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ABSTRACT

In Pakistan—a country in the midst of the fertility transition—16 percent of all pregnancies are unintended, most of which end in a birth. In mid-transition societies, unwanted fertility is thought to be due to declines in desired family size that are not accompanied by access to family planning; however, gender issues and cultural norms may also play a role by limiting women's reproductive autonomy. Using the Pakistan Demographic Health Survey of 1990-91 and 2012-13, I aimed to examine whether women's empowerment (proxied by women's education) accompanied by perceived spousal concordance on desired family size influence the intendedness of the last birth. In addition, I aimed to see whether educational gradient of unintended fertility has changed over time. Results show that perceived spousal concordance in general is not associated with unintended childbearing. Analysis show that compared to women with no formal education, educated women are more likely to have mistimed birth rather than a wanted or unwanted birth. Moreover, the educational gradient in the risk of having unintended birth has changed over time. There is a strong educational gradient for unwanted higher-order births over time. Women with a secondary education are less likely to have unwanted birth over time. The results suggest that highly educated women are least likely to want many children as but also least likely to be able to exert their own preferences.

INTRODUCTION

Regardless of their intentions to stop childbearing or space their pregnancies, women in many countries often have more children than desired, and this contributes to growing levels of unintended fertility. In recent decades, a desire for a smaller family is growing among couples due to increased urbanisation and socio-economic opportunities. Pakistan, the 6[th]most populous country in the world, is experiencing this shift in desired family size, accompanied by a decline in fertility levels. Fertility has declined from 6 births per women in 1980s to 3.8 births per women in 2012-13, but the decline is slow compared to other neighbouring countries [Sathar, *et al*., (2014); National Institute of Population Studies (2013)]. According to the 2012-13 Pakistan Demographic Health Survey (PDHS), 16 percent of all pregnancies are unintended, and most of these pregnancies end in births [National Institute of Population Studies (2013)]. Unintended (both mistimed and unwanted) fertility has negative social and health consequences for both mother and child [Guzzo and Hayford (2011); Joyce, *et al*. (2000); Singh, *et al*. (2013)].

Pakistan is a male-dominated society. Major household decisions, including reproductive ones, are made by the head of the household, usually a male. Women, especially those of childbearing age in traditional societies like Pakistan, have to submit to their partner's will, as the husband is usually the sole breadwinner. They have limited control over their fertility i.e. how many children they want to have and when to have them. Decision about family size and family planning are usually made by husbands or mother-in-law [Casterline, *et al*. (2001)]. Evidence of men's power in childbearing decisions can be seen in the fertility and reproductive health surveys which reveal a large discrepancy between women's stated fertility intentions and their actual fertility [Kritz and Makinwa-Adebusoye (2001): Bankole and Singh (1998)]. To some extent, this represents unmet need for contraception. However, PDHS 2012-13 shows that the knowledge of contraceptive methods is universal in Pakistan [NIPS (2013)]. Therefore, it seems that the discrepancy between women's desired and actual fertility may also reflect women's marginalised position and lack of power and resources to exercise authority. Also, in traditional societies, even when female education and employment increases, women are not always able to convert their improved socioeconomic position into a more equitable relationship with their partner. In this view, it is important to look at fertility behaviours through a gendered lens.

The objective of this chapter is to examine the association between women's perception of their husband's fertility desires relative to their own, as well as women's absolute education and the intendedness of women's most recent pregnancy/birth. Doing so will allow an examination of how changes in women's empowerment relates to reproductive behaviours, which is important because, in terms of the fertility transition, Pakistan is currently in mid-transition phase. During the shift from high fertility (where individuals both want and have many children) to low fertility (where individuals both want and have few children), fertility desires decline but the ability to limit fertility is not always present, and thus unintended fertility is high. Generally, high unintended fertility during this phase is largely attributed to a lack of access to family planning services (CITE). However, I argue that gender issues are also at play, and attention to such issues has largely been overlooked. Gender system influences couple's fertility desires and goals and thereby their behaviours. One of the reasons of experiencing an unintended pregnancy can be the lack of spousal agreement on desired family size. In other words, women who fail to protect themselves from unintended pregnancy may be because they perceive that their husband wants more children than they do. In male dominated societies, couples' concordance on reproductive matters may be high because women usually are socialised to accept the opinion of their husbands or they don't voice their opinions because of the fear of reprisal [Mason and Smith (2000)]. On the other hand, gendered environment of the society hinders husband-wife communication and thus may lead to discordance; as spousal communication is associated with more agreement [Mason and Smith (2000); Tumlinson, *et al.* (2013)]. However, with changing social norms due to increase in education and diffusion of small family ideals and increased media exposure over last two decades, perceived discordance on fertility desires and goals may be high not only because of male dominance but women may internalise small family size ideals due to increase awareness and control over their fertility.

BACKGROUND

Fertility can decline if unwanted pregnancies are checked, but without significant declines in desired family size, fertility transition cannot reach the stage of replacement level. Historical progress of an agricultural society to an industrial society results in socioeconomic development of a kind which reduces desired family size, according to conventional demographic theory [Notestein (1945, 1953)]. This theory holds that parents want fewer children when the costs of having children increase and the benefits decrease as a consequence of development. Reduced child mortality removes uncertainty and the need to have more children, and formulating—and reaching—a desired family size becomes easier for parents [Bongaarts (2011)]. This theoretical framework helps to demonstrate that a couple's rational and conscious decision-making leads to

reduced family size. Couples weigh the benefits of having more children against costs, which forms the basis of their individual desired family size. However, individuals' personal desires are not the only influences on their reproductive behaviour.

This is particularly true when one takes a gendered lens to reproduction in developing countries. Theories of demographic change (i.e., classic demographic transition theory, wealth flow theory, and the diffusion innovation theory) generally emphasize population decline as achieved through declining mortality and fertility. Many scholars highlight the fact that demographic research has ignored the role of societal gender systems in shaping the reproductive attitudes and behaviours of men and women [Presser (1997); Mason (1997)]. 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." It is often assumed that couples have common shared interests, but what matters more to individuals in terms of reproductive choices is a function of gender and hence it is different for men than for women [Thomson (1997); Dodoo and Frost (2008)]. For instance, in highly gendered society, women position in the household is strengthened if she bears more son than daughter. This strong preference of son by women may reduce the couple agreement on desired fertility [Mason and Smith (2000)]. Contextual reality is, therefore, as odds with the theoretical frameworks. Theory sometimes falls short of taking into account that, within a particular society or a culture, significant differentials exist between the relative control and authority of men and women over most matters, including sexual preferences and reproductive decision-making.

