implications on contraceptive use in India.

In the past 50-60 years, desired and actual family size have decreased, and contraceptive use has increased, especially in developing countries (Darroch, 2013). However, there still exist significant levels of unmet need for modern contraceptives and family planning in general, to avoid unintended pregnancies. Globally, the unmet need for contraception has been estimated at 190 million women who are not using any method of contraception to avoid pregnancies<sup>4</sup>.

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<sup>4</sup> Contraceptive use by Method 2019: Data Booklet, United Nations.

There are many reasons that can explain the unmet need, such as the limited choice of methods available, limited access to family planning services, fear, or experience of adverse effects, cultural or religious opposition, poor quality of services available and gender-based barriers (Joshi et al. 2015). Lack of use and availability of adequate family planning methods directly impact the physical well-being of the females because of unintended pregnancies (Clealand et al. 2012) and, because of the indirect costs it entails as time out of work or education (Fennell, 2011). Besides, making fertility choices and the use of contraception for birth spacing is even important for child health outcomes (Maitra and Pal, 2008; Lay and Robilliard, 2009; Van der Klaauw and Wang, 2011).

Despite this significant existence of unmet need, the contraceptive prevalence has almost doubled, from 35 percent in 1970 to 63 percent in 2017. Global trends in contraception adoptions suggests that the use of female permanent methods to avoid unintended pregnancies is highest at 23.7 percent in 2019<sup>5</sup>. Method-specific prevalence has varied widely across regions - in developing countries. Female sterilization continues to be the most common method in Asia, Latin America, Caribbean and North America; IUDs (Intrauterine device) are an important alternative in Asia and Europe while oral contraceptives and condoms have been predominant methods in developed countries (Darroch, 2013).

In case of India, despite it being the first country in the world to adopt an official family planning program in 1952, the adoption of contraception methods remains abysmally low even now. Though the use of contraception has increased from 41 percent in 1992-93 to 56 percent in 2005-06, it declined to 53 percent in 2015-16 (NFHS-4). Further, we observe that there also exists a wide unmet need for contraception with nearly 12.9 percent (NFHS-4) of women in the fecund and sexually active category, who don't want more children or want to delay their next child, having no access to any method of contraception. Amongst the various methods of contraception, female sterilization has persistently been the most used method, ever since the inception of Family Planning Program in India, with more than a third of the sexually active population opting for it, despite the lower cost and safer procedures of vasectomies. Another popular method of contraception in India is male condoms with strikingly low rates of adoption

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<sup>5</sup> Contraceptive use by Method 2019: Data Booklet, United Nations.

(relative to female sterilization) at nearly 5 percent. This highlights a huge gender disparity in contraceptive use in India with most of its burden falling on women.

The literature for India in this area is scanty and hence, calls for a deliberation. Given the specifics of India's socio-demographic and economic context, the method of contraception speaks volumes about the stature of women in the household, and in the society. While, there has been some research that has highlighted the gender skewed take-up of contraception method in case of European countries (Serbanescu et al., 2004; Bentley and Kavanagh, 2008), and in case of some Asian countries (Mason and Smith, 2000), there has been no such definitive study in case of India.

Hence, the objective of this paper is two-fold – one, to estimate the determinants of adoption of different types of reversible and permanent methods of contraception, and second, to estimate the role of gender in the adoption of a method of contraception. In order to address the two research questions, we employ multinomial logit model using nationally representative data from two rounds of National Family Health Survey (NFHS3 and NFHS4). Our study is closely aligned with Dereuddre et al. (2016), which addresses these questions in the context of European countries.

The main findings of our paper are that women with higher bargaining power, either by the virtue of higher education or employment or higher say in household decision making, tend to choose reversible methods over permanent methods of contraception, and more specifically, male methods over female methods. Larrson and Stanfors (2014) have also found education of women to be an important factor effecting contraceptive use in the context of Sub-saharan Africa. Further, we find that child sex composition also plays a vital role in the choice of method of contraception, as couples with only girls would never opt for permanent methods and couples with two or more boys, have a higher likelihood of choosing a permanent method. This result is in consonance with the observation made by Edmeades et al. (2012).

The rest of the paper is organised as follows. In the next section (section 2), we describe the data used for our analysis. In section 3, we discuss the empirical strategy and describe the variables of interest. Section 4 outlines the main findings of the regression analyses and section 5 discusses these results in detail. Lastly, we conclude our analysis with some policy implications in section 6.

## 2. Data

For this study, we use two rounds of a nationally representative National Family Health Survey (NFHS) dataset, conducted during 2005-06 and 2015-16 respectively. NFHS-3 collected information from a nationally representative sample of 109,041 households, 124,385 women age 15-49, and 74,369 men age 15-54. The NFHS-3 sample represents 99 percent of India's population living in all 29 states. Similarly, NFHS-4 gathered information from 601,509 households, 699,686 women between age 15-49, and 112,122 men between age 15-54.

