Couple-Level Agreement on Future Fertility Intentions and Contraceptive Use

Saima Bashir

Karen Benjamin Guzzo

Abstract

Despite the recognition that men play a significant role in reproductive behavior, much of the research on reproductive attitudes and behaviors remains focused on women in Pakistan. This is particularly problematic in a patriarchal society experiencing dramatic changes in gender roles at the societal level. Using matched couple data from two cycles of the Pakistan Demographic Health Survey (1990-91 and 2012-13), this paper examines the relative influence of husbands' and wives' fertility preferences, as well as women's absolute education, in predicting contraceptive use, paying attention to changes over time. Multivariate analysis shows that both spouses' fertility preferences exert equal influence on contraceptive use. Moreover, the positive association between women's own education and contraceptive use has weakened over time. Although contraceptive use is higher among educated women, uneducated women are driving the fertility decline. Decomposition analysis indicates that 20% of the overall change in contraceptive use is attributable to compositional changes in the population, with women's education the largest of these compositional changes. The findings highlight the importance of using couple-level data to understand couples' reproductive attitudes and behaviors.

Introduction

Although scholarship on reproductive attitudes and behaviors has long recognized the importance of both partners' fertility intentions and desires for fertility behavior (Stein et al., 2014; Rosina and Testa, 2009; Thomson, 1997; Morgan, 1985; Fried and Udry, 1979), family planning research as well as policy formulation has, until recently, used data gathered from the female segment of the population. Conventional fertility analysis assumes that because women are the actual bearer of children, their reports on fertility attitudes and behaviors are more accurate. However, this perspective does not consider the role of gender on reproductive attitudes and behaviors, ignoring the power and authority men enjoy in reproductive decision-making.

This is particularly true in patriarchal societies, where the socio-cultural and economic structure of the society protects men's authority in all spheres of life, including reproductive ones. This is evident from studies done on couples' reproductive intentions and behaviors that show discrepancies in husbands' and wives' reports (Diro and Afework, 2013; Becker, 1996). For example, Casterline, Sathar, and Haque (2001) found that Pakistani men feel quite justified in not using contraception, and more women cited their husband's objection as a reason for non-use of contraceptives than men cited their wives' objections to non-use. The growing literature on men's influence on fertility demonstrates women's inability to translate their fertility intentions into behavior (Ezeh, 1993, Bankole and Singh, 1998; Dodoo, 1998). As DeRose and Ezeh (2005) argue, fertility decline in patriarchal societies cannot occur without changes in men's fertility ideals, a shift in reproductive decision-making power that favors women, or some combination of the two. In this view, research on either men or women data may produce misleading results, particularly estimates of unmet need derived from women data only (Dodoo,

1993), and calls for couple-level data analysis to consider a gendered influence on couples' fertility decision-making. This chapter, therefore, examines the relative influence of husbands' and wives' fertility preferences in shaping their reproductive behavior in Pakistan.

Setting

With respect to its familial structure and fertility, Pakistan, the sixth most populous country in the world, is a patriarchal society where men play a major role in contraceptive practice, and women's position in society is increasingly contested. Pakistan started its family planning program in the early 1960s. Despite this early start, fertility declined slowly. Estimates show a decline of around 1.5 births per women between the 1980s and 1990s (Sathar et. al., 2009). After the 1990s, the fertility rate continued to decline but at a slower pace; the latest Pakistan Demographic Health Survey (PDHS) 2012-13 shows the total fertility rate (TFR) stagnating at 3.8, only slightly lower than 4.1 children per women in 2006-07. The key to fertility decline is contraceptive use (Bongaarts, 1997; Bongaarts et al., 1984). Though contraceptive use increased sharply between 1990 and 1998 (12% vs. 28%), the increase was short-lived. The contraceptive prevalence rate (CPR) is very low and seems to have plateaued. Overall, 35% of currently married women in Pakistan are currently using a contraceptive method (26% using modern methods), which is only a five-percentage point increase from 2006-07 (NIPS, 2013). Thus, the early success in lowering fertility levels seems to have disappeared, yet the reasons underlying the stagnation of fertility decline are unclear. Recent evidence suggests that Pakistani women on average are having 0.9 more births than they want and 16% of the births are unintended in nature (either mistimed or unwanted) (NIPS, 2013). Although the desire to stop childbearing is high among currently married women (42.3%), the majority of women are not using contraception to avoid unwanted births. Married women who want no additional children

but are not using contraception cited their husband's disapproval as the most common reason among non-fertility related reasons (Mahmood and Ringheim 1996, 1997; Casterline et. al 2001; Agha 2010).

However, Pakistan exemplifies a society in which gender roles have changed dramatically, as evident from significant increases in women's education and participation in labor force. Over the last two decades a shift has occurred in the socio-cultural context of Pakistani society. The government is increasingly improving women's status by investing in women's education and designing and implementing policies to protect women's rights. For instance, during the last two decades a gradual improvement in female literacy occurred, with rates increasing from 21% in 1990 to 47% in 2011-12 (Pakistan Bureau of Statistics, 2015). Although the level is still low and gender disparities remain large (men's literacy is at 70%), this increase in the female literacy rate brings hope for future generations. Gender parity in education has also improved for both primary and secondary education (Pakistan Bureau of Statistics, 2015). These changes imply that women may be more empowered than in the past. Malika and Courtney (2011) found that higher education brought more economic independence and social status for women, who started challenging the deep-rooted social norms that discriminate against women. In other words, education is an agent of change for women to control their lives. Women are also increasingly entering in the labor force, though most of them are working in the agriculture sector. Female labor force participation rate has increased from 16.2% in 2000-01 to 24.3% in 2011-12 (Pakistan Labour Force Survey, 2013). Women's share in wage employment in the non-agricultural sector has also increased over time; it was 7.98% in 1999-00, 8.95% in 2001-02 and rose to 10.45% in 2010-11 (Pakistan Labour Force Survey, various issues).

What is interesting about Pakistan's fertility stall, then, is that it coincides with marked improvement in women's education and overall socioeconomic position. Education provides women access and resources to regulate their fertility behavior (see e.g. Bbaale and Mpuga, 2011; Uchudi, 2001; Jejeebhoy, 1995). According to PDHS 2012-13, the CPR is much higher among women with higher education than women with no formal education (44% vs. 30%) (NIPS, 2013). Given the change in gender roles and relations in Pakistan, it seems likely that women's power has increased, which should allow them to assert their own preferences for contraceptive use and childbearing behaviors. However, given that women tend to want smaller families as their education and social statuses improve, the stagnation in fertility levels implies that women are still unable to assert their own preferences. Gender changes at the societal level sometimes are slow to translate into gender changes in interpersonal relationships. In other words, with increases in education and greater exposure to opportunities outside home, women may internalize smaller family size ideals, yet the gender dynamics of the society may remain pronatalist, thereby leading to more disagreement in a couple's fertility intentions and contraceptive use.

The combination of a fertility stall and improving women's status suggests that the gendered dynamics of reproductive decision-making need to be considered. Fertility decision-making requires the involvement of both partners; therefore, spousal agreement on fertility preferences and attitudes are often cited as important determinant of their subsequent behavior (Irani et al., 2014; Bankole and Singh, 1998; Bankole and Audam, 2011). Although men's influence on fertility decision-making is acknowledged, little is known about the influence of men's fertility preference in relation to his wife's use of contraception in Pakistan. Shah (1974) found strong support for interspousal communication in predicting couples' use of contraception.

Two other studies by Mahmood (1997, 1998) found a strong influence of a husband's desire for no more children on couples' contraceptive use. Another study by Mahmood and Ringheim (1997) examined husbands and wives' data separately to look at the gender differences in the desire to stop childbearing, focusing on a couple's family planning attitudes by using matched couple data of PDHS 1990-91. They found strong influence of a couple's discussion and approval of family planning on the desire for no more children among both husbands and wives.

One of the reasons for the limited research on spousal concordance on fertility intentions and behavior is, until recently, a lack of couple-level data. After a gap of almost 20 years, the Pakistan Demographic Health Survey (PDHS) 2012-13 has collected data on fertility intentions from both men and women at household level (PDHS 1990-91 collected data from couples at household level). In this paper, I will use this couple-level data to look at how couples' agreement on fertility preferences, as well as women's absolute education predicts contraceptive use. Specifically, this study has three objectives: 1) when couples disagree on fertility preferences, whose (husband or wife) fertility preferences (desire for another child) have more influence on contraceptive use? 2) does women's absolute education influence contraceptive use? and 3) has the education gradient changed over time, as might be expected when diffusion occurs?

Answering these questions will help in better understanding the role of gender and couple dynamics in use of contraception. The extent to which contraceptive use is influenced by the couple's fertility preferences will shed light into the role of gendered power in reproductive decisions. The analysis will provide important insights for policy makers and other stakeholders to address the seemingly stalled fertility in Pakistan by considering gender differences in fertility preferences and power relations within household. Further, this study contributes to the existing

literature on couples' fertility preferences and subsequent behavior by taking advantage of one of the few couple-level datasets available. Moreover, this study explores change over time in the relationship between women's education and contraceptive use to examine whether an education gradient still exists. The focus on observing change over time is important because of increased focused on women's empowerment (namely education) over the past two decades in Pakistan at both governmental and household level.