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-maker, such as Pakistan, men's attitudes and desires toward fertility shape the fertility outcomes of the couple [DeRose, *et al*. (2002); Mason and Smith (2000)]. For example, Ezeh (1993) studied how partners affect each other's attitudes toward contraception in Ghana, observing that the wife's attitudes and preferences regarding contraception were in fact a mirror of the husband's attitudes and preferences but not vice versa. This shows the relative dominance and authority of a husband that may result from women's economic dependency on their husbands and their low status.

Although there is considerable evidence that men's authority, desires, and intentions about childbearing affect women's fertility and childbearing intentions, the primary focus of fertility research remains women, in the sense that fertility data is generally only collected from women and women/mothers are the unit of analysis [Dodoo and Frost (2008); Thomson (1997); Lundgren (2005)]. Thomson (1997) argued that it is advantageous to include men in

fertility behaviour research as she found that husband's desires and intentions matter, and the potentially asymmetrical nature of spouses' intentions warrants data collection for both spouses. In the absence of such data, getting indirect data on men's preferences—by asking women about their perceptions of their partner's beliefs – may provide another way to evaluate the gendered nature of fertility decisions. Some prior research has demonstrated that wives' report of their partners' fertility preferences are not problematic [Morgan (1985); Korenman, *et al.* (2002); Williams (1994); Khan, *et al.* (2007); Diro and Afework (2013)]. Further, even if women do not accurately perceive or know their husband's fertility preferences, it may be that women's *perception* about their partner's attitudes is more relevant for shaping women's own fertility behaviour and outcomes [Bankole (1995); Ezeh (1993)]. Several studies found that contraceptive use is low when women perceive that their husbands disapprove of family planning [Casterline, *et al.* (2001); Mbizvo and Adamchak (1991)]. Lack of spousal communication [Lasee and Becker (1997)] and education may also inhibit women's ability to accurately perceive their partner's fertility intentions and desires, and as such, unwanted fertility (as reported by women) may be high if women perceive that their husbands want more children than they do.

Gender Context in Pakistan

Pakistan is a patriarchal society and women position in the society is always contested. Gender is the main organising system of the society. Social and cultural values put women in subordinate position and restrict women role to the private sphere of home i.e. to the reproductive roles as mothers or wives. Men are the main breadwinner and major household decision including the reproductive ones are made by men. Parents consider male child as an old age security because of their dependence on their son's income and culturally ingrained ideals of male authority, therefore they invest more on the education of their sons rather than daughters to ensure their better future [Noureen and Awan (2011)]. On the other hand, in Pakistan marriage is universal and is only acceptable form of a making a union. Childbearing outside of marriage is not acceptable. Therefore, unlike the US, almost all of the fertility is within marital union and a woman is expected to prove her fertility right after marriage because of the pro-natalist culture and attitude of the society. Due to the pro-natalist attitudes, almost all of the first births occurs right after marriage and are wanted in nature. Women seldom report an unintended first birth even if they do experience an unintended birth, due to immense social pressure. However, the decision to have another child is quite different and wantedness of the birth is affected with the number of children already born [Testa (2014)]. Women are less likely to report an unwanted birth until they achieve their desire parity.

The lack of attention to gender in Pakistani context is especially problematic, given marked improvement in women's education and employment. Though, gender related statistics are not very encouraging in Pakistan [UNDP 2015), over time, a shift has occurred with new policies to empower women and improve women's status in Pakistan. For instance, during the last two decades a gradual improvement in female literacy occurred, with rates increasing from 21 percent in 1990 to 49 percent in 2015 [Pakistan Bureau of Statistics (2016); Planning Commission (2015)]. Although the level is still low and gender disparities remain large (men's literacy is at 70 percent), this increase in the female literacy rate brings hope for future generations. Gender parity in education has improved—for primary education, secondary education and youth literacy [Pakistan Bureau of Statistics (2015)]. Women are also increasingly entering in the labour force, though most of them are working in the agriculture sector. Women's share in wage employment in the non-agricultural sector has increased over time; it was 7.98 percent in 1999-00, 8.95 percent in 2001-02 and rose to 15.8 percent in 2014-15 [Planning Commission (2015)]. Pakistan parliament has not only passed additional laws to protect women's rights recently but also strengthened existing laws to provide women's equal and just opportunities. The current political and social environment undoubtedly promotes women's educational and employment opportunities, but deep rooted cultural and gender attitudes towards the education of girls remain strongly biased and largely unchanged [Choudhary (2014)].

Perceived Spousal Concordance and Unintended Fertility

Pakistan is currently in mid-transition phase, and according to transition theory unwanted fertility may be high not only because of reduction in desired family size and lack of access to family planning but because gender relations and cultural norms may not be changing at the same time. As such, women may not be able to fully act on their fertility desires. In light of increased levels of education and economic development and legal reforms that support greater gender equality, one might expect spousal preference to change at the same time. However, Pakistan's culture and socioeconomic structures remain male-dominated. This suggests that fertility preferences may not change at the same time, in the same way, for men and women, which may make women's perception of their partner's fertility goal an important predictor of how women themselves classify the intendedness of a birth.

In this chapter, I rely on an indirect construct of couple's agreement on desired family size by using the wife's report of her husband's fertility desires as a proxy. I used the wife's report of her husband's fertility desires as a proxy for the husband's reports to see how this perception is associated with the intendedness of the most recent pregnancy/birth. I hypothesise that women's perception of their husbands desired family size is associated with their

reporting of intentions of their last pregnancy/birth. Because of the male dominated society where men's desires matter more than women's, I hypothesise that this association would be stronger in case of women's perceived discordance on desired family size. Almost all the fertility is with in marital union in Pakistan and a woman is expected to prove her fertility right after marriage because of the pro-natalist culture, the association between women's report of their husband's desired family size and unintended fertility would be stronger for higher order births than for the first birth.

Hypothesis 1: Women's perceived spousal discordance on desired family size increases the risk of unintended pregnancy/birth, particularly for higher order births.

The reason that I am expecting strong association for higher order birth is that essentially all of the first births are wanted. Also, unlike US, almost all of the fertility in Pakistan is within marital union. Therefore, women are expected to have their first birth early in marital duration to conform to the socio-cultural norms.