For our analysis, we restrict focus on couple dataset from the two rounds making it into a pooled-cross section. Within this set we exclusively focus on women who are married, sexually active and fertile (excluding those who are infecund). Our working sample for the paper, therefore, includes 102,952 observations (couples), wherein NFHS-3 and NFHS-4 contributes 39,257 and 63,695 couples, respectively.

The couple dataset includes information on women's and men's socio-demographic characteristics such as their level of education, religion, caste, occupation etc. It also includes their respective responses to questions on - their choice of contraception such as current and ever used methods of contraception, desire for more children, ideal family size and gender preferences for children. We also make use of the information on women's autonomy, that is, questions on women's say on - health related matters, large purchases, mobility and spending her own income.

## 3. Empirical Methodology

In order to analyze the determinants of the choice of method of contraception by a couple, we estimate a multinomial-logit model using following equation:

$$Y_{ist} = \alpha_{ist} + \beta_{ist}X_{ist} + \delta_s + \theta_t + \varepsilon_{ist}$$

Where, the dependent variable  $Y_{ist}$  is a categorical variable that captures the choice of contraception of couple  $i$ , living in state  $s$  and in time period  $t$ . We have captured the variable in following formats - one, where the dependent variable has been classified into five categories

– female permanent method, male permanent method, female reversible method, male reversible method, and no method. In this, the female reversible method includes modern methods (pill, IUD, injections, female condoms) as well as traditional methods (periodic abstinence). Similarly, male reversible methods include modern (condom) as well as traditional method (withdrawal). Two, where we have redefined the dependent variable into a coarser variable, having three categories - permanent methods (subsuming in it male and female permanent methods), reversible methods (male and female reversible methods) and no method. And finally, we have also classified the dependent variable in three categories based on the gender-type of the method used, that is, male method, female method, and no method. In this, male method includes male permanent and reversible methods, and female methods include female permanent and reversible methods. While the first definition of the dependent variable will provide us with an analysis of choice across all different types of contraception methods, the second definition has been used to broadly identify the choice between reversible and permanent methods. The third definition is also coarse but with an explicit focus on the gender dimension of contraception. Under each of these classifications, we have excluded the couples wherein more than one method of contraception has been reported to be used or where the female partner has been reported to be infecund. It is important to mention here that the inclusion of ‘no method’ has primarily being added to avoid selection issue with respect to the dependent variables.

While defining each of these dependent variables we have considered the responses of only females for female methods and only of males for male methods of contraception. For instance, for IUDs we have considered the responses of females, since it’s a female method of contraception. Likewise, for male condoms we have considered the responses of males, since it’s a male method of contraception. Reason for following this approach is that we have found significant discrepancies in the responses of male and female partner for any given method of contraception. For instance, in our data we observed that while 47 percent of women reported themselves to be sterilized, according to the response of men this proportion (females who are sterilized) stood at 21percent only. Therefore, to ensure reliability of the construction of our dependent variables, we followed the above-mentioned hybrid approach.

For explanatory variables ( $X$ ) we have included variables which can be classified into – female characteristics, household characteristics and variables indicating need for family planning.

Female characteristics includes the age as well as the squared age term to account for non-linearity in the variable. We have also captured the level of female autonomy as an index variable using Principal Component Analysis (PCA) (Filmer and Pritchett, 2001). The index is based on women's say on health-related matters, decision related to large purchases in the household, decision related to how to spend their own earnings and finally, their say on visiting family and relatives. Further, we have also captured level of female education via absolute and relative methods. Under absolute method we define the variable as a categorical variable with four categories – primary level of education, secondary level of education, higher level of education and no education. Under the relative method, we have defined the relative levels of education across male and female partners using three categories -when female has higher education than male partner , when male has higher education than female partner, and finally when both have equal level of education (either no education or same level of some education). Lastly, female characteristics also include occupation status of females, again, using both absolute and relative method. Under absolute method we define the variable as a categorical variable with six categories – employed in agriculture, in skilled / unskilled manual labour, in professional/clerical jobs, in sales, in services, and not employed. Under the relative method, we have defined the relative levels of occupation status across male and female partners using three categories – when female is working and male is not working, when male is working and female is not working, and when both of them are either working or not working (single combined category). The relative methods of capturing education and occupation enables us to analyse the inter play of power dynamics amongst the couple and hence its influence on the choice of contraception. Additionally, use of relative method enables us to also control for the problem of multicollinearity in our estimation.

The household characteristics include a dichotomous variable for the type of residence, classified into categories – rural and urban, which takes value 1 if the residence type is rural and 0 if it is urban. Further, we have also controlled for the religion of the household, which is a categorical variable with three categories – Hindu, Muslim and others (subsumes Sikh, Christians and other religions). Lastly, we have also captured the economic well-being of the household using a quantile variable that has been constructed using the wealth index variable provided in the NFHS dataset. This variable has five categories – poorest households, poorer households, middle-income households, richer households and richest households.