Gender and Reproductive Decision-Making

Gender necessarily and differentially influences fertility intentions and decision-making processes. High levels of unmet need in developing countries and correspondingly lower levels of contraceptive use among women reflects women's inability to translate their preferences into behaviors. As such, researchers have increasingly underscored the need to examine the influence of men on women's reproductive intentions and behaviors. Presser (1997) pointed out the lack of analysis of the gender systems prevalent in most demographic research, highlighting the importance of this dimension in explaining female and male reproductive behavior. The societal gender system is actually critical for fertility research because, as Mason (1997) notes, it comprises the "entire complex of interactions, roles, rights and statuses that surround men and women in a given society or culture." Power differentials by gender may be particularly important for reproductive decisions in developing countries. In societies where patriarchal systems prevail and where men are the main decision-makers, men's attitudes and desires toward fertility shape the fertility outcomes of the couple (DeRose et al., 2002; Mason and Smith, 2000).

Couples may not share the same fertility desires and goals, particularly in patriarchal societies, and this may inhibit contraceptive use. Although it seems clear that contraceptive use will be high when both husband and wife want to stop or postpone their childbearing and low

when both want to have additional children, it is less clear what would happen when couples

disagree on future childbearing. Past research is mixed. In societies where gender equality is

high, husbands' and wives' desires have equal influence on fertility decisions (see e.g. Thomson,

1997). But studies in developing countries, primarily in an African context, have found that

men's fertility desires and attitudes have significant influence on shaping couples' reproductive

attitudes and behaviors. Men tend to be more pronatalist than women, and women's actual or

perceived knowledge of husband's fertility preferences and attitudes toward contraceptive use

may prevent them from utilizing family planning services (Bankole and Audham, 2011;

Casterline et al., 1997; Casterline et al., 2001; Ezeh, 1993; Kulczycki, 2008; Lasee et al., 1997;

Mbizvo and Adamchak, 1991; Yadav et al., 2010; Mahmood and Ringheim, 1996; Ogunjuyibe et

al., 2009; Kamau, 1996; Kimuna and Adamchak's, 2001; Bankole, 1995). For instance, Mason

and Smith (2000) found that negotiation between husbands and wives on whether to use

contraception is influenced by gender stratification, with the husband possessing more

negotiation power in more highly gender-stratified communities. Similarly, Dodoo (1998) found

that contraceptive use is higher when the husband wants to stop childbearing rather than the wife.

This shows the relative dominance and authority of a husband on women's fertility choices and

behaviors, particularly use of contraception, that may result from the economic dependency of

women on their husbands and their low status in patriarchal societies. This warrants the

examination of male fertility preferences and perspectives in conjunction with their partner's

fertility preferences and desires.

We might expect that agreement would be higher in patriarchal societies, as women may

continuously adjust their preferences according to their husband's desires. As DeRose et al.

(2002) found in Ghana, both partners are willing to adjust their fertility preferences and

behaviors in accordance with the more pronatalist partner, usually the husband. However, when disagreement occurs, gender inequality would likely favor men's preferences. Given that men have more control on reproductive decisions as evident from women's reports of their husband's disapproval of family planning as major reason for not using contraception (see e.g. Casterline et al., 2001; Zaidi and Hussain, 2015), I expect that the husband's fertility preference will dominate.

Hypothesis 1: When couples disagree, contraceptive use will be higher among couples in which the husband does not want another child but the wife does than couples in which husband wants another child but wife does not.

Women's Education and Reproductive Decision-Making

Education is another widely-studied determinant of fertility preferences and behavior. Education is believed to provide women with the tools and resources to make informed choices as well as present them alternative choices that can influence their fertility desires (Jejeebhoy, 1995; Scheon et al., 1999; Stein et al., 2014). As a proxy for women's empowerment and status, women with different educational attainment levels will behave differently in terms of fertility preferences and behaviors that reflect their "attitudes, opportunities, or constraints" (Perelli-Harris et al., 2010). An extensive body of research has found that women's empowerment, especially women's education, influences a range of reproductive attitudes and behaviors (Edmeades et al., 2012; Mason and Smith, 2000; Upadhyay and Karasek, 2012; Kishor, 2000; Schuler et al., 1997). For instance, studies have found that women with a primary and secondary level education are significantly more likely to use contraceptives than u women with no education (see e.g. Mahmood and Ringheim, 1996). In general, women's education is associated with lower fertility desires and higher contraceptive use, and, as mentioned earlier, there is a

marked improvement in women's education in last two decades in Pakistan. Although women's education has increased, it is still rare for women to achieve higher levels of education, and so a positive education gradient likely still exists for contraceptive use.

Hypothesis 2: Educated women (both primary and secondary and above educated) will be more

likely to use contraception than women with no formal education.

Diffusion and Reproductive Decision-Making

However, Pakistani society in general is evolving, and couples are exposed to modern family ideals through different means of communication other than education. In other words, diffusion processes are occurring which promote smaller family ideals (Casterline 2001; Bongaarts and Watkins, 1996). It is first the attitudes, behaviors, and values of an innovative and educated group that favors fertility decline that then diffuses to other groups such as individuals with no formal schooling through media exposure or through direct contact with educated women (Casterline, 2001; Cleland, 2001). Just two or three decades ago, it was rare for women to receive any level of education. Educated women were a select group, making higher levels rarer and perhaps more influential for individual women's fertility ideals and behavior. As education expanded, higher levels of education have become more common for women, and further, women's status more generally has improved, perhaps weakening the impact of women's own education level. Therefore, it is of particular interest to know whether individual-level education still has the same influence on reproductive decision making, or whether the education gradient of contraceptive use has declined over time. Given the widespread diffusion of smaller family ideals, I expect that the influence of a wife's own education on contraceptive use will be stronger in 1990 than in 2012.

Hypothesis 3: The educational gradient (women's absolute education) in contraceptive use will

decline over time.

Other Factors Influencing Couples' Reproductive Preferences and Behaviors

Of course, couples' fertility preferences and women's education are not the only factors that influence couples' reproductive attitudes and behaviors. Spousal educational homogamy, age, parity, employment status, place of residence, experience of child mortality, and household wealth status are all associated with the decision to have another child and thus contraceptive behavior (Hakim 2003; Hayford and Morgan 2008).

Though I expect that rising education among individual women would enable them to assert more control over fertility behaviors, in settings with strong gender inequities in power, it is possible that women's own education may not translate into key fertility behaviors if husbands' preferences are paramount (Bankole, 1995; Mason and Smith, 2000; DeRose et al., 2002; DeRose, 2003). Research has found inconsistent results of the influence of absolute and relative education on a couple's reproductive intentions and behavior, with some studies observing that the husband's education is strong predictor of couples' use of contraception (e.g., DeRose et al., 2002; DeRose and Ezeh, 2005; Ezeh, 1993; Gubhaju, 2009). Similarly, studies have documented a positive association between women's age and contraceptive use (Ibisomi, 2014; Jones et al., 2012). However, large spousal age differences (common in patriarchal societies) negatively affect contraceptive use, particularly when the wife is younger than her husband. This in turn compromises a women's ability to negotiate and make informed reproductive choices (Longfield et al., 2004; Luke, 2005).

Scholarship on fertility and women's employment has found inconsistency in the direction and strength of relationship (Joshi, 2002). Some studies found that women's employment has little effect on their control over their fertility when women work merely due to economic pressure (Bruce and Dwyer, 1998). It is also argued that it is not women's employment per se but control over earnings that influences the demand for children (Kirtz and Mankinwa-Adebusoye, 1993; Mahmud, 1993). Higher parity is associated with higher probability of contraceptive use (Achana, 2012; Lasee and Becker, 1997). Socioeconomic differences also influence couples' use of contraception. For example, women residing in urban areas and belonging to a high wealth household are more likely to use contraception probably because of better access, resources, and knowledge about contraception (Mahmood and Ringheim, 1998; Bbaale and Mpuga, 2011; NIPS, 2013). Also, previous experience of child mortality may influence contraceptive use, as couples may want to replace their deceased child (Dodoo, 1993).

Data and Methods

In this chapter, the unit of analysis is again the couple. In Pakistan, marriage is universal, so all couples are married couples and all fertility is marital fertility. In both the PDHS 1990-91 and 2012-13, information on fertility preferences (discussed below) is collected from both men and women, making this the ideal data set to study how changes in gender roles influences couple-level decision-making for reproductive behaviors. The only difference between two surveys is the selection of husbands. In 1990-91, a random fraction of husbands of female respondents were interviewed regardless of age, but in 2012-13, an independent sample of men aged 15-49 were selected for interview, some of whom can be matched with spouses who were also interviewed.

For PDHS 1990-91, I have selected for analysis a matched set of currently married, fecund women aged 15-49 and their husbands (of any age). The initial sample size was 1,365 married couples, but there were several restrictions that reduced the sample size. First, I dropped those cases where a husband had more than one wife (n=67). I limit my analytical sample to fecund couples because of the focus on current contraceptive use. Therefore, I excluded women who were pregnant (n=199) or who were sterilized or declared infecund (n=86). I also dropped those men who were sterilized or those who reported that their wives were infecund (n=43). This yielded a final analytical sample of 970 couples.