Women's Education and Unintended Fertility

In general, women education is generally equated with women empowerment measured in terms of improved economic opportunities, better living standards, and decline in maternal and infant mortality. However, feminist scholars argue that women empowerment as a result of increase in women education is a process that changes and transform the existing structure of power [Ghose and Mullick (2015)], especially in male-dominated societies. Education provides women resources and enables them to make informed choices [Jejeebhoy (1995)]. Education exposes women to new ideals and alternative life studies by providing economic opportunities to pursue goals other than childbearing [Uchudi (2001); Martin (1995); Jejeebhoy (1995)]. Formal education promotes the discussion and use of family planning methods by increasing the degree of communication between spouses [Martin (1995)]. Educated couples are better able to communicate with each other with regard to the use of contraceptives as compared with couples who have a low level of education [Uchudi (2001); Hindin (2000)]. Research on the fertility transition has generally overlooked the role gender in various contexts which results in a certain lack of clarity regarding reproductive decision making in different social and cultural contexts. This may prove especially informative considering the apparent stall in the fertility decline in Pakistan that is occurring even as women's socioeconomic position is improving. Education and exposure to the modern ideals brings change in women family ideals. When women are more educated and aware then they are more likely to challenge the existing societal norms specifically related to their reproductive sphere. In this context, attention to women's perceived partners' fertility desires and their influence on their

reproductive behaviour will help in understanding the gender norms and relations in light of improvements in female empowerment – that is, whether women's empowerment is transferring into their reproductive life sphere. I expect that rising education among individual women would enable them to assert more control over fertility behaviours, yet in settings with strong gender inequities in power; it is possible that women's own education may not translate into key fertility behaviours.

I examine how the wife's education, as a proxy for power and equality in a couple's relationship, influences intendedness of pregnancy/birth. With the increase in women's education, change in gender roles, and the diffusion of small family ideals over the last two decades in Pakistan, I expect that education will have a depressing effect on fertility by changing the attitudes and behaviours of men and women. Bongaarts (2003) observed that gap in wanted fertility declines with education but disparities in unwanted fertility widen with education. I expect that there are educational variation in the fertility intentions of recent birth.

Hypothesis 2: Educated women will be less likely to experience unintended fertility than women with no formal education.

Educational Gradient of Unintended Fertility

Pakistani society in general is evolving, and people have become more receptive to modern family ideals and life styles. Therefore, we should not ignore the role of diffusion processes in spreading smaller family ideals and the information regarding various ways to achieve their family ideals through different means of communication such as TV and the internet. The technological revolution and access and availability of family planning services are considered as important tools in reducing unintended fertility [Westoff and Bankole (1996)]. During the diffusion process, the fertility attitudes and behaviours of high socio-economic groups (those who are the agent of change and forerunner of accepting modern life style ideals) are spread across all socio-economic classes. In other words, it is first the attitudes, behaviours, and values of an innovative and educated group that favours fertility decline that then diffuses to other groups such as uneducated individuals through media exposure or through direct contact with educated women [Casterline (2001); Cleland (2001)]. Studies in the US shows that with the diffusion of family planning methods, unintended fertility has declined across all educational groups until 1990s but this trend got reversed and strong educational gradient in unintended fertility is observed since mid-1990s [Finer and Henshaw (2006); Musick (2007)]. Put differently, women with college degree are less likely to experience unintended fertility than their less educated counterparts. Therefore, it is important to examine whether diffusion process has levelled off educational differences in unintended fertility in Pakistan's context. Though this cannot be

explicitly tested in the current chapter, changes in the educational gradient of fertility behaviour over time would be indicative of diffusion processes. Since 2000, media industry in Pakistan has flourished tremendously and every segment of society has access to it. Electronic media is playing an important role in educating women and diffusing smaller family ideals. The role of media is important as majority of the population especially in rural areas cannot read and write.

Hypothesis 3: Educational differences of unintended childbearing will decrease over time.

I expect this because education levels were lower in the 1990s, making higher levels more rare and perhaps more influential for individual women. As education expanded, higher levels of education are more common for women, and further, women's status more generally has improved, perhaps weakening the impact of individual education level.

Other Predictors of Unintended Childbearing

Of course, women's perception about their husbands desired family size and women's education are not the only factors that influence unintended childbearing. Spousal educational homogamy, age, parity, employment status, place of residence, experience of child mortality, and household wealth status are all associated with unintended fertility [Hakim (2003); Hayford and Morgan (2008); Peristera and Kostaki (2007)]. Though I expect that rising education among individual women would enable them to assert more control over fertility behaviours, in settings with strong gender inequities in power, it is possible that women's own education may not translate into key fertility behaviours if husbands' preferences are paramount [Bankole (1995); Mason and Smith (2000); DeRose, Dodoo and Patil (2002); DeRose (2003)]. Couple educational difference may lead to varying ideals of gender roles and relations and may thus lead to varying family size ideals, which in turn may influence the women's report of their birth intentions. A study done in Bangladesh has observed that likelihood of reporting a mistimed birth is higher among women whose husbands are literate [Gipson and Hindin (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)]. Similarly, unintended pregnancies are positively related with maternal age and the number of previous pregnancies and births. Young women are more likely to experience mistimed birth because of their lack of knowledge and access to contraception; whereas,

older women are at higher risk of experiencing unwanted birth [Adetunji (1997); Adikari, *et al.* (2006); Shaheen, *et al.* (2007); Exavery, *et al.* (2014); Ikamari, *et al.* (2013)]. Large age differences among couples are a norm in patriarchal society. Large age-difference between couples not only affect their spousal communication but also put women in more vulnerable position to have say in household matters especially related to their fertility [Mason and Smith (2000); DeRose and Ezeh (2010)].

Gender preferences are a strong predictor of reproductive behaviour and intentions of the couples, with son preferences generally increasing fertility, fertility intentions, and unwanted pregnancies [Rai, *et al.* (2014); Hussain, *et al.* (2000); Sathar, *et al.* (2015)]. Son preference is quite strong in Pakistan and unwanted fertility increases with number of surviving sons [Hussain, *et al.* (2000)]. Similarly, scholarship on unintended fertility has found preceding birth interval as a significant predictor of mistimed and unwanted pregnancy. Shorter birth intervals i.e. less than two years are associated with higher likelihood of unintended pregnancy [Dibaba (2010); Johnson and Madise (2009)]. Research also suggests that rural women are more likely to have more children than urban women, and the risk of unintended pregnancy/birth is higher among women belonging to low socio-economic strata [Finer and Henshaw (2006)]. Women living in rural area are at higher risk of experiencing unintended pregnancy due to lack of awareness, availability and accessibility to family planning methods [Singh, *et al.* (2010); Kost, *et al.* (2012)].