Finally, we have also included variables which explains the need for family planning. First amongst them is a slew of binary variables highlighting the sex composition of total children of a couple following Edmeades et al. (2012). This includes having only girls, only boys, one girl only, one boy only, one girl and one boy, one girl and two boys, two girls and one boy; and ‘others’ which includes all other possible combinations of girls and boys. Next, we have controlled for an index of exposure to mass media specifically focussing on family planning using PCA (Filmer and Pritchett, 2001). The index is constructed based on the following information – whether female has heard about family planning on radio or on TV or have read about it in the newspaper. Jensen and Oster (2009) have found in the context of India, that women’s exposure to mass media is associated with an increase in reported autonomy, decrease in reported acceptability of beating, and decrease in fertility. Lastly, our analysis also controls for state and time fixed effects.

In the next section, we, now, discuss the results from multinomial regressions.

#### **4. Results**

In this section we will present results for the three classifications of dependent variables, as discussed above.

First, we provide the results for choice between different types of reversible and permanent methods of contraception.

Our results indicate that as the education level of females increases, the odds of adopting a female reversible method becomes higher vis-à-vis female permanent method, that is sterilization. Similarly, for the choice between male reversible and female permanent methods, higher education corresponds to higher odds of adopting a male reversible method. Even when the choice is between not using a method or opting a female permanent method, higher education level entails to higher odds for choosing ‘no method’ over female sterilization. Hence, we can conclude that more educated females are less likely to go for female sterilization over any other option that they may have.

Next, when we look at the occupation status of females, we find that compared to unemployed females, females employed in agriculture or, skilled/unskilled manual labour or, services tend

to have higher odds of adopting female permanent methods over female reversible or male reversible or no method. However, this is not true for females who are employed either in sales or are working as professionals. Thus, our findings are in consonance with the results on education, as females who are working as professional or sales staff tend to be more educated than those in any other occupation category.

We have also estimated the equation using variables on relative education and occupation status between males and females. In this, we find that couples, where females are more educated than their male partners, tend to have lower odds for adopting a female permanent method over any other choice of contraception that they may face. Contrary to this, we find that couples, where males are more educated than their female partners, have higher odds of adopting female sterilization over any other reversible method or no method. Further, we find that couples, where males are employed and females are not, their odds for adopting female sterilization are lower in comparison to any other method choice, including no method.

Similarly, the variable that captures a female's autonomy in household decision making process highlights that women with higher autonomy tend to have higher odds in favour of adopting a female reversible or a male reversible method over female permanent method. However, when faced with a choice between no method and female sterilization, females with higher autonomy have higher odds of going for female sterilization rather than not choosing any method.

As for the age variable, we find that higher is the age of the female, higher is the odds for the couple to adopt permanent method of contraception vis-à-vis any other method. This is indicative of the fact that at higher ages, the likelihood of the couple having already achieved an ideal family size and composition also increases. Therefore, the completion of fertility or of the desired family size and composition makes them choose permanent methods over any other contraceptive choice.

Further, when we look at the child sex composition, we observe that couples with two or more boys, regardless of the presence or absence of a girl child, have higher odds of opting for female sterilization over female reversible methods, male reversible method or no method. However, couples who only have girl children have lower odds to adopt a permanent method of contraception than any reversible method or no method. Similarly, we also find that couple who only have one child, either male or female, are significantly less likely to opt for a

permanent method of contraception (as has also been indicated in the odds of variables – ‘*girlonly\_1*’ and ‘*boyonly\_1*’).

As for the male permanent method, since our sample has less than 1 percent couples adopting it, we believe there are no meaningful deductions that we can make.

**Table 3: The factors determining the adoption of alternative contraception methods (Ref.= Female permanent method)**

	Female reversible method		Male reversible method		No method	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Education (Ref. – Not educated)						
Primary	0.965 (0.041)		0.623*** (0.043)		0.751*** (0.022)	
Secondary	2.006*** (0.079)		2.151*** (0.109)		1.209*** (0.034)	
Higher	5.911*** (0.401)		7.984*** (0.612)		3.797*** (0.202)	
Occupational status (Ref. – Not employed)						
Agriculture	0.846*** (0.035)		0.704*** (0.045)		0.838*** (0.023)	
Skilled/unskilled manual	0.998 (0.054)		0.856** (0.061)		0.873*** (0.033)	
Professional/clerical	1.361*** (0.114)		1.332*** (0.118)		1.159** (0.077)	
Sales	1.819*** (0.161)		1.208* (0.133)		2.152*** (0.135)	
Services	0.426*** (0.031)		0.342*** (0.036)		0.255*** (0.014)	
Relative education (Ref. – Equally educated)						
Female higher educated		1.150*** (0.044)		1.177*** (0.056)		1.049* (0.030)
Male higher educated		0.821*** (0.026)		0.796*** (0.032)		0.748*** (0.017)
Relative occupational status (Ref. – Both (not) employed)						
Female employed; male not employed		1.011 (0.120)		1.025 (0.189)		1.543*** (0.108)
Male employed; female not employed		1.167*** (0.035)		1.422*** (0.057)		1.270*** (0.026)
Age	0.681*** (0.010)	0.670*** (0.010)	0.818*** (0.018)	0.802*** (0.017)	0.490*** (0.005)	0.483*** (0.005)
Age <sup>2</sup>	1.004*** (0.000)	1.004*** (0.000)	1.001*** (0.000)	1.001*** (0.000)	1.009*** (0.000)	1.009*** (0.000)