For the PDHS 2012-13 couple analysis, a matched set of currently married, fecund women aged 15-49 and their husbands are selected, yielding a sample size of 2,798 couple. In 134 cases, a husband had more than one wife, so I dropped these cases. I also dropped those women who were pregnant (n=376), were sterilized or were declared infecund (n=292). I also dropped those men who were sterilized or those who reported that their wives were infecund (n=24). My final analytical sample is therefore 1,972 couples.

As one of the objective of this study is to examine whether educational gradient of contraceptive use has changed over time, I combined both datasets, and this yielded the pooled analytical sample of 2,942 couples. The main objective of pooling the datasets is not only to increase the sample size to obtain more precise estimates but also to investigate the effect of time. The gap of more than twenty years between two surveys facilitates observing change in gender relations which may affect reproductive intentions and decision-making. To capture the structural change over time, I included survey year as a dichotomous variable (with 1990-91 as the reference category) in multivariate analysis.

Measures

Dependent Variable.

Current Contraceptive Use: The dependent variable for this analysis is current contraceptive use. The information on current contraceptive use is only collected from women. Following other studies, a couple is considered to be using contraceptives if the wife reports current use of any method (Dodoo, 1993; Bankole and Audam, 2011). The question on current contraceptive use is asked of currently married, non-sterilized and non-pregnant women. The women were asked "Are you currently doing something or using any method to delay or avoid getting pregnant?" Current contraceptive use is thus a dichotomous measure. Current contraceptive use refers to both modern and traditional methods.

Independent Variables

Couple's Agreement in Fertility Intentions: The DHS asks both men and women about their future fertility intentions. Currently married, non-sterilized women who were not pregnant and men whose wives were not pregnant were asked "Would you like to have (a/another) child, or would you prefer not to have any (more) children?" The response categories were 1) have another child; 2) no more; 3) undecided/don't know. Respondents who were undecided are categorized as they want a(nother) child. Studies on fertility intentions and desired family size have shown that respondents who give a non-numeric response or were undecided are more similar in characteristics to those who wanted more children and did not have a clear wish to stop childbearing (Becker and Sutradhar, 2007; Mahmood and Ringheim, 1997; Olaleye, 1993). Retaining these cases is important, as a substantial percentage (40%) of the respondents in 1990 gave a non-numeric response to question on fertility intention. However, the percentage of non-

numeric responses has dropped significantly over time as evident from various studies on DHS (Bongaarts, 2011). Still, a non-negligible percentage of men and women (13%) responded that they were undecided or didn't know in PDHS 2012-13.

Since I am particularly interested in examining disagreement among couple on having a child, I used an interaction approach that combines the spouses' joint fertility preferences on the use of contraception instead of an additive approach which looks at the influence of each partner's fertility preference on use of contraception (Bankole, 1995). Therefore, the couple-level construct of fertility intention is defined as: both want a(nother) child, only wife wants another child (reference), only husband wants another child, and both don't want a(nother) child. Constructing a variable in which both partners' preferences are included, rather than interacting two separate variables, is a straightforward approach to examine the relative strength of the influence of each partner's fertility preferences on contraception.

Education: Wife's education is categorized into three categories: no formal education (reference category), primary education (grade 1-5), secondary and above education (grade 6 & above).

Other Control Variables

Control variables include: couple educational homogamy, wife's current age, couple's age difference, women work status, parity (number of living children), experiencing any child death, rural-urban residence, household wealth, and an indicator of disagreement on number of living children. *Couple educational homogamy* is measured as: have same level of education, husband is less educated than wife, husband is more educated than wife, and both have no formal education (reference). *Wife's current age* is represented by a three-category measure: 15-24 years old (reference), 25-34 years old, and 35 years old and above. *Couples' age difference* is

also included in the analysis and is categorized as: wife is older by 1-9 years, wife is younger by 0-4 years (reference), wife is younger by 5-9 years, and wife is younger by 10+ years. *Women's work status* is a dichotomous measure. *Parity* is represented by a three-category measure: 0-2 living children (reference), 3 living children, 4 and above living children. A dummy variable for *experiencing any child death* is also included in the analysis. To account for the *urban-rural* differentials, l included a dummy for urban-rural residence with rural as reference category. *Household wealth* is based on information on the wealth index as provided in the PDHS 1990-91 and PDHS 2012-13, constructed from information on household asset data including ownership of a number of consumer durables as well as standard of living and dwelling characteristics (National Institute of Population Studies, 1991, 2013; Mahmood and Bashir, 2012; Rutstein and Johnson, 2004). The wealth index originally consisted of five categories (poorest, poorer, middle, higher, and highest). For the sake of simplicity, I merged the poorest and poorer into one category of 'poor' and higher and highest into 'high,' with poor being the reference category. A substantial number of couples disagree on number of living children (110 in 1990 and 81 in 2012); therefore, I included a dummy for disagreement on number of living children to account for this because disagreement among couple on number of living children affects their fertility preferences differently.

Analytical Strategy

I used both bivariate and multivariate analytical techniques to study the association between couples' fertility intentions and current contraceptive use. A bivariate analysis is used to identify patterns of associations between couples' contraceptive use, wife's education, and couples' fertility preferences and their individual and shared background characteristics across surveys. I then moved to multivariate analysis. Logistic regression models are used because the

outcome of interest (current contraceptive use) is dichotomous in nature. The logistic regression model is of the form,

$$\ln [(\pi i)/(1-\pi i)] = X'\beta = \sum bi \, xi$$

where πi is the probability of using contraceptives, bi are estimated regression coefficients, and xi are the background characteristics, consisting of couples' fertility intentions, wife's and couple's education, wife's age, couple's age difference, wealth index, parity, type of residence, experience of child mortality, and an indicator for disagreement on number of living children.

In the first model, I regress current contraceptive use on couples' fertility intention along with survey year in the pooled PDHS 1990-91 and PDHS 2012-13 dataset (Hypothesis 1). In the second model, I added wife's education (Hypothesis 2). The third model includes the control variables. In the final model, I tested the interaction between survey year and wife's education to determine whether education gradient of contraceptive use has changed over time (i.e., between 1990-91 or in 2012-13) controlling for all other variables (Hypothesis 3).

To identify the key sources of change in use of contraception over the last two decades, I used regression-based decomposition technique for non-linear models (an extension of the Blinder– Oaxaca decomposition method for non-linear regression models such as logistic regression models) (Fairlie, 2005; Power et al., 2011). Decomposition analysis quantifies change over time or across groups into components attributable to compositional changes (i.e., differences in the proportion with various characteristics) between surveys and components attributable due to change in the effect of explanatory variables (i.e., differences in the coefficients due to changes in population behavior) (Blinder, 1973; Oaxaca, 1973; Powers et al. 2011). I used the Stata *mvdcmp* package developed by Powers et al. (2011) to carry out the

multivariate logistic regression decomposition. Both changes in population composition and population behavior related to contraceptive use (effect) are important. In this study, I used regression based decomposition analysis to see how much change in use of contraception is due to changes in women's characteristics, particularly women's absolute education, and how these factors shape differences across surveys conducted at different times. All the analysis is weighted (sampling weights are used to account for clustering due to sampling design and non-response).

Results

Descriptive Results[1]

Table 1 presents the percentage distribution of couples shared and individual characteristics, along with current contraceptive use across both surveys. The results show that contraceptive use has increased markedly between 1990-91 and 2012-13. In 2012, 41% of couples reported that they are currently using any contraceptive method, whereas only 12% were couple were using any contraceptive method in 1990. Note that this differs from overall current contraceptive use among married women in Pakistan i.e. 35%. Overall, the majority of couples in both surveys agreed on their fertility preferences (either want or don't want a(nother) child) (76% in 1990 and 82% in 2012), with more couples in both time periods agreeing they want additional children than agreeing they do not want any more children. In the case of disagreement among couples, twice as many couples consisted of husbands who wanted another child than vice versa in both time periods (18% vs. 6% & 11.7% vs. 6%). However, a 35%

---

[1] All the analyses (bivariate & multivariate) are weighted to account for complex survey design of PDHS 1990-91 & 2012-13.

decline is observed in couples in which only husband wants a(nother) child between 1990 and 2012.

-Table 1-

An improvement is observed in wives' education between 1990 and 2012. In 1990, more than 80% of the women had no formal education, declining to 53% by 2012. Similarly, only 12% of the women had a secondary or higher education in 1990, increasing to 30% by 2012. The percentage of couples having the same level of education almost doubled between 1990 and 2012, with a substantial decline in the percentage of couples in which neither member had any education (46.8% vs. 22.2%). However, a gendered pattern is evident in terms of couple's educational homogamy – in around 40-45% of couples in both time periods, the husband is more educated than his wife. An increase is observed in the percentage of working women; more than one quarter of women were working in 2012. In both time periods, the majority of women were in younger age categories. The pattern of couples' age difference is similar across surveys, although the proportion of couples in which the wife is older increased by 62% between these two-time periods. Similarly, the proportion of women who were 10 or more years younger than their husbands dropped by half. The majority of couples had more than two children, although the proportion having only two children doubled between 1990 and 2012 (9.5% vs. 18.1%). At the same time, a substantial decline is observed in the percentage of couples with 4 or more children. More than two thirds of couples have not experienced child mortality. More than two thirds of the sample belonged to rural areas, and more than 50% of the respondents belonged to poor or middle wealth household. Disagreement on the number of living children is small across both surveys, and it declined in 2012.