This paper focuses on the association between women's perception of their husband's fertility desires as well as women's education and the intendedness of most recent pregnancy/birth by using the PDHS 1990 and 2013. In the wake of changing gender roles and an unfinished fertility transition in Pakistan, it is important to look at the relationship between perceived spousal fertility desires and its impact on unintended fertility. The main contribution of this paper is that I am looking at change over time in the relationship between women's perception of their partner's desired family size and intendedness of their most recent pregnancy/birth. I have data on two time points in which massive social changes, particularly for women, occur in Pakistan. The analysis will provide new insight into spousal relationships and communication between partners on reproductive matters and the role of gender in reproductive intentions and behaviours, especially when gender roles and relations are changing at societal level. This will help policy makers and other stakeholders concerned with high levels of unintended fertility to make informed decisions about reducing unintended pregnancies by revealing the influence of perceived partner's fertility desire.

DATA AND METHODS

Data for this study come from the Pakistan Demographic Health Surveys (PDHS) of 1990-91 and 2012-13, nationally representative surveys undertaken

to yield information on the socioeconomic, demographic and health characteristics of women. This is the only national level survey in which questions on intention of pregnancy/birth are asked in Pakistan. In this study, the focus of analysis are women aged 15-49 years who had a birth in the five years preceding the survey or those who were pregnant at the time of survey, as birth intendedness is only collected for currently pregnant women and those who had given birth five years preceding the survey. Of the 6,611 ever married women in the PDHS 1990-91, I excluded those with no birth in the five years preceding the survey and who were not currently pregnant (n=2,308). I restricted the analysis to the most recent birth to avoid recall error yielding 4,303 women aged 15-49 for the PDHS 1990-91. As the focus of analysis is the wantedness of most recent pregnancy/birth, I excluded those women for whom information on intendedness of recent pregnancy/birth is missing (n=114) as well as those women for whom information on husband's desire for children (discussed below) is missing (n=140). Therefore, the final analytical sample for the PDHS 1990-91 is 4,049 women.

Similarly, for the PDHS 2012-13, of 13,558 ever married women aged 15-49, I excluded women who had not experienced any birth in the five years preceding the survey and who were not currently pregnant (n=5,635). I also dropped those women for whom information on intendedness of recent birth or current pregnancy is missing (n=478) as well as women for whom information on husband's desire for children is missing (n=358). Excluding these women yielded a sample of 7,087 women aged 15-49 for the PDHS 2012-13.

To observe change over time, I pooled the PDHS 1990-91 and PDHS 2012-13 women data for this analysis. 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 to 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.

Dependent Variable

The dependent variable is intendedness of most recent pregnancy/birth, which is asked only of women. Pregnancy intention variable is a retrospective measure of a woman's feeling at the time she became pregnant. The DHS asks women "At the time you became pregnant with (name), did you want to become pregnant then, did you want to wait until later, or did you not want to become pregnant at all?" The dependent variable is defined as: 0 for wanted pregnancy/birth (respondent reports that she wanted to become pregnant); 1 for mistimed pregnancy/birth (wanted to wait until later); and 2 for unwanted pregnancy/birth (respondent reports that she did not want to have any (more) children at all).

Independent Variables

Two main independent variables are perceived spousal concordance on fertility preferences and women's education. Perceived spousal is measured by the question: "Do you think your husband wants the same number of children that you want, or does he want more or fewer than you want?" The variable is categorised into four categories: same number of children (reference), more than wife, fewer than wife, and don't know. Education is measured by the wife's educational attainment level, categorised by four categories: no formal education (reference category), primary education (grade 1-5), secondary education (grade 6-10), and higher education (grade 11 and above). The rationale behind this categorisation is that in Pakistan, the majority of women have no formal education, and very few women have a college education (National Institute of Population Studies, 2013).

Control Variables

In this analysis, I also control for a number of other socioeconomic and demographic predictors: couples' educational difference, wife's age, couples' age difference, the woman's work status, birth interval, number of living sons, experienced any child death, place of residence, household wealth, and whether the woman as currently pregnant. *Couples' educational homogamy* is categorised as: have the same level of education, husband has less education than wife, husband has more education than wife, and both have no formal education (reference). *Wife's current age* is represented by a three-category measure: 15-24 (reference), 25-34, and 35 and above. *Couples' age difference* is also included in the analysis and is categorised 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, with 0 for not working, and 1for working. *Preceding birth interval* is measured as: less than 18 months (reference), 18-24 months, and more than 24 months. In this analysis, I also controlled for number of living sons, as having a male child enhances the woman's position in the household and society. *Number of living sons* is a four-category variable: no living son (reference), one, two, and three or more living sons. 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)]. The index reflects the level of wealth that is consistent with expenditure and income measures and is developed and tested in many countries to measure

inequalities in household income and its relation with use of health services and health outcomes [Rutstein and Johnson (2004); Mahmood and Bashir (2012)]. 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. To account for current pregnancies, a dummy for currently pregnant women is included in the analysis.

Analytical Strategy

In this analysis, I disaggregated the data by birth order: first births and higher-order births. The rationale of running models separately by birth order is two-fold. First, I had essentially no unwanted first births. Second, the decision to have another child is quite different and wantedness of the birth is affected with the number of children already born [Testa (2014)]. In other words, higher-order births are influenced by the women's past fertility. As such, only the higher-order birth models include controls for birth interval, the number of living sons, and whether they ever experienced a child death.

Logistic Regression-First Order Birth

There were only six women who reported an unwanted first birth; these cases are dropped to produce a sample of women with either mistimed or wanted birth. The analytical sample for the analysis of first births consists of 2,126 women: 2,025 wanted and 99 mistimed pregnancies/births. Therefore, for first births, logistic regression analysis is used to estimate the odds of having a mistimed birth versus wanted birth.

Multinomial Logistic Regression-Higher Order Births

For the higher order births, I am able to include both unwanted and mistimed births (as well as wanted births). The analytical sample consists of 9,004 women aged 15-49: 6,681 wanted, 982 mistimed, and 1,341 unwanted pregnancies/births. I intend to determine the relative risk of having a wanted pregnancy/birth, mistimed pregnancy/birth, or unwanted pregnancy/birth. Therefore, I employed multinomial logistic regression to examine the association of perceived spousal concordance in fertility preference on intendedness of most recent pregnancy/birth, because the dependent variable has three categories: wanted, mistimed, and unwanted pregnancy/birth.