Rural	0.755*** (0.026)	0.777*** (0.025)	0.672*** (0.027)	0.648*** (0.025)	0.813*** (0.021)	0.872*** (0.021)
Only one girl	15.894*** (1.843)	16.773*** (1.933)	14.121*** (1.973)	14.936*** (2.077)	6.938*** (0.738)	7.198*** (0.760)
Only one boy	9.114*** (0.769)	9.195*** (0.764)	10.931*** (1.149)	10.931*** (1.133)	3.338*** (0.246)	3.301*** (0.239)
Girls only	2.622*** (0.197)	2.515*** (0.187)	5.536*** (0.505)	4.958*** (0.447)	0.919 (0.053)	0.893** (0.050)
Boys only	0.773*** (0.048)	0.718*** (0.044)	0.712*** (0.068)	0.627*** (0.060)	0.195*** (0.009)	0.183*** (0.008)
One girl and one boy	1.173*** (0.067)	1.150** (0.065)	1.076 (0.093)	1.011 (0.087)	0.339*** (0.015)	0.328*** (0.014)
One girl and two boys	0.551*** (0.040)	0.507*** (0.036)	0.449*** (0.056)	0.383*** (0.047)	0.138*** (0.007)	0.134*** (0.007)
Two girls and one boy	1.304*** (0.093)	1.133* (0.079)	0.974 (0.116)	0.791** (0.093)	0.381*** (0.020)	0.325*** (0.017)
Other combinations of boys and girls	1.088* (0.049)	0.963 (0.042)	0.776*** (0.046)	0.667*** (0.039)	0.382*** (0.014)	0.357*** (0.013)
Female Autonomy	1.019** (0.009)	1.041*** (0.009)	1.053*** (0.012)	1.084*** (0.012)	0.962*** (0.006)	0.977*** (0.006)
Mass media	1.057*** (0.013)	1.151*** (0.014)	1.042*** (0.016)	1.177*** (0.017)	0.913*** (0.009)	0.956*** (0.008)
Religion	Yes	Yes	Yes	Yes	Yes	Yes
Wealth	Yes	Yes	Yes	Yes	Yes	Yes
<b>N</b>	<b>91028</b>	<b>90984</b>	<b>91028</b>	<b>90984</b>	<b>91028</b>	<b>90984</b>

Note: Odd-ratios have been reported in the table. Robust standard errors are used and are reported in parentheses. The estimations control for state and time fixed effects. The ‘male permanent’ method was also estimated for completeness, however, it is not interpreted and shown here since our sample has less than 1 percent couples adopting it.

\*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$

Our second classification, which defines dependent variable more broadly and purely across permanent and reversible methods only (Appendix - Table A.2.), also supports our findings and is consistent with the results discussed above.

Next, in order to understand the gendered take up of methods of contraception, we estimate our equation using the dependent variable where the choice of contraception method has been only segregated into male, female and no method (Table 2). The findings of these estimations highlight that as the education of female increases so does the odds of adoption of male methods vis-à-vis female methods. When the choice is between no method and female method, higher education levels corresponds to higher odds for choosing no method over female method. As for the occupation of the female, we find that except for females employed in professional services, employment of females in any other category of occupation is associated with higher odds for choosing females methods over male methods. However, when the choice is between no method and any female method, we observe that couples where females work as professionals or are employed in sales, have higher odds for choosing no method over any female method. For employment in other occupational categories, the odds are persistently in favour female methods.

Corresponding to our previous analysis, analysing the relative levels of education and occupation status of females versus males, we find that whenever females are more educated than their male partners, the odds of choosing male methods over female methods are significantly higher. However, couples where males are more educated than female partners, the odds of choosing female methods are higher than choosing a male method or no method. Similarly, in couples where male is working while female is not, the odds of choosing female method is lower than male method or no method.

Further, we find that females with higher autonomy tend to have lower odds of adopting female methods against male methods; and, when the choice is between no method and female method, the empowered females have higher odds to choose female methods.