Figure 1 shows the relationship between couple's fertility preferences and current contraceptive use across both surveys. There is an increase in contraceptive use across all categories of couples' fertility preferences between 1990 and 2012. Contraceptive use is higher when couples agree on fertility preferences (either want or don't want a(nother) child); however, the increase is more pronounced when both the husband and wife don't want more children. An increase in contraceptive use among couples who agree to have more children indicates that these couples are probably using contraceptives to space their childbearing. Surprisingly, the bivariate relationship does not support the argument (Hypothesis 1). I expected that the husband's fertility preferences would have more influence on contraceptive use (i.e., when couples disagree, contraceptive use will be lower among couples in which husband wants more children but wife does not). Instead, contraceptive use is higher among these couples, and the difference in contraceptive use between those in which only the wife wants and only the husband wants has widened between 1990 and 2012. This suggests that a wife's preferences have more weight in deciding about use of contraception.

-Figure 1-

Figure 2 presents the relationship between wife's education and contraceptive use. The graph shows that contraceptive use is higher among educated women than women with no education (Hypothesis 2). Contraceptive use has increased between 1990 and 2012 across all educational categories for wives; however, the increase is larger among women with no education and primary-educated women. This suggests that education's association with contraceptive use seems to have weakened over time (Hypothesis 3). The proportion of women with primary education who reported using contraceptives has increased from 21% to 48% between 1990 and 2012 and from 6% to 33% among women with no formal schooling.

-Figure 2-

Multivariate Logistic Regression

Table 2 shows the results of the pooled logistic regression to examine change over time in the relationship between couples' fertility preferences, couples' relative education and couples' current contraceptive use. Table 2 has four models. Model 1 includes couples' fertility preferences along with a dummy for survey years (Hypothesis 1); in Model 2, I added the wife's education (Hypothesis 2); Model 3 includes all individual and couple-level shared characteristics as control variables. In Model 4, I include the interaction of wife's education with survey year (Hypothesis 3).

-Table 2-

Model 1 shows that the odds of using contraception increased significantly between 1990 and 2012. The odds of contraceptive use are 5.6 times as high in 2012 than in 1990. Looking at the results for fertility preferences, the findings largely support the expectation that contraceptive use is significantly higher among couples in which both husband and wife agree to have no more children and lower when both want another child compared to couples in which wife wants another child but husband does not. The analysis does not support Hypothesis 1 of male dominance (in the case of disagreement, contraceptive use will be higher when the husband wants no more children but the wife does compare to when the wife wants no more children but husband does). The relationship between couple's joint fertility preferences and contraceptive use does not depend on which partner wants another child. Rather, the preferences of both spouses exert equal influence on contraceptive use when conflict arises. In other words, the odds

of contraceptive use when only the wife wants another child are not significantly different from when only the husband wants another child.

Model 2 includes wife's education to examine whether a positive education gradient still exists in contraceptive use. The relationship between a couple's fertility preferences and contraceptive use essentially remains the same. The results show that women's own education has significant influence on couple's contraceptive use. The findings support the positive educational gradient hypothesis (Hypothesis 2) that educated women are more likely to use contraception than women with no formal education, particularly among women with secondary and above education. The odds of contraceptive use are 3.3 times as high for women with secondary and higher educated women and 2.4 times as high for women with primary education than women with no formal education. Primary and secondary educated women are also significantly different from each other in terms of contraceptive use (not shown), with secondary and above educated women being more likely to use contraceptives than primary educated.

In Model 3, I added individual- and couple-level shared sociodemographic characteristics. Including these variables does not change the relationship between the variables of interest. Primary and secondary educated women remained significantly different from each other in terms of contraceptive use (not shown) even when I controlled for background variables. Couples' relative education has no influence on contraceptive use. Model 3 shows that women aged 35 and above are 66% less likely to use contraceptives than younger women aged 15-24. The odds of using contraceptives are 4.3 times as high among couples with 4 and more living children and 3.5 times as high for couples with two to three children than couples who either have one or no living child. Urban couples and couples belonging to middle wealth households are 53% and 71% more likely to use contraceptive than their rural counterparts and couples

belonging to poor wealth household, respectively. Being in the work force, previous experience

of child mortality, and age difference among spouses are not associated with current

contraceptive use.

Model 4 tests the interaction between survey year and wife's education to examine

whether the education gradient of contraceptive use has changed or remains constant over time.

The interaction between survey year and wife's education supports Hypothesis 3 and indicates

that the influence of women's education on contraceptive use has lost strength over time.

Interestingly, when I added the interaction term between survey year and wife's education, the

magnitude of the coefficient for survey year increased dramatically. This means that

contraceptive use increased significantly among women with no formal education between 1990

and 2012; that is, contraceptive use has increased across all educational groups over time but

more substantially among women with no schooling.

Decomposition Analysis

Recall that contraceptive use increased substantially from 12% to 41% between 1990 and

2012 among sampled couples (Table 1), so it is important to understand how changes in the

population composition has influenced the change in contraceptive use. To calculate the amount

of change attributable to compositional changes versus changes in coefficient (effects of

sociodemographic characteristics) for each variable, I performed decomposition analysis based

on the logistic regression models run separately for PDHS 1990 and 2012 (Table A1 in this

chapter appendix).

Aggregate Decomposition

I present two alternative sets of estimates (Table 3). The only difference is that the first set of estimates hold population composition at 2012 (for the rates component) and coefficients at 1990 (for the composition component) (Col 2 & 3) whereas the second set of estimates holds population composition at 1990 and coefficients at 2012 (Col 5 & 6). Difference between two estimates are mainly due to "differences in the weights applied to changes in coefficients or composition" (Hook et al., 2004). The overall decomposition indicates that 20% of the overall change in contraceptive use is attributable to compositional changes in the population, and 80% of the change in contraceptive use is attributable to differences in the effects of characteristics (coefficient changes). Of the coefficients, the intercept accounts for most of the change in contraceptive use (60% & 72% based at which year the coefficients are fixed) (Table 3). The importance of the intercept essentially means that change in contraceptive use between 1990 and 2012 is due to general changes and "not behavior specific to a particular segment of the population" (Hayford, 2013).

-Table 3 -

Detailed Decomposition

In this section, I explored the compositional factors that are basis of change in contraceptive use over the last two decades. As shown in Table 3, I have two sets of decomposition results, switching the year at which coefficients are fixed. A negative percentage means that given factors lead to decline in contraceptive use and positive percentage means that given factors lead to an increase in contraceptive use between two surveys.

Difference due to Characteristics/Compositional Changes

Women's education is the single largest contributor to the compositional component of the change in contraceptive use. In other words, an increase in the proportion of educated women is associated with increase in contraceptive use. Women's education accounts for 17.9% (primary 4.7% and secondary 13.2%) of the overall increase in contraceptive use, with changes in secondary and above education (13.2%) significantly contributing to the change in contraceptive use. Compositional shifts in couples' joint fertility preferences as evident from the increase in the proportion of couples in which both partners do not want to have more children (Table 1) contributed significantly but modestly to the increase in contraceptive use (5%). However, the impact of couples' joint fertility preferences on the increase in contraceptive use is substantially lower when examined using the coefficients at 2012 than at the beginning of interval (1990). Put differently, the changes in the composition of couples in which both partners do not want another child would have contributed 5 percentage points to changes in contraceptive use if 1990 coefficients are used, but the contribution would be only 3.2 percentage points if 2012 coefficients are used means by changing the context. This suggests that contraceptive use tend to be higher in 1990 than in 2012 for the couples in which both husband and wife do not want additional children.

Though there were only small changes in the age composition of women in the sample, a decrease in women aged 35+ (Table 1) contributed significantly to increased use of contraception (2.2%). Higher parity is also associated with increase in contraceptive use, as observed in Table 2. Therefore, an increase in the proportion of couples with two to three children in the sample contributed significantly to the increase in contraceptive use. However, a decline in the proportion of couple with 4 and more children in the sample had a negative impact

on use of contraception. Similarly, a decline in proportion of women belonging to middle wealth households in the sample had a negative impact on use of contraception.

Difference due to Coefficients

The analysis shows that the contribution due to the difference in the coefficients (effects) of wife's age and wife's higher education is significant, suggesting a differential impact of wife's age and education on contraceptive use. The analysis shows that impact of wife's higher education on contraceptive use has declined over time, and wife's age has become more important over time.