For both set of analyses, Model 1 is the base model and includes the dummy for survey year to measure change over time and perceived spousal concordance on desired family size. Model 2 adds wife's education to examine how it changes the relationship between perceived spousal concordance on desired family size and pregnancy/birth intendedness of most recent pregnancy. Model 3 introduces couples' relative characteristics (i.e., couples' educational

homogamy, wife's age, couples' age difference), and various demographic and socio-economic controls (i.e. women's work status, preceding birth interval, number of living sons, whether women experienced any child death, place of residence, household wealth, and whether women was pregnant at the time of survey). In Model 4, I include the interaction of wife's education with survey year to test whether the education gradient is stronger in the 1990s than in 2013 in explaining the intendedness of most recent pregnancy/birth.

It can be difficult to interpret interactions in multinomial logistic regression models, particularly if the interaction tested is between two categorical variables. In this case, predicted probabilities are more useful in explaining the association between two variables and also are more easily understood. To examine whether wife's education has a stronger influence on reporting intendedness of most recent pregnancy/birth in 1990 than in 2012-13, I calculated predicted probabilities of the interaction term (survey year x wife's education).

Supplementary Analysis

Pooled regression models assume the effect of independent variables to be equal over time and do not vary. However, descriptive statistics (Tables 1 and 2) suggests that the association between intendedness of the birth and perceived spousal concordance and education changes between 1990-91 and 2012-13. In order to examine whether the association between independent variables and intendedness of the birth for recent pregnancy changes change over time, I analysed the full model separately by survey year (Table 6); this essentially interacts all the covariates with survey year.

RESULTS

The results of the analysis are presented separately by birth order. The first set of analyses present the findings for intendedness of most recent pregnancy/birth for the first birth. The second set of analyses present the findings of intendedness of most recent pregnancy/birth for women with higher-order births.[1]

First Order Birth

Descriptive Statistics

Table 1 presents the percentage distribution of the variables used to study the intendedness of the birth of women aged 15-49 for their most recent pregnancy/birth by birth order. Almost all of the first order births were wanted in both 1990 and 2012 (96 percent and95 percent, respectively). Less than 5 percent of the first order births were termed as mistimed by mothers in 1990 and 2012.

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[1] All the results are weighted analysis and I used svyset to take into account complex survey design.

Table 1

Percentage Distribution of Fertility Intentions, Perceived Spousal Concordance (with respect to preferences) of Ever Married Women Aged 15-49 by Parity and Survey Year

Variables	First Order Birth		Higher Order Birth	
	1990	2012	1990	2012
Intendedness of recent pregnancy/birth				
Wanted	95.5	95.2	71.1	75.8
Mistimed	4.1	4.7	9.8	12.2
Unwanted	0.4	0.1	19.1	12.0
Perceived Spousal Concordance on Desired Family Size				
Both want same	36.6	60.0	44.4	56.7
Husband wants more	12.7	23.3	16.7	29.4
Husband wants fewer	5.9	4.9	5.4	4.7
Don't know	44.9	11.8	33.5	9.1
Wife's Education				
No formal education	78.0	41.3	79.8	59.5
Primary	8.2	16.7	9.3	16.5
Secondary	11.5	25.3	9.8	16.7
Higher	2.4	16.8	1.0	7.4
Husband vs. wife's education				
Both have no formal education	43.4	16.7	46.9	30.3
Husband education less than wife	5.3	23.5	5.2	13.0
Husband education higher than wife	46.6	48.8	43.7	48.7
Both have same level of education	4.9	11.1	4.2	8.1
Wife's Age				
15-24	70.8	59.1	15.8	15.7
25-34	26.9	38.5	55.3	58.7
35 +	2.3	2.4	28.9	25.6
Age difference(Husband-wife)				
Wife is older by 1-9 years	3.7	8.3	4.4	6.9
Wife is younger by 0-4 years	40.9	46.9	35.4	43.8
Wife is younger by 5-9 years	36.5	31.7	35.7	32.2
Wife is younger by 10+years	18.9	13.1	24.5	17.1
Work Status				
Not working	85.4	84.3	82.7	73.8
Working	14.6	15.7	17.3	26.2
Birth Interval				
Less than 18 months			13.3	14.6
18-24 months			17.9	20.8
24 months +			68.8	64.7
Number of living sons				
No living sons			11.5	12.5
1			25.4	30.4
2			29.7	29.7
3+			33.5	27.4
Experienced any child death				
No			63.6	70.0
Yes			36.4	30.0
Place of Residence				
Rural	74.8	64.7	71.2	71.5
Urban	25.2	35.3	28.8	28.5
Household Wealth				
Poor	44.0	33.5	41.5	46.1
Middle	21.0	19.8	20.1	19.7
High	35.0	46.7	38.4	34.3
Currently Pregnant				
No	62.8	80.4	81.8	87.1
Yes	37.2	19.6	18.2	12.9
N	**756**	**1,376**	**3293**	**5,711**

The percentage of women reporting that they and their husband desire same number of children almost doubled between 1990 and 2012 (37 percent and 60 percent, respectively) for the first birth. Interestingly, there is a two-fold increase in the share of women who reported that their husbands want more children than they want between 1990 and 2012. This supports the argument that desired family size first declines for women when the fertility transition starts. The percentage of women who reported that they do not know about their husband's fertility desires declined substantially, from 45 percent in 1990-91 to 12 percent in 2012-13, indicating that over time spousal communication about reproductive matters has increased in Pakistan.

The percentage of women having primary and secondary education increased since 1990-91. In 2012-13, around 42 percent of women had a primary and secondary level of education as compared to only 19 percent in 1990-91. The percentage of women with more than 10 years of education increased from 2.4 percent in 1990 to 17 percent in 2012-13. Although the percentage of women with no formal education has declined between 1990-91 and 2012-13, still around 40 percent of women in the sample had no formal education in 2012-13.

Table 1 also shows that in almost 50 percent of the couples, husbands were more educated than wives. However, the share of couples in which both had no formal education has declined substantially between 1990 and 2012-13 (43 percent and 17 percent, respectively). In more than 40 percent of the couples, the husband was more educated than the wife in both 1990-91 and 2012-13, but there was also an increase in the share of couples where wife is more educated than her husband, rising to 23 percent in 2012-13. Around two-thirds of the women having their first birth were between the ages of 15-24 both in 1990 and 2012-13. More than 40 percent of the women were 1-4 years younger than their husband and in one-third of the cases wives were 5 to 9 years younger than their husbands. More than two fifth of the women were out of work force both in 1990 and 2012-13. More than one-third of the women were living in urban areas in 2012-13 as compared to a quarter in 1990-91. Between 1990-91 and 2012-13, a decline is observed in women belonging to poor households.