**Table 2: The factors determining gender division in contraception (Ref. = Female method only)**

	Male method		No method	
	Model 1	Model 2	Model 1	Model 2
Education (Ref. – Not educated)				
Primary	0.606*** (0.030)		0.773*** (0.019)	
Secondary	1.291*** (0.049)		1.010 (0.024)	
Higher	2.787*** (0.162)		2.132*** (0.088)	
Occupational status (Ref. – Not employed)				
Agriculture	0.963 (0.040)		0.879*** (0.020)	
Skilled/unskilled manual	0.826*** (0.045)		0.904*** (0.029)	
Professional/clerical	1.154** (0.077)		1.109** (0.058)	
Sales	0.881 (0.079)		1.811*** (0.094)	
Services	0.326*** (0.029)		0.315*** (0.015)	
Relative education (Ref. – Equally educated)				
Female higher educated		1.093** (0.041)		1.013 (0.024)
Male higher educated		0.946* (0.030)		0.855*** (0.016)
Relative occupational status (Ref. – Both (not) employed)				
Female employed; male not employed		1.153 (0.145)		1.037 (0.069)
Male employed; female not employed		1.428*** (0.044)		1.176*** (0.021)
Age	0.883*** (0.013)	0.873*** (0.013)	0.636*** (0.005)	0.632*** (0.005)
Age <sup>2</sup>	1.001*** (0.000)	1.001*** (0.000)	1.006*** (0.000)	1.006*** (0.000)
Rural	0.816***	0.820***	0.894***	0.939***

	(0.026)	(0.025)	(0.019)	(0.019)
Only one girl	2.287***	2.463***	1.462***	1.501***
	(0.192)	(0.206)	(0.082)	(0.083)
Only one boy	2.400***	2.517***	1.249***	1.253***
	(0.176)	(0.183)	(0.060)	(0.060)
Girls only	2.357***	2.281***	0.867***	0.849***
	(0.168)	(0.162)	(0.040)	(0.039)
Boys only	0.588***	0.554***	0.301***	0.286***
	(0.043)	(0.040)	(0.012)	(0.011)
One girl and one boy	0.825***	0.813***	0.464***	0.449***
	(0.054)	(0.053)	(0.017)	(0.016)
One girl and two boys	0.398**	0.372***	0.219**	0.209***
	(0.036)	(0.033)	(0.010)	(0.009)
Two girls and one boy	0.687***	0.631***	0.438***	0.407***
	(0.060)	(0.055)	(0.020)	(0.018)
Other combinations of boys and girls	0.637***	0.609***	0.479***	0.456***
	(0.030)	(0.028)	(0.015)	(0.014)
Female Autonomy	1.026***	1.040***	0.969***	0.976***
	(0.009)	(0.009)	(0.005)	(0.005)
Mass media	1.034***	1.101***	0.923***	0.947***
	(0.012)	(0.013)	(0.007)	(0.007)
Religion	Yes	Yes	Yes	Yes
Wealth	Yes	Yes	Yes	Yes
<b>N</b>	<b>93056</b>	<b>93008</b>	<b>93056</b>	<b>93008</b>

Note: Odd-ratios have been reported in the table. Robust standard errors are used and are reported in parentheses. The estimations control for state and time fixed effects.  
\*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$



Looking at the age of females, we observe that higher age corresponds to higher odds of adoption of female methods over male methods and no method.

Moving on, in the ensuing section, we provide discussion and rationale behind the results described above.

## **5. Discussion**

It is worth noting that many of the variables, like women's education, her occupation status and female autonomy index, as discussed above, can be used to define and measure the bargaining power of females in a household. The extant literature on bargaining power suggests that more empowered females tend to make better reproductive decisions, have higher contraceptive use (Schuler and Hashemi, 1994; Dharmalingam and Morgan, 1996; Morgan and Niraula, 1995) and have lower fertility and fertility desire (Jejeebhoy, 1991; Balk, 1994; Tfaily, 2004).

Reassessing these variables from the point of view of their contribution to the bargaining status of women, we find a confirming and pertinent role of education. Our analysis highlights that better educated females, either in absolute terms or relative to their partners, tend to opt for reversible methods of contraception over permanent methods. Similarly, women with higher autonomy also make choice in favour of reversible methods over permanent ones. Our result from occupation status of females indicates that females who are employed, either in 'agriculture' or in 'services' or are working as 'manual labour' (which together constitutes 85% of the working females), prefer to opt for female permanent method over any other method (including no method), while women employed either as 'professionals' or working in 'sales', tend to choose reversible methods (male or female reversible) as against permanent methods. There is considerable literature that discusses the role of female's occupation status in defining her relative bargaining position (Dharmalingam and Morgan, 1996; Rahman and Rao, 2004; Anderson and Eswaran, 2009). However, it is to be noted here that women's employment in agriculture sector or as manual labour may not necessarily tantamount to better bargaining power. In fact, her employment in such low-paying jobs may signify the lack of basic social and economic protection for large section of rural population. Women being the cheapest and weakest labour providers in households or communities are left to fall back on agriculture,

while the men of the households move out of farms in pursuit of better work opportunities (Pattnaik et al., 2018). Therefore, for most women in India, labour market participation, specifically in agriculture, becomes a survival strategy for the household and not a means of improving standards of living or their say in the household (Kantor, 2008).