Discussion

Scholarship on fertility attitudes and behaviors is coming to the consensus that the dynamics of a couple's reproductive decision-making process cannot be fully understood by only using data from one partner (Bankole, 1995). Therefore, more recent surveys on reproductive-related matters are now collecting data from both men and women. The growing literature on men's influence on fertility reflects women's inability to translate their fertility intentions into behavior (Ezeh 1993; Bankole and Singh, 1998; Dodoo, 1998). Attention to gender issues and spousal dynamics in reproductive intentions is especially important in a patriarchal society experiencing changing gender role dynamics such as Pakistan. In other words, with increases in education and greater exposure to opportunities outside home, women may internalize smaller family size ideals even though their partners may remain pronatalist, thereby leading to more disagreement in a couple's fertility intentions, which in turn predicts their reproductive behavior (Bongaarts, 1991; Ezeh, 1993; DeRose and Ezeh, 2005).

The goal of this study is to examine how a couple's disagreement on fertility preferences are associated with contraceptive use, especially in light of changing educational patterns among women and the diffusion of small family ideals. Primarily, I am interested in which spouse's future fertility desires are more strongly associated with contraception when disagreement occurs. Second, is women's absolute education still an important correlate of contraceptive use? Third, has the education gradient changed over time, as might be expected when diffusion occurs?

As demonstrated elsewhere, contraceptive use has increased between 1990 and 2012 (11.7% vs. 41%). The majority of couples agree on their fertility preferences (either both want or don't want another child), with couples more often agreeing that they do want another child than that they do not want more children. Disagreement among couples on the desire for additional children decreased between 1990 and 2012; however, husbands are more pronatalist than their wives in both time periods, consistent with work suggesting that during the course of transition in highly gendered society, women are first to internalize the desire for smaller families (Mason, 2000). The results also show that women's education has increased over time, supporting the argument that gender roles are changing dramatically in Pakistan.

My findings suggest that couples' joint (agreement/disagreement) fertility preferences are an important predictor of contraceptive use. It is straightforward and easy to understand that when both spouses do not want to have another child then they will tend to use contraception compared to couples who both want to have more children. However, my analysis does not support the male dominance hypothesis that in the case of disagreement, contraceptive use will be higher when only the husband wants additional children than vice versa (Hypothesis 1). Instead, both husbands' and wives' fertility preferences are equal associated with the odds of

using contraception. Some other studies also found similar results (see e.g. Bankole, 1995; Bankole and Singh, 1998), but this finding does not support the male dominance argument that men have more power in reproductive decision-making in patriarchal societies. This result indicates that even if men have more authority in household decision-making, "that power does not seem to drive contraceptive use among couples in favor of the husband's fertility preference" (Bankole & Audam, 2011).

One reason for this finding may be that men may be indifferent when it comes to women's reproductive needs, in part because contraception is usually considered as women's domain. Most of the family planning methods and programs are women-focused. For instance, outreach programs, such as the Lady Health Worker (LHW) program, provide information and contraceptives to women at their homes, particularly in rural areas in Pakistan. This may give women access, ability, and 'permission' to use contraception when they do not want to have another child even if their husband does. Men and women may also think differently about contraception. Studies have shown that men usually report higher contraceptive use than women (Bankole and Audam, 2011). However, their reports could depend on which method is used and its frequency. For instance, a husband may report current use of condom if he used it once during the last week, whereas a wife may report that couple is not using contraception currently if her frame of reference is all episodes of intercourse. Another plausible reason for not finding support for the male dominance hypothesis is that women adjust their fertility preferences according to their partner's desires, particularly in patriarchal societies (DeRose et al., 2002).

My second objective is to see whether women's absolute education influences the use of contraception given changes in gender roles more broadly. Women's education is strongly associated with contraceptive use and lower fertility. Participation in educational activities delay

the onset of fertility and provide women with more economic opportunities outside home which in turn increases the opportunity cost of childbearing and childrearing (see e.g. Bbaale and Mpuga, 2011; Schultz, 1993). Well-educated women may have more decision-making power, particularly in a highly-gendered society where women's status is contested (Jejeebhoy, 1995). The results support my hypothesis (Hypothesis 2) that educated women, especially those who have secondary and above education, are significantly more likely to use contraception than women with no formal education. Though women's education has increased markedly in Pakistan, educated women are still a select group, particularly at higher levels.

The third objective of this study was to ask whether women's own education remains as strongly linked to contraception in more recent years; that is, whether the education gradient remains constant or changed over time. The result of this study support the expectation (Hypothesis 3) that the education gradient has lost strength over time as contraceptive use has increased substantially among uneducated women. This is not surprising as other studies have found similar results that contraceptive use is increasing among women with no education (see e.g. Bhat, 2002; McNay et al., 2003) and provides evidence of an ongoing, if slow, fertility transition. But at the same time, it shows that women's own socioeconomic characteristics such as education are no longer the only predictors of their fertility behavior. An increase in contraceptive use among women with no education over time can be described as a "spillover effect" (McNay et al., 2003). In other words, women's own individual characteristics (such as having a low level of education) may be negatively linked to fertility, yet they are influenced by the fertility behavior of others (i.e., educated women). It also implies that the aspiration of a better life, the technological innovation, and the realization or desire of investing more in their children's education, especially among girls (as evident from increases in girls' education over

time), may have encourage women with no formal education to regulate their fertility behavior (Bhat, 2002).

The findings of this study show that a couple's joint fertility preferences are an important predictor of contraceptive use and highlight the importance of using couple-level data to understand couples' reproductive attitudes and behaviors. This is especially important in the era of markedly changing gender roles and relations at the societal level. Although men's dominance over reproductive decisions has been believed to be a force delaying the onset of fertility transition (Caldwell and Caldwell 1987; Kritz 1999), the result of this study suggests that men and women's fertility preferences exert equal influence on the use of contraception. This finding asks for more in-depth analysis of couples' fertility attitudes and behaviors particularly over the reproductive life course of the couples; it may possible that the influence of gender operates differently by number of living children. Similarly, results suggest that the positive association between women's own education and contraceptive use has weakened over time. Although contraceptive use is higher among educated women, women with no formal education are driving the fertility decline. This suggests that women with no formal education are becoming more receptive of modern family ideals, perhaps due to increased exposure to mass media that introduces them to alternative lifestyles that favor smaller families. Therefore, it is important to examine the fertility behavior of women with no education, particularly the role of diffusion process in use of contraception.

Limitations

This study has several limitations. First, women's education is a poor proxy for women's empowerment. There are several other variables identified in literature, such as wife's gender role ideologies, attitudes towards wife beating, ownership of assets, healthcare decision-making,

and spousal communication on fertility-related issues, among others. Such factors could be valuable in examining the influence of women's improved status on shaping couple's fertility intentions and behaviors. However, much of these improved measures of women's empowerment are not available in PDHS 1990-91 or were measured inconsistently across surveys, preventing inclusion in the analysis. Another limitation of this study is the cross-sectional nature of the data. As mentioned before, fertility preferences are not static and are reassessed by couples over time. It would be valuable to have a longitudinal data that have a prospective measure of a couple's fertility preferences to see how a couple's fertility attitudes and behaviors are shaped over time according to their individual and shared characteristics.

Finally, I was unable to consider empirically the role of mass media on contraceptive use for two main reasons. First, mass media exposure is totally different in both time periods. In 1990, there was only one state run television channel and radio, and its family planning messages were direct, mainly promoting and encouraging couples to use family planning methods. In the early 2000s, a revolution in electronic media occurred, and many new television channels were launched. These channels brought new and luxurious lifestyle ideals in people's life. However, a decline is observed in exposure to direct family planning messages through mass media over time. Zaidi (2015) observed that around 50% of the married women were exposed to family planning messages either through television, radio, or newspaper in 2006-07, and this proportion has declined to 25% by 2012-13. As such, the influence of mass media exposure on uptake of contraception will be vary in two time periods. Second, survey questions directly ask respondents about family planning knowledge and their sources of information. But these questions do not capture the diffusion of smaller family ideals via other mediums like TV serials,

shows, and social media. In Pakistan, new private TV channels exposed women (and men) to new modes of family and lives.

Conclusion

This study is an important contribution to understanding couple's reproductive attitudes, preferences, and behavior over time particularly when gender roles are changing dramatically. This study has some important policy implications. First, the finding that contraceptive use does not depend on which partner wants another child suggests it is time to revisit the family planning program. Therefore, the low level of current contraceptive use may be the result of supply-demand gap as evident from the increase in "unmet need" over time (NIPS, 2013). A recent review study by Zaidi and Hussain (2015) finds that inadequate and poor access to family planning services, lack of availability, and cost of modern methods are stronger reasons for the low uptake of modern contraception than husband disapproval and religious beliefs about family planning.

Second, men's role in fertility decision-making should not be ignored. This is true in traditional societies where women's access to services is limited, and spousal communication on family planning is limited because of cultural norms that do not support open discussion of sexual matters. Pakistan's family planning program mainly focuses on women, but the low level of contraceptive use may be the result of unmet needs of the men as well as women. Another study by Kamran et al. (2014) found that husbands cited cost and lack of availability of family planning services as main reasons for not using contraceptives. As the gender dynamics of the society favors male dominance, it would be advantageous to target men because it may possible that it is the unmet need for family planning among men that hinders further fertility decline due to low contraceptive use among couples. A couple's fertility preferences and contraceptive use

32

are essentially a dyadic decision; therefore, efforts to promote family planning will be more effective when husbands are more approving of contraception and revise their fertility goals with changes in their wife's fertility desires (Bankole and Singh, 1998).