Table 2 shows the distribution of women's report of intendedness of the last birth by perceived spousal concordance and their education for the most recent pregnancy/birth by birth order across the two surveys. Almost all of the first births were wanted across both surveys, and no variation was observed by women's perception of their husband's desired family size.

Table 2

Percentage Distribution of Women's Fertility Intentions by Perceived Spousal Concordance on Desired Family Size and Wife's Education, PDHS 1990-91 and 2012-13

| | Fertility Intentions of First Order Birth | | | | | |
| | 1990 | | | 2012 | | |
Variables	Wanted	Mistimed	Unwanted	Wanted	Mistimed	Unwanted
Perceived Spousal Concordance on Desired Family Size						
Both want same	94.4	5.6	-	95.3	4.7	-
Husband wants more	94.9	5.1	-	95.3	4.7	-
Husband wants fewer	95.5	4.6	-	93.8	6.3	-
Don't know	96.7	3.3	-	95.6	4.4	-
Wife's education						
No formal education	96.4	3.6	-	96.7	3.3	-
Primary	93.0	7.0	-	93.0	7.0	-
Secondary	94.1	5.9	-	95.4	4.6	-
Higher	88.5	11.5	-	94.0	6.0	-
N	**717**	**34**	**-**	**1,310**	**65**	**-**
Fertility Intentions of Higher Order Birth						
Perceived Spousal Concordance on Desired Family Size						
Both want same	65.7	11.6	22.7	76.7	11.9	11.3
Husband wants more	73.3	9.7	17.1	75.0	11.6	13.4
Husband wants fewer	70.9	12.7	16.4	72.4	13.3	14.3
Don't know	73.9	7.6	18.5	82.9	7.4	9.7
Wife's education						
No formal education	72.9	7.8	19.3	78.5	8.6	12.9
Primary	63.4	16.6	20.1	72.1	13.9	14.0
Secondary	56.4	19.4	24.3	74.6	15.9	9.5
Higher	72.9	10.4	16.7	74.5	17.7	7.8
N	**2311**	**327**	**655**	**4370**	**655**	**686**

Similarly, no variation is observed in the wantedness of the birth by education. More than 90 percent of the women across all categories of education reported that their first order birth was intended. However, interestingly, around 12 percent of the women in 1990-91 who had more than 10 years of education termed their first order birth as mistimed, declining to 6 percent in 2012-13.

Regression Results

Table 3 shows the results of pooled logistic regression models predicting the association between perceived spousal concordance on desired family size and the odds of having a mistimed (rather than wanted) first birth. Model 1 includes only the perceived spousal concordance on desired family size. Contrary to expectation, spousal concordance in general is not associated with birth intendedness. Compared to women who report they and their husband want the same number of children, there is no difference in the odds of a mistimed birth rather than a wanted birth among those whose husband wants more than they do and among those husband wants fewer children than they do. In Model

2, I added wife's education as a proxy for power and equality in couple's relationship to see whether the relationship between perceived spousal concordance on desired family size and intendedness of the birth is modified by education. However, contrary to expectation, education is not significantly associated with fertility intentions.

Table 3

Logistic Regression Predicting First-Order Mistimed Pregnancy/Birth by Perceived Spousal Concordance, Education, and Demographic and Socio-economic Background Characteristics (N=2,126)

Variables	Model 1	Model 2	Model 3
Year (omitted=1990)			
2012	0.78	0.62	1.18
Perceived Spousal Concordance (omitted= Both want same)			
Husband wants more	1.01	1.13	1.28
Husband wants fewer	1.41	1.53	1.54
Don't know	0.68	0.77	0.77
Wife's education (omitted= No formal education)			
Primary		1.93	1.90
Secondary		1.78	1.60
Higher		1.99	2.31
Husband vs. wife's education (omitted=Both have no formal education)			
Husband education less than wife			0.77
Husband education higher than wife			0.99
Both have same level of education			0.46
Wife's Age (omitted=15-24)			
25 and above			0.58
Age difference(Husband-wife) (omitted=Wife is younger by 0-4 years)			
Wife is older by 1-9 years			0.34
Wife is younger by 5-9 years			0.79
Wife is younger by 10+years			0.95
Work Status (omitted= Not working)			
Working			0.36
Place of Residence (omitted=rural)			
Urban			1.65
Household Wealth(omitted=poor)			
Middle			1.16
High			1.26
Currently Pregnant (omitted=no)			
Yes			15.25***
N	**2126**	**2126**	**2126**

† (p<0.10), * (p<0.05), ** (p<0.01), *** (p<0.001).

In Model 3, I included couple-level characteristics and various demographic and socio-economic variables to see whether these variables explain any association between spousal concordance on desired family size and intendedness of first order birth. Model 3 shows adding these controls does not change the relationship between women's perceived spousal concordance

intendedness of first birth. The only significant covariate in Model 3 is current pregnancy: Women who were pregnant at the time of survey were 15 times more likely to report their pregnancy is mistimed rather than wanted than non-pregnant women. I also tested for interactions between education and survey year, but these were not significant and are thus not shown in the model.

Higher-Order Births

The last two columns of Table 1 present the distribution of key variables for the higher order birth for two surveys. The distribution of these variables does not differ substantially from first order births except for the intendedness of most recent pregnancy/birth and women's work status. Table 1 show that a substantial proportion of higher-order pregnancies/births were reported as mistimed or unwanted in both surveys. The results also show that the percentage of unwanted pregnancies has declined between 1990 and 2012 but still 1 in every 10 pregnancies/births was unwanted in 2012-13. More than one fourth of the women with higher order birth were working at the time of survey in 2012-13.

In this analysis, I also include preceding birth interval, number of living sons, and experience of any child death. The distribution of birth spacing is almost similar across both surveys. More than two thirds of the women reported that the preceding birth interval was more than 24 months. More than 50 percent of the women had either one or two living sons. A considerable proportion of women had experienced child death in 1990-91 and 2012-13 (36 percent and30 percent, respectively).