Another important observation from our analysis signifies the importance of child-sex composition for a given couple's contraception choice. Not surprisingly, we find prevalence of strong son preference amongst couples, which is also in consonance with literature (Case and Deaton, 2003; Jayaraman et al., 2009). Our results suggest that couples are much less likely to opt for a permanent method if they only have girls. Further, even if there is a son, the couples seem to have preference for at least two boys and hence have a significantly lower chance to opt for sterilization if it has not been achieved.

Further, our results on the role of gender in the choice of contraception, confirms to the importance of bargaining power of females, as discussed above. These results, too, suggest that females with relatively better bargaining position - captured by higher education, employment status, and the level of autonomy with respect to household decision making - are more likely to choose male methods of contraception as against female methods. This highlights a stronger tide in favour of male methods of contraception.

Putting these results together, we can, therefore, synthesize that women with higher bargaining power tend to choose reversible methods over permanent methods; and , male methods over female methods. However, this is not to overlook the palpable evidence of female sterilization still being the most popular choice in India.

## **6. Conclusion**

Despite a significant move in the favour of male reversible methods of contraception, which is up from a meagre 5.6 percent in NFHS-4 to 9.5 percent in NFHS-5, it is a well-known fact that women still carry a sizable burden of contraception use in India, with female sterilization being one of the most popular methods of contraception (37.9 percent, *NFHS-5*). Therefore, in an attempt to understand this huge gender gap in contraception use, we investigated the role of various factors that affect the choice of method of contraceptive use, using NFHS-3 and NFHS-4 datasets. In addition to various household-level factors, we look closely at factors associated

with a woman's bargaining power. For this, we followed a multi-layered approach as the bargaining position of a woman can be reflected via multiple aspects, such as, her level of education, her status of employment, her level of autonomy with which she participates in different household decisions. The results from our analysis confirm that couples where the woman has better bargaining position, have a higher probability to opt for reversible methods vis-a-vis permanent methods of contraception.

These results offer some very important insights. First of all, we should not overlook that there still exists wide unmet need for contraception, per se, despite an increase in its take-up. This necessitates the need to, first, make the different methods of contraception accessible to the masses in order to improve overall contraceptive prevalence rates. Secondly, our results highlight the importance of education. In order to enable couples in making fully informed decisions on contraceptive use, there is an imperative need to widen the knowledge and awareness levels about the use and benefits of different methods of contraception at the community level for which we need to educate both adult males and females. This can be done by utilising the already existing network of community health workers like Accredited Social Health Activist (ASHA workers), or Anganwadi Workers or Auxiliary Nurse Midwife (ANM). In so far, most of these awareness programs are usually targeted towards women. However, since decisions of contraceptive use are taken at the couple level, it is paramount to target such awareness campaigns towards both men as well as women.

Much of what we have suggested above needs the backing of a law. However, currently there is no law on contraception in India that makes access to a sound sexual health our legal right. So, just like India has its new Medical Termination of Pregnancy (Amendment) Act 2021 that has expanded the access of safe and legal abortion, there is also a need to consolidate the scattered law in the field of contraception, too. The said law can then ensure that there are no un-necessary restrictions on the advertisement and publicity of contraceptives, making the information and knowledge on them easily available and accessible. Further, the law can also be used to make the availability and accessibility of contraceptives, per se, much easier, by enrolling in the services of Primary Health Centres, particularly to improve access in small towns, peri-urban and in rural areas. Legal cushioning to contraception can contribute not only to the cause of family planning in India but also to the cause of maternal and child health, and more specifically to the cause of female emancipation by giving women the right to choose as to when do they want to plan their family, if at all.

The policy prescriptions from our paper can help in fostering an informed and much healthier reproductive behaviour amongst the masses and can help our country in honouring its commitment to the Sustainable Development Goals and Millennium Development Goals. However, future research using causation can be useful in designing more targeted policy responses.