Finally, though women's education has a significant influence on a couple's reproductive behavior, the finding of increase contraceptive use among women with no formal education shows that the fertility transition is indeed underway in Pakistan, even if the pace is slower than in earlier years or other contexts. Furthermore, the increase in contraceptive use among women with no education lends support to the diffusion theory argument that fertility transition can happen even at lower level of socio-economic development primarily due to diffusion of smaller family ideals through various means of communication. In this regard, it is important to identify the sources of diffusion – which sources and modes of communication are women most likely to be receiving family planning messages? Is this interaction happening at the household level, where educated members of the household are influencing the behavior of less educated members? Is it community level factors such as the proportion of literate women in the community or proportion of women using contraceptives that influence the reproductive behavior of less educated women? To what extent are mass media channels in spreading the smaller family ideals among women having no schooling?

Despite the increase in contraceptive use among uneducated women, the high TFR (4.4) and high levels of unwanted fertility among women with no education indicates that these women are not fully able to achieve their desired fertility (NIPS, 2013). Therefore, an in-depth analysis of the contraceptive behavior of these women is required to understand what methods of contraception they are using, how effective these methods are, how consistent these women are in using contraception, and whether what they are doing to control their fertility is enough?

Nevertheless, the increase in contraceptive use among women with no formal education provides the evidence that fertility transition is undergoing in Pakistan, though at a slow pace. Strong political will is required to promote effective family planning methods and overcome the supply side barriers to family planning use.

REFERENCES

Achana, F. S., Bawah, A. A., Jackson, E. F., Welaga, P., Awine, T., Asuo-Mante, E., Oduro, A.,
   Awoonor-Williams, J. K. & Phillips, J. F. (2015). Spatial and socio-demographic
   determinants of contraceptive use in the upper east region of Ghana. *Reproductive
   Health*, 12:29.

Agha, S. (2010). Intentions to use contraceptives in Pakistan: Implications for behavior change
   campaigns. *BMC Public Health*, 10(1).

Bankole, A. and Audam, S. (2011). Fertility preferences and contraceptive use among couples in
   sub-Saharan Africa. *African Population Studies*, 25(2): 556- 586.

Bankole, A. and Singh, S. (1998). Couples' fertility and contraceptive decision-making in
   developing countries: Hearing the man's voice. *International Family Planning
   Perspectives*, 24(1): 15-24.

Bankole, A. (1995). Desired fertility and fertility behavior among the Yoruba of Nigeria: a study
   of couple preferences and subsequent fertility. *Population Studies*, 49: 317-328.

Bbaale, E. & Mpuga, P. (2011). Female education, contraceptive use, and fertility: Evidence
   from Uganda. *Consilience: The Journal of Sustainable Development*, 6(1): 20–47.

Becker, S. and Sutradhar, S.C. (2006). Fertility intentions: Are the undecided more like those
   who want more or want no more children? *Journal of Biosocial Science,* 39 (1): 137-145.

Becker, S. (1996). Couples and reproductive health: A review of couple studies. *Studies in
   Family Planning*, 27(6): 291-302.

Bhat, Mari P. N. (2002). Returning a favor: Reciprocity between female education and fertility.
   World Development, 30(10): 1791–1803

Blinder, A. S. (1973). Wage discrimination: Reduced form and structural estimates. *Journal of
   Human Resources*, 8: 436–455.

Bongaarts, J. (1997). Trends in unwanted childbearing in the developing world. *Studies in Family Planning*, 28(4): 267-277.

Bongaarts, J. and Watkins, S.C. (1996). Social interactions and contemporary fertility transitions. *Population and Development Review*, 22(4): 639-682.

Bongaarts, J. (1984). Implications of future fertility trends for contraceptive practice. *Population and Development Review*, 10(2): 341-352.

Bruce, J. and Dwyer, D. (1988). Introduction. In D. Dwyer and J. Bruce (Eds) *A home divided: Women and income in the Third World.* Stanford, California: Stanford University Press).

Caldwell, J.C. and Caldwell, P. (1987). The cultural context of high fertility in sub-Saharan Africa. *Population and Development Review*, 13(3): 409–437.

Casterline, J.B., Sathar, Z.A., and Haque, M. (2001). Obstacles to contraceptive use in Pakistan: A study in Punjab. *Studies in Family Planning*, 32(2): 95-110.

Casterline, J. (2001). Diffusion processes and fertility transition: Introduction. In: Casterline, J., editor. *Diffusion Processes and Fertility Transition: Selected Perspectives*, Committee on Population, Division of Behavioral and Social Sciences and Education, National Research Council. Washington, DC: National Academy Press; 2001.

Casterline, J.B., Perez, A.E., & Biddlecom, A.E. (1997). Factors underlying unmet need in the Philippines. *Studies in Family Planning,* 28(3): 173-191.

Cleland, J. (2001). Potatoes and pills: An overview of innovation diffusion contributions to explanations of fertility decline. In: Casterline, J., editor. *Diffusion Processes and Fertility Transition: Selected Perspectives*, Committee on Population, Division of Behavioral and

Social Sciences and Education, National Research Council. Washington, DC: National

Academy Press; 2001.

DeRose, L.F. & Ezeh, A.C. (2005). Men's influence on the onset and progress of fertility decline

in Ghana, 1988-98. *Population Studies*, 59(2): 197-210.

DeRose, L.F. (2003). Marriage, lineage, relative spousal power and fertility decline in Ghana.

http://paa2004.princeton.edu/download.asp?submittedId=40838.

DeRose, L.F., Dodoo, F.N., & Patil, V. (2002). Fertility desires and perceptions of power in

reproductive conflict in Ghana. *Gender Sociology*, 16:53–73.

Diro, C.W. and Afework, M.F. (2013). Agreement and concordance between married couples

regarding family planning utilization and fertility intention in Dukem, Ethiopia. *BMC*

Public Health:1-7.

Dodoo, F.N. (1998). Men matter: additive and interactive gendered preferences and reproductive

behavior in Kenya. *Demography,* 35(2): 229-242.

Dodoo, F. N-A. (1993). A couple analysis of the micro-level supply/demand factors in fertility

regulation. *Population Research and Policy Review*, 12: 93–101.

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.

Ezeh, A. C. (1993). The influence of spouses over each other's contraceptive attitudes in Ghana.

Studies in Family Planning, 24(3): 163-174.

Fried, E.S. & Udry, J.R. (1979). Wives' and husbands' expected costs and benefits of

childbearing predictors of pregnancy. *Social Biology*, 26: 256-274.

Gubhaju, B. (2009). The influence of wives' and husbands' education levels on contraceptive method choice in Nepal, 1996-2006. *International Perspective on Sexual and Reproductive Health*, 35(4):176-185.

Hakim, C. (2003). A new approach to explaining fertility patterns: Preference theory. *Population and Development Review,* 29(2):349–74.

Hayford, S.R. (2013). Marriage (still) matters: The contribution of demographic change to trends in childlessness in the United States. *Demography*, 50(5): 1641-1661.

Hayford, S. R., & Morgan, S. P. (2008). Religiosity and fertility in the United States: The role of fertility intentions. *Social Forces*, 86: 1163-1188.

Hook, J.V., Brown, S.L., & Kwenda, M.N. (2004). A decomposition of trends in poverty among children of immigrants. *Demography*, 41(4): 649–670.

Ibisomi, L. (2014). Is age difference between partners associated with contraceptive use among married couples in Nigeria? *International Perspectives on Sexual and Reproductive Health*, 40(1):39–45.

Jejeebhoy, S. (1995). Women's education, autonomy, and reproductive behavior: Experience from developing countries. Oxford: Clarendon.

Jones, J., Mosher, W., & Daniels, K. (2012). Current contraceptive use in the United States, 2006-2010, and changes in patterns of use since 1995. National Health Statistics Report Number 60. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics.

Joshi, H. (2002). Production, reproduction and education: women, children and work in a British. *Population and Development Review*, 28: 445-74.

Kamran, I., Khan, M., & Tasneem, Z. (2014). Involving men in reproductive and fertility issues : Insights from Punjab. *Health, Nutrition, and Population (HNP) discussion paper.* World Bank, Washington, DC.

Kamau, R.K., Karanja, J., Sekadde-Kigondu, C., Ruminjo, J.K., Nichols, D., & Liku, J. (1996). Barriers to contraceptive use in Kenya. *East Africa Medical Journal*, 73(10):651–9.

Kimuna, S.R. & Adamchak, D.J. (2001). Gender relations: Husband-wife fertility and family planning decisions in Kenya. *Journal of Biosocial Science*, 33(1):13–23.

Kishor, S. (2000). *Women's contraceptive use in Egypt: What do direct measures of empowerment tell us?* Paper presented at the Annual Meeting of the Population Association of America, Los Angeles.

Kritz, M., & Makinwa-Adebusoye, P. (2001). *A couple agreement on wife's autonomy and reproductive dynamics in Nigeria*. IUSSP, XXIV General Population Conference, Salvador, Brazil, 18-24 August 2001.