The second half of Table 2 shows the distribution of women's birth intendedness by perceived spousal concordance and their education for the most recent pregnancy/birth for higher order birth. Substantial variation is observed in wantedness of the last birth of women for higher order birth by perceived spousal concordance on desired family size between 1990-91 and 2012-13. In both time periods, more than two thirds of the women reported that their most recent pregnancy/birth was wanted across all the categories of spousal concordance measure. About 12 percent of women who reported they and their husband have the same desired family size characterised their most recent birth as mistimed in both surveys. However, a shift in the distribution for unwanted birth for higher-order births is observed, declining from 23 percent to 11 percent. The percentage of unwanted fertility attributable to women who reported not knowing their spouse's fertility preferences declined by fifty percent; from 18 percent in 1990-91 to 9 percent in 2012-13. Overall, more than two thirds of women with higher-order births reported that their most recent pregnancy/birth was wanted in both 1990-91 and 2012-13, with one exception; in 1990-91, around 50 percent of the women with secondary education reported unintended fertility (both mistimed and unwanted). In recent times, a 70 percent

increase in mistimed birth is observed among women with higher education. Interestingly, a substantial decline is observed in unwanted fertility across all educational categories. However, the decline is more pronounced for women with secondary and higher education (24 percent vs. 9 percent and 17 percent vs. 8 percent respectively) in 2012-13.

Multinomial Logistic Regression

Table 4 shows the pooled multinomial logistic regression models predicting the association between perceived spousal concordance in desired family size and intendedness of most recent birth/pregnancy among women aged 15-49 for higher order births. To study change over time, I pooled the data for PDHS 1990-91 and PDHS 2012-13 (Table 4). The primary reference category is a wanted pregnancy/birth; relative risk ratios (RRRs) presented shows the relative risk of having either a mistimed or unwanted pregnancy/birth relative to having a wanted pregnancy/birth. I also use unwanted pregnancy/birth as the reference category to show the relative risk of having mistimed birth rather than an unwanted birth (results not shown but discussed here).

Table 4 contains four models. Model 1 includes the women perceived spousal concordance on desired family size along with dummy for survey year; in Model 2 I added wife's education. Model 3 includes spousal level characteristics (i.e., spousal educational gap, wife's age, spousal age gap, and whether women is working or not) and various demographic and socio-economic variables as controls (i.e., preceding birth interval, number of living sons, whether women experienced any child death, place of residence, household wealth, and whether women was pregnant at the time of survey). In Model 4, I tested the interaction of wife's education with time.

Model 1 shows that the relative risk ratio of reporting an unwanted birth relative to a wanted birth were significantly lower in 2012 than in 1990. Further, the relative risk of experiencing a mistimed birth is 0.9 times higher than an unwanted birth for women in 2012 than in 1990(not shown). Contrary to expectation, perceived spousal concordance on desired family size in general is not related with intendedness of the birth. However, women who reported that they don't know about their husband desired family size were around 40 percent less likely to report a mistimed than a wanted birth and 30 percent less likely to report an unwanted birth than a wanted birth compared to women who reported that both husband and wife wants same number of children.

In Model 2, I added wife's education as a proxy for power and equality in couple's relationship to see whether the relationship between perceived spousal concordance on desired family size and birth intentions is modified by education. The relative risk ratios of perceived spousal concordance largely remain unchanged when I controlled for wife's education. Education is significantly associated with the intendedness of the most recent pregnancy/birth

Table 4

Table 4

among higher-order births. Educated women (of any level) are significantly more likely to report their recent pregnancy/birth as a mistimed birth than wanted as compared to their uneducated counterparts. The risk of experiencing a mistimed birth is 2.5 times as high for secondary and higher educated women and 2 times as high for women with primary education than women with no formal education. Interestingly, the risk of experiencing an unwanted birth relative to a wanted birth is the same across all educational categories. The risk of experiencing a mistimed birth relative to an unwanted birth increases with education. Compared to their peers with no formal education, the risk of a mistimed birth versus an unwanted birth is 3.3 times as high for women with higher education, 2.6 times as high for women with secondary education, and 1.9 times as high for women with primary education (not shown).

Model 3 includes couple's individual and shared demographic and socio-economic characteristics. The addition of these variables does not change the relationship between perceived spousal concordance and birth intentions. The risk of experiencing a mistimed birth rather than a wanted birth is still higher for educated women though reduced in magnitude as compared to women with no formal education. Similarly, the relative risk of experiencing a mistimed birth versus an unwanted birth is significantly higher for women with secondary and higher education as compared to their uneducated counterparts (not shown). The relative risk of experiencing an unintended birth (both mistimed and unwanted) is significantly higher for couples in which the wife is more educated than her husband relative to couples having no formal education. Women aged 35 and above are more likely to report their most recent pregnancy/birth as unwanted than wanted and are less likely to report a mistimed pregnancy/birth than wanted as compared to women aged 15-24 (RRR=15.3 and RRR=0.46 respectively). Interestingly, the relative risk of an unwanted pregnancy/birth is 4 times as high for women aged 25-34 than younger women (15-24 years). Women who are 10 or more years younger than their husbands are significantly more likely to report an unwanted birth than a wanted birth and are significantly less likely to report a mistimed birth than an unwanted birth (RRR=1.57 and RRR=0.60, respectively). Higher birth interval is associated with lower risk of experiencing an unintended fertility (both mistimed and unwanted) relative to wanted fertility. Having a living son significantly increases the risk of experiencing an unwanted birth relative to a wanted birth and significantly reduces the risk of a mistimed birth as opposed to an unwanted birth. Compared with women who had not experienced any child deaths, women who experienced a child death were about 30 percent less likely to report a mistimed pregnancy/birth as opposed to wanted and 36 percent less likely to say that a pregnancy/birth was mistimed rather than unwanted (not shown). Women living in urban areas and belonging to higher economic strata were significantly more likely to report their recent pregnancy/birth as unwanted than wanted as compared to their counterparts living in rural area and belonging to lower economic strata. Currently pregnant women were more likely to report their recent pregnancy/birth as mistimed or

unwanted than wanted (RRR=1.8 and RRR=1.6, respectively) compared to non-pregnant women.

In Model 4, an interaction between education and survey year is included to see whether the education gradient is stronger in the 1990s than in 2013 in explaining the unintended fertility. The main effect of education represents differences in the level of mistimed or unwanted fertility relative to wanted fertility across educational level for 1990-91. The main effect of education is large and positive but remains significantly only for secondary education after the introduction of the interaction between survey year and education. The interaction term suggests strong educational gradient of unintended fertility over time. In other words, women with secondary education are less likely to experience unintended fertility overtime. For instance, in 1990-91, women with secondary education were significantly more likely to experience mistimed birth than women in 2012 (RRR=2.25). This means that the risk of mistimed fertility declined for secondary educated women over time.