## References

- Anderson, S., & Eswaran, M. (2009). What determines female autonomy? Evidence from Bangladesh. *Journal of Development Economics*, 90(2), 179-191.
- Balk, D. (1994). Individual and community aspects of women's status and fertility in rural Bangladesh. *Population studies*, 48(1), 21-45.
- Bentley, R., & Kavanagh, A. M. (2008). Gender equity and women's contraception use. *Australian Journal of Social Issues*, 43(1), 65-80.
- Case, A., & Deaton, A. (2003). *Consumption, health, gender, and poverty* (Vol. 3020). World Bank Publications.
- Cleland, John, Agustin Conde-Agudelo, Herbert Peterson, John Ross, and Amy Tsui. "Contraception and health." *The Lancet* 380, no. 9837 (2012): 149-156.
- Darroch, J. E., & Singh, S. (2013). Trends in contraceptive need and use in developing countries in 2003, 2008, and 2012: an analysis of national surveys. *The Lancet*, 381(9879), 1756-1762.
- Dereuddre, R., Van de Velde, S., & Bracke, P. (2016). Gender inequality and the 'East-West' divide in contraception: An analysis at the individual, the couple, and the country level. *Social Science & Medicine*, 161, 1-12.
- Dharmalingam, A., & Philip Morgan, S. (1996). Women's work, autonomy, and birth control: Evidence from two south Indian villages. *Population Studies*, 50(2), 187-201.
- Edmeades, J., Pande, R., Macquarrie, K., Falle, T., & Malhotra, A. (2012). Two sons and a daughter: sex composition and women's reproductive behaviour in Madhya Pradesh, India. *Journal of Biosocial Science*, 44(6), 749-764.
- Fennell, J. L. (2011). Men bring condoms, women take pills: Men's and women's roles in contraceptive decision making. *Gender & Society*, 25(4), 496-521.
- Filmer, D., & Pritchett, L. H. (2001). Estimating wealth effects without expenditure data—or tears: an application to educational enrollments in states of India. *Demography*, 38(1), 115-132.
- Jayaraman, A., Mishra, V., & Arnold, F. (2009). The relationship of family size and composition to fertility desires, contraceptive adoption and method choice in South Asia. *International perspectives on sexual and reproductive health*, 29-38.
- Jejeebhoy, S. J. (1991). Women's status and fertility: successive cross-sectional evidence from Tamil Nadu, India, 1970-80. *Studies in Family Planning*, 22(4), 217-230.

- Jensen, R., & Oster, E. (2009). The power of TV: Cable television and women's status in India. *The Quarterly Journal of Economics*, 124(3), 1057-1094.
- Joshi, R., Khadilkar, S., & Patel, M. (2015). Global trends in use of long-acting reversible and permanent methods of contraception: seeking a balance. *International Journal of Gynecology & Obstetrics*, 131, S60-S63.
- Kantor, P. 2008. Women's Exclusion and Unfavorable Inclusion in Informal Employment in Lucknow, India: Barriers to Voice and Livelihood Security. *World Development*, Vol. 37(1): 194-207.
- Lay, J., & Robilliard, A. S. (2009). The complementarity of MDG achievements: the case of child mortality in Sub-Saharan Africa. *World Bank Policy Research Working Paper*, (5062).
- Maitra, P., & Pal, S. (2008). Birth spacing, fertility selection and child survival: Analysis using a correlated hazard model. *Journal of health economics*, 27(3), 690-705.
- Mason, K. O., & Smith, H. L. (2000). Husbands' versus wives' fertility goals and use of contraception: The influence of gender context in five Asian countries. *Demography*, 37(3), 299-311.
- Morgan, S. P., & Niraula, B. B. (1995). Gender inequality and fertility in two Nepali villages. *Population and Development Review*, 541-561.
- Pattnaik, I., Lahiri-Dutt, K., Lockie, S., & Pritchard, B. (2018). The feminization of agriculture or the feminization of agrarian distress? Tracking the trajectory of women in agriculture in India. *Journal of the Asia Pacific Economy*, 23(1), 138-155.
- Rahman, L., & Rao, V. (2004). The determinants of gender equity in India: examining Dyson and Moore's thesis with new data. *Population and Development Review*, 30(2), 239-268.
- Schuler, S. R., & Hashemi, S. M. (1994). Credit programs, women's empowerment, and contraceptive use in rural Bangladesh. *Studies in family planning*, 65-76.
- Serbanescu, F., Goldberg, H., & Morris, L. (2004, October). Reproductive health in transition countries in the European context. In *European Population Forum, Population Challenges and Policy Responses*, Geneva.
- Stanfors, M., & Larsson, C. (2014). Women's education, empowerment, and contraceptive use in sub-Saharan Africa: findings from recent demographic and health surveys. *Etude de la Population Africaine*, 28(2), 1022-1034.
- TFAILY, R. (2004). Do women with higher autonomy have lower fertility? Evidence from Malaysia, the Philippines, and Thailand. *Genus*, 7-32.

United Nations Population Fund. (2021) *State of world population report, 2021: My body is my own* ([https://www.unfpa.org/sites/default/files/pub-pdf/SoWP2021\\_Report\\_-\\_EN\\_web.3.21\\_0.pdf](https://www.unfpa.org/sites/default/files/pub-pdf/SoWP2021_Report_-_EN_web.3.21_0.pdf))

Van der Klaauw, B., & Wang, L. (2011). Child mortality in rural India. *Journal of Population Economics*, 24(2), 601-628.

Xu, Y., Bentley, R. J., & Kavanagh, A. M. (2011). Gender equity and contraceptive use in China: An ecological analysis. *Women & health*, 51(8), 739-758.