Kritz, M. M. (1999). Husband and wife agreement, contraceptive use, and ethnicity in Nigeria. Cornell University Population and Development Program. Working Paper Series 99.03.

Kulczycki, A. (2008). Husband-wife agreement, power relations and contraceptive use in Turkey. *International Family Planning Perspectives*, 34(3): 127-137.

Lasee, A. and Becker, s. (1997). Husband-wife communication about family planning and contraceptive use in Kenya. *International Family Planning Perspectives*, 23(1): 15-20.

Longfield, K., Glick, A., Waithaka, M., & Berman, J. (2004). Relationships between older men and younger women: implications for stis/hiv in Kenya. *Studies in Family Planning*, 35(2):125-134.

Luke, N. (2005). Confronting the 'sugar daddy' stereotype: Age and economic asymmetries and risky sexual behavior in urban Kenya. *International Family Planning Perspectives*, 31(1):6–14.

Mahmood, N. & Bashir.S. (2012). Applying an equity lens to maternal health care practices in Pakistan. Working Paper No.83. Pakistan Institute of Development Economics.

Mahmood, N. (1998). Reproductive goals and family planning attitudes in Pakistan: A couple-level analysis. *The Pakistan Development Review*, 31(1): 19-34.

Mahmood, N. & Ringheim, K. (1997). Knowledge, approval and communication about family planning as correlates of desired fertility among spouses in Pakistan. *International Family Planning Perspectives*, 23:122-129 & 145.

Mahmood, N. & Ringheim, K. (1996). Factors affecting contraceptive use in Pakistan. *Pakistan Development Review*, 35(1):1–22.

Mahmud, S. (1993). *Female power: A key variable in understanding the relationship between women's work and fertility*. Dhaka: Bangladesh Institute of Development Studies. Unpublished Manuscripts.

Malika, S. & Courtney, K. (2011). Higher education and women's empowerment in Pakistan. *Gender and Education*, 23(1): 29–45.

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.

Mbizvo, M. & Adamchak, D. (1991). Family planning knowledge, attitudes, and practices of men in Zimbabwe. *Studies in Family Planning*, 22:31–38.

McNay, K., Arokiasamy, P., & Cassen, R. (2003). Why are uneducated women in India using contraception? A multilevel analysis. *Population Studies*, 57(1): 21-40.

Morgan, S. P. (1985). Individual and couple intentions for more children: A research note. *Demography*, 22: 125-132.

National Institute of Population Studies (NIPS) [Pakistan] and Macro Internation Inc. (2013). *Pakistan Demographic and Health Survey 2012-13. Islamabad. NIPS and Macro International Inc.*

National Institute of Population Studies (NIPS) [Pakistan] and IRD/Macro International Inc. (1992). *Pakistan Demographic and Health Survey 1990/91.* Columbia, Maryland, USA: NIPS and IRD/Macro International Inc.

Ogunjuyigbe, P.O., Ojofeitimi, E.O. & Liasu, A. (2009). Spousal communication, changes in partner attitude, and contraceptive use among the Yoruba's of southwest Nigeria. *Indian Journal of Community Medicine*, 34(2):112–116.

Olaleye, D.O. (1993). Ideal family size: A comparative study of numerical and non-numerical fertility desires of women in two Sub-Saharan African Countries. *DHS Working Paper* Number 7.

Oaxaca, R. (1973). Male–female wage differentials in urban labor markets. *International Economic Review*, 14: 693–709.

Pakistan Bureau of Statistics (2015). *Pakistan social and living standards measurement survey (2013-14).* Government of Pakistan, Statistics Division, Islamabad.

Pakistan Labour Force Survey (2001-02, 2002-03, 2005-06, 2007-08 and 2009-10, 2010-11). Pakistan Bureau of Statistics. Statistic Division, Government of Pakistan.

Perelli-Harris, B., Sigle-Rushton, W., Kreyenfeld, M., Lappegård, T., Berghammer, C., & Keizer, R. (2010). *The educational gradient of nonmarital childbearing in Europe: Emergence of a pattern of disadvantage?* Max Planck Institute for Demographic Research Working Paper WP 2010-004.

Powers, D.A., Yoshioka, H., and Yun, M-S. (2011). mvdcmp: Multivariate decomposition for nonlinear response models. *The Stata Journal*, 11(4): 556-576.

Presser, H. (1997). Demography, feminism and science – policy nexus. *Population and Development Review*, 2: 295-332.

Rosina, A. & Testa, M.R. (2009). Couples' first child intentions and disagreement: An analysis of the Italian case. *European Journal of Population*, 25(4): 487.

Rutstein, S. & Johnson, K. (2004). The DHS Wealth Index. Claverton, Maryland, USA. (DHS Comparative Report No. 6).

Sathar, Z. & Zaidi, B. (2009). *Fertility prospects in Pakistan*. United Nations Expert Group Meeting on Recent and Future Trends In Fertility. Population Division, United Nations Department of Social and Economic Affairs, New York. December 2-4, 2009.

Shah, N. M. (1974). The role of inter-spousal communication in adoption of family planning: A couple approach. *The Pakistan Development Review*, 13(4): 452–469.

Schoen, R., Astone, N.M., Kim, Y.J., & Nathanson, C.A. (1999). Do fertility intentions affect fertility behaviours? *Journal of Marriage and the Family*, 61 (3): 790–799.

Schuler, S.R., Hashemi, S.M., & Riley, A.P. (1997). The influence of changing roles and status in Bangladesh's fertility transition: Evidence from a study of credit programs and contraceptive use. *World Development,* 25(4):563-575.

Schultz, T.P. (1993). Mortality decline in the low-income world: causes and consequences. *American Economic Review*, 83: 337-42.

Stein, P., Willen, S., & Pavetic, M. (2014). Couples' fertility decision-making. *Demographic Research*, 30: 1697-1731.

Thomson, E. (1997). Couple childbearing desires, intentions and births. *Demography*, 34(3): 343-354.

Upadhyay, U.D. & Karasek, D. (2010). Women's empowerment and achievement of desired fertility in sub-Saharan Africa. DHS Working Papers No. 80. Calverton, Maryland, USA: ICF Macro.

Uchudi, J.M. (2001). Spouses' socioeconomic characteristics and fertility differences in sub-Saharan Africa: does spouse's education matter? *Journal of Biosocial Science*, 33(4):481–502.

Yadav. K., Singh, B., & Goswami, K. (2010). Agreement and concordance regarding reproductive intentions and contraception between husbands and wives in rural Ballabgarh, India. *Indian Journal of Community Medicine*, 35(1):19–23.

Zaidi, B. & Hussain, S. (2015). *Reasons for low modern contraceptive use – Insights from Pakistan and neighboring countries*. Islamabad: Population Council.

Table 1: Sample Characteristics of Couples by Survey Year

Characteristics	1990	2012
Percent Using Contraceptives	11.7	41.0
Couples' Fertility Preferences		
Both want a(nother) child	49.9	47.8
Only wife wants	6.1	6.0
Only husband wants	18.1	11.7
Both don't want a(nother) child	25.9	34.5
Wife's Education		
No formal education	81.3	53.2
Primary	6.9	16.9
Secondary & higher	11.9	29.8
Couples' Educational Homogamy		
Both have no formal education	46.8	22.2
Husband is less educated than wife	2.7	9.7
Husband is more educated than wife	40.6	45.3
Both have same level of education	10.0	22.9
Wife's Age		
15-24	22.4	21.1
25-34	39.4	44.0
35+	38.3	34.9
Couples' Age Difference		
Wife is older by 1-9 years	4.6	12.0
Wife is younger by 0-4 years	37.2	43.0
Wife is younger by 5-9 years	33.8	32.4
Wife is younger by 10+ years	24.5	12.7
Parity		
0	10.9	13.4
1	12.1	12.8
2	9.5	18.1
3	14.1	16.4
4 & above	53.4	39.3
Experience of Child Mortality		
No	70.0	77.8
Yes	30.0	22.2
Wife's Work Status		
No	83.9	72.8
Yes	16.1	27.2
Place of Residence		
Rural	68.8	64.3
Urban	31.2	35.7
Household Wealth		
Poor	43.2	36.1
Middle	19.0	18.5

Higher	37.8	45.5
Disagreement on Number of Living Children		
No Disagreement	90.5	97.4
Disagreement	9.5	2.6
Unweighted N	970	1,972

Source: PDHS 1990-91 & 2012-13

Figure 1: Current Contraceptive Use by Couple's Fertility Preferences: PDHS 1990 & 2012