Predicted Probabilities

As it is difficult to interpret the interaction in multinomial logistic models, I calculated the predicted probabilities of the interaction term (survey year x wife's education). Table 5 presents the predicted probabilities for wanted, mistimed, and unwanted birth by women's education derived from multinomial logistic regression in Model 4 of Table 4. The probabilities are derived by holding all other variables at their (weighted) mean values. The purpose is to investigate whether the educational gradient changes over time and this is evaluated across survey years to study the change over time in intendedness of the last birth of women by their educational level (among women having a higher-order birth). Although unwanted fertility has declined between 1990 and 2012 across all educational categories, the decline is more pronounced for women with a secondary education. The probability of experiencing an unwanted birth significantly declined for women with a secondary education between 1990 and 2012 and suggests that the educational gradient in the risk of having unwanted birth has changed over time. In other words, women with secondary education are significantly less likely to experience an unwanted birth over time compared to less educated women. This result does not confirm that the educational differences of unintended fertility will decline over time (Hypothesis 3). Table 5 also shows that educational gradient of mistimed birth has changed over time, women with secondary education are less likely to experience mistimed births over time. Interestingly, the educational gradient of mistimed birth has reversed for highly educated women over time. However, there is no significance difference in the probability of having a mistimed birth across any educational categories. As far as wanted births are concerned, women with a secondary education are significantly more likely to report a wanted birth.

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Table 5

Predicted Probabilities of Unintended Childbearing by Education

	No Formal Education	Primary	Secondary	Higher
1990				
Wanted	0.73	0.7	0.61	0.75
Mistimed	0.09	0.12	0.17	0.08
Unwanted	0.17	0.18	0.22	0.17
2012				
Wanted	0.77	0.73	0.77	0.77
Mistimed	0.1	0.13	0.13	0.14
Unwanted	0.13	0.14	0.11	0.09

Note: Predicted probabilities are derived from multinomial logistic regression Model 4 while holding all the other variables at their weighted mean values.

Supplementary Analysis

Table 6 shows the results from the full model estimated separately by survey year to examine whether the association between independent variables and intendedness of the birth changes over time[1]. In general, the results of disaggregated analysis by survey years are same as observed in pooled analysis with the exception that the relative risk of experiencing a mistimed pregnancy/birth relative to an unwanted pregnancy/birth is 1.5 times higher for women who perceive that their husband wants fewer children than they do in 1990-91 compared to the women in which they perceive that couple share same desired family size. Also, the risk of experiencing an unwanted birth relative to a wanted birth is higher for working women in 2012-13. However, working women in 2012-13 are 40 percent less likely to say their most recent pregnancy/birth is mistimed relative to an unwanted pregnancy/birth. Furthermore, I applied a Chow Test [Chow (1960)] to see if the association between the covariates and the outcome has changed over time. With 48 degrees of freedom, the result of chow test is highly significant (p<.005) shows that association between covariates and response variable has changed over time i.e. between 1990-91 and 2012-13.

DISCUSSION

Pakistan is currently in the middle of the fertility transition. However, recent surveys show that fertility decline has stalled in recent years. One of the components of stalled fertility is high level of mistimed and unwanted pregnancies. Recent estimates show that around one-fifth of the births are unintended (both mistimed and unwanted) in Pakistan [NIPS (2013)]. It may represent high level of unmet need for contraception, however, nearly universal knowledge of family planning among Pakistani women signify that women lack control over their fertility. Only 35 percent of women are currently using any

Table 6

Table 6

contraceptive method [NIPS (2013)]. In this chapter I argue that gender necessarily and differentially affects the reproductive decision making of women, yet the role of gender in fertility research has generally been overlooked. Because Pakistan is a male-dominated society, I examined the association between women's perception about their husband's desired family size and intendedness of the last pregnancy/birth as reported by women. Using the Pakistan Demographic Health Survey of 1990-91 and 2012-13, I aimed to examine whether women's empowerment (proxied by women's education) accompanied by perceived spousal concordance on desired family size influence the intendedness of the last birth.

Analysis suggests that over time unwanted fertility has declined in Pakistan, consistent with the transition theory argument that unwanted fertility is high at the start of fertility transition but declines as the transition proceeds. The main objective of this chapter is to examine the association between women perceived spousal concordance on desired family size and unintended fertility. In patriarchal societies, such as Pakistan, husband's fertility desires take precedence. Therefore, during the course of demographic transition, unintended fertility may not be high because of lack of access to family planning services and decline in desired family size but it may be that gender dynamics of the society are not changing at the same time. As such, women may not be able to fully act on their fertility desires. In this perspective, women's perception of their partner's fertility goal is an important predictor of how women themselves classify the intendedness of a birth. Because of the male dominated society, I argue that women's perception of their husbands desired family size is associated with their reporting of intentions of their last pregnancy/birth. I hypothesised that women may report high unintended fertility in case of women's perceived discordance on desired family size.

Overall, this analysis does not support the hypothesis (Hypothesis 1) that women are more likely to characterise a birth as unintended in case of perceived discordance on desired family size. The results suggest that a woman is less likely to characterise her birth as unintended (mistimed or unwanted) when she is unaware of her partner's fertility desires, though this is only true for higher order births. If women do not know what their husbands want, and their births are less likely to be unintended, this suggests that women's fertility behaviours are thus reflecting their own desires. It may possible that those who don't know spouses' fertility desires have more pronatalist attitudes and therefore they are less likely to report unintended pregnancy/birth. Analysis of background characteristics of these women reveals that more than 80 percent of these women have no formal education and 60 percent living in rural areas. Prior research has shown that women with no education are more pronatalist and they are more likely to rationalise their behaviour [see Schultz (1993); Bbaale and Mpuga (2011)]. Also, large fertility differentials by women education are observed during fertility transition. In other words, childbearing desires decline

first among educated women and last among less educated women [Cleland (2002)].

Considering the socio-cultural environment of the country, lack of knowledge about spouses' fertility desires may also suggest that couples are not communicating about their fertility desires. In developing societies, gender and social norms of the societies prohibit open discussion on reproductive health issues (Kamran et al., 2011). Pakistan is a male-dominated society, and generally husbands' opinions and desires carry more weight in household decision-making, including reproductive matters. In this context, it is reasonable to assume that women may experience communication barriers especially related to reproductive matters.

The second objective of this chapter is to examine whether women's absolute education is related to unintended fertility controlling for women's perceived spousal concordance on desired family size. Women education is generally equated with women empowerment measured in terms of improved economic opportunities, better living standards, and decline in maternal and infant mortality. Education provides women resources and enables them to make informed choices [Jejeebhoy (1995)] and provide women economic opportunities to pursue goals other than childbearing [Uchudi (2001); Martin (1995); Jejeebhoy (1995)]. Formal education promotes the discussion and