## Appendix

**Table A.1.: Descriptive statistics**

Variables	N	Mean	Std. Dev.
<i>Woman's Educational Status</i>			
Not educated	102,951	.352	.477
Primary	102,951	.155	.361
Secondary	102,951	.410	.491
Higher	102,951	.084	.277
<i>Woman's Occupational status</i>			
Not employed	102,935	.646	.478
Agriculture	102,935	.171	.376
Skilled/unskilled manual	102,935	.065	.246
Professional/clerical	102,935	.031	.172
Sales	102,935	.024	.151
Services	102,935	.057	.230
<i>Relative educational status</i>			
Equally educated	102,952	.261	.439
Woman higher educated	102,952	.213	.409
Man higher educated	102,952	.525	.499
<i>Relative occupational status</i>			
Both (not) employed	102,879	.324	.468
Woman employed, man not employed	102,879	.016	.125
Man employed, woman not employed	102,879	.659	.473
<i>Child-Sex Composition</i>			
No children	102,952	.115	.320
Only one girl	102,952	.044	.204
Only one boy	102,952	.057	.232
Girls only	102,952	.045	.208
Boys only	102,952	.080	.272
One girl and one boy	102,952	.108	.310
One girl and two boys	102,952	.058	.233
Two girls and one boy	102,952	.048	.213
Other combinations of boys and girls	102,952	.201	.401
Autonomy	102,116	-.074	1.609
Mass media	102,930	-.003	1.276
<i>Religion</i>			
Hindu	102,875	.741	.438
Muslim	102,875	.143	.349
Other	102,875	.116	.320
<i>Wealth Quintiles</i>			
Poorest	102,952	.145	.353



Poorer	102,952	.182	.386
Middle	102,952	.238	.425
Richer	102,952	.202	.401
Richest	102,952	.232	.422
Age	102,952	31.811	7.964
Rural	102,952	.632	.482

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**Table A.2.: The factors determining permanent vs reversible methods of contraception (Ref. = Permanent methods)**

	Reversible methods		No method	
	Model 1	Model 2	Model 1	Model 2
Education (Ref. – Not educated)				
Primary	0.887*** (0.035)		0.768*** (0.023)	
Secondary	2.099*** (0.073)		1.233*** (0.034)	
Higher	6.781*** (0.409)		3.801*** (0.200)	
Occupational status (Ref. – Not employed)				
Agriculture	0.782*** (0.030)		0.815*** (0.022)	
Skilled/unskilled manual	0.957 (0.046)		0.879*** (0.033)	
Professional/clerical	1.322*** (0.098)		1.148** (0.076)	
Sales	1.601*** (0.127)		2.199*** (0.138)	
Services	0.404*** (0.026)		0.262*** (0.014)	
Relative education (Ref. – Equally educated)				
Female higher educated		1.154*** (0.040)		1.047 (0.030)
Male higher educated		0.801*** (0.023)		0.741*** (0.016)
Relative occupational status (Ref. – Both (not) employed)				
Female employed; male not employed		1.035 (0.113)		1.545*** (0.108)
Male employed; female not employed		1.224*** (0.033)		1.246*** (0.026)
Age	0.714*** (0.010)	0.703*** (0.010)	0.485*** (0.005)	0.478*** (0.005)
Age <sup>2</sup>	1.003*** (0.000)	1.003*** (0.000)	1.009*** (0.000)	1.009*** (0.000)
Rural	0.716***	0.721***	0.805***	0.859***

Only one girl	(0.022) 14.712***	(0.021) 15.504***	(0.020) 6.981***	(0.021) 7.198***
Only one boy	(1.666) 9.194***	(1.743) 9.229***	(0.741) 3.356***	(0.759) 3.304***
Girls only	(0.739) 3.291***	(0.728) 3.073***	(0.246) 0.927	(0.238) 0.897*
Boys only	(0.218) 0.731***	(0.200) 0.665***	(0.053) 0.198***	(0.050) 0.185***
One girl and one boy	(0.042) 1.087	(0.037) 1.049	(0.009) 0.341***	(0.009) 0.329***
One girl and two boys	(0.057) 0.512**	(0.054) 0.459***	(0.015) 0.141**	(0.014) 0.136***
Two girls and one boy	(0.034) 1.189**	(0.030) 1.004	(0.007) 0.388***	(0.007) 0.329***
Other combinations of boys and girls	(0.079) 0.997	(0.065) 0.866***	(0.020) 0.394***	(0.017) 0.366***
Female Autonomy	(0.041) 1.032***	(0.034) 1.056***	(0.015) 0.963***	(0.013) 0.978***
Mass media	(0.008) 1.046***	(0.008) 1.153***	(0.006) 0.903***	(0.006) 0.947***
Religion	(0.012) Yes	(0.012) Yes	(0.008) Yes	(0.008) Yes
Wealth	Yes	Yes	Yes	Yes
<b>\N</b>	<b>91028</b>	<b>90984</b>	<b>91028</b>	<b>90984</b>

Note: Odd-ratios have been reported in the table. Robust standard errors are used and are reported in parentheses. The estimations control for state and time fixed effects.  
\*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$