Category	1990	2012
Both want a(nother) child	4.6	25.0
Only wife wants	13.8	40.8
Only husband wants	16.1	50.6
Both don't want a(nother) child	21.9	59.8
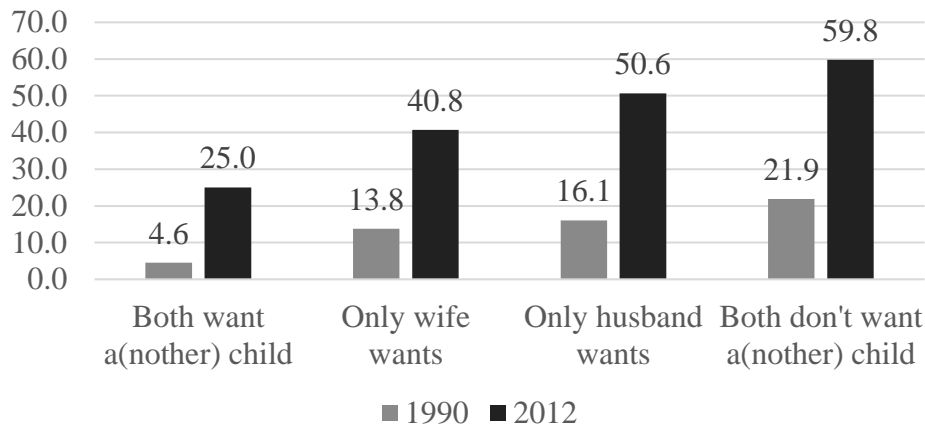
Figure 2: Current Contraceptive Use by Wife's Education: PDHS 1990 & 2012

Category	1990	2012
No education	6.1	32.9
Primary	20.9	47.9
Secondary & higher	44.6	51.6

Table 2: Pooled Logistic Regression Models Predicting Current Contraceptive Use

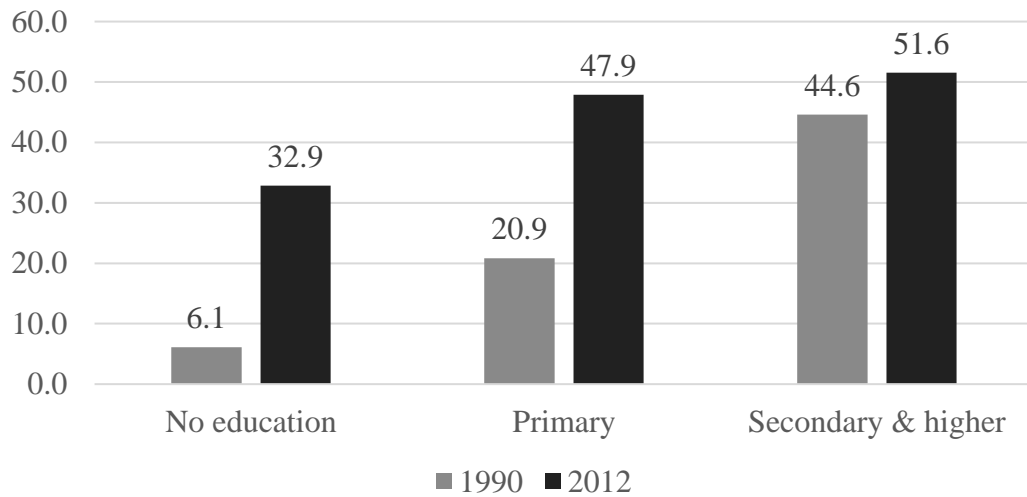| Variables	Model 1	Model 2	Model 3	Model 4
Survey Year (omitted=1990)				
2012	5.64***	4.55***	5.07***	8.23***
Couples' Fertility Preferences (omitted= wife wants another but husband does not)				
Husband wants another but wife does not	1.44	1.43	1.57	1.63
Both don't want a(nother) child	2.09**	2.01**	2.28**	2.33**
Both want another child	0.45**	0.39***	0.57*	0.60+
Wife's Education (omitted=no formal education)				
Primary		2.41***	1.99**	3.12*
Secondary & higher		3.34***	3.20***	9.80***
Couples' Educational Homogamy (omitted= both have no formal education)				
Husband is less educated than wife			1.06	1.06
Husband is more educated than wife			1.14	1.09
Both have same level of education			0.84	0.82
Wife's Age (omitted=15-24)				
25-34			0.66*	0.68+
35+			0.32***	0.34***
Couples' Age Difference (omitted=wife is younger by 0-4 years)				
Wife is older by 1-9 years			1.05	1.02
Wife is younger by 5-9 years			1.01	1.01
Wife is younger by 10+ years			1.26	1.31
Wife's Work Status (omitted=not working)				
Yes			1.22	1.17
Parity (omitted= 0-1)				
2-3			3.52***	3.34***
4 & above			4.33***	4.09***
Experience of Child Mortality (omitted=no)				
Yes			0.96	0.96
Place of Residence (omitted=rural)				
Urban			1.53*	1.49*
Household Wealth (omitted=poor)				
Middle			1.71**	1.75**
High			1.41	1.48+
Disagreement on Number of Living Children (omitted= no disagreement)				
Disagreement			0.78	0.82
Interaction (omitted= 1990 & No formal Education)				
Primary				0.57
Secondary & higher				0.25***
Constant	0.13***	0.10***	0.03***	0.02***

Source: PDHS 1990-91 & 2012-13; + (p<0.10), * (p<0.05), ** (p<0.01), *** (p<0.001

Table 3: Decomposition Analysis of Change in Current Contraceptive Use Among Married Couples 1990-2012

	Coefficients Fixed at 1990		Coefficients Fixed at 2012	
	Due to difference in Characteristics (Comp.)	Due to difference in coefficients (Rates)	Due to difference in Characteristics (Comp.)	Due to difference in coefficients (Rates)
Current Contraceptive Use	E	C	E	C
Couples' Fertility Preferences (omitted= wife wants another but husband does not)				
Husband wants another but wife does not	-1.85	-1.89	-1.45	-1.43
Both don't want a(nother) child	4.99	-2.95	3.17	-4.61
Both want another child	0.71	7.19	0.59	8.06
Wife's Education (omitted=no formal education)				
Primary	4.67	-0.37	2.62	-1.06
Secondary & higher	13.25	-4.73	12.57	-13.93
Couples' Educational Homogamy (omitted= both have no formal education)				
Husband is less educated than wife	-0.32	-0.86	1.87	-3.59
Husband is more educated than wife	-0.03	-4.61	0.47	-6.01
Both have same level of education	-2.51	-0.10	-1.03	-0.26
Wife's Age (omitted=15-24)				
25-34	-0.79	13.15	-1.77	17.19
35+	2.21	16.83	2.37	17.93
Couples' Age Difference (omitted=wife is younger by 0-4 years)				
Wife is older by 1-9 years	-0.04	-0.74	1.09	-2.30
Wife is younger by 5-9 years	-0.08	3.33	0.09	3.73
Wife is younger by 10+ years	-3.49	5.54	0.85	3.35
Wife's Work Status (omitted=not working)				
Yes	1.24	0.94	-0.02	1.85
Parity (omitted= 0-1)				

2-3	9.99	2.51	3.5	4.29
4 & above	-14.46	-4.63	-7.7	-3.98
Experience of Child Mortality (omitted=no)				
Yes	0.16	1.6	0.45	1.38
Place of Residence (omitted=rural)				
Urban	0.97	-5.5	1.16	-7.35
Household Wealth (omitted=poor)				
Middle	-0.24	4.25	-0.01	4.84
High	1.59	-6.01	1.83	-8.46
Disagreement on Number of Living Children (omitted= no disagreement)				
Disagreement	3.59	-4.44	-1.31	-1.40
Constant		61.94		72.43
Total	19.55	80.45	19.35	80.65

Note: (1) Results based on regression models (Tables A1). (2) Estimates are based on STATA package mvdcmp described in Powers, Yoshioka and Yun (2011).

APPENDIX

Table A1: Logistic Regression Models Predicting Current Contraceptive Use: PDHS 1990 & 2012

Current Contraceptive Use	1990	2012
Couples' Fertility Preferences (omitted= wife wants another but husband does not)		
Husband wants another but wife does not	1.96	1.48
Both don't want a(nother) child	2.97*	2.18*
Both want another child	0.43+	0.63
Wife's Education (omitted=no formal education)		
Primary	2.17	1.88*
Secondary & higher	7.99***	2.72***
Couples' Educational Homogamy (omitted= both have no formal education)		
Husband is less educated than wife	2.22	0.94
Husband is more educated than wife	1.35	0.99
Both have same level of education	0.79	0.77
Wife's Age (omitted=15-24)		
25-34	0.32**	0.79
35+	0.13***	0.41**
Couples' Age Difference (omitted=wife is younger by 0-4 years)		
Wife is older by 1-9 years	1.54	0.99
Wife is younger by 5-9 years	0.83	1.08
Wife is younger by 10+ years	0.81	1.49
Wife's Work Status (omitted=not working)		
Yes	0.99	1.16
Parity (omitted= 0-1)		
2-3	2.60+	3.47***
4 & above	5.11**	4.04***
Experience of Child Mortality (omitted=no)		
Yes	0.84	0.97
Place of Residence (omitted=rural)		
Urban	2.16+	1.34+
Household Wealth (omitted=poor)		
Middle	1.03	1.89**
High	2.04	1.32
Disagreement on Number of Living Children (omitted= no disagreement)		
Disagreement	1.75	0.50*
Constant	0.03***	0.15***
Unweighted N	970	1,972

Source: PDHS 1990-91 & 2012-13; + (p<0.10), * (p<0.05), ** (p<0.01), *** (p<0.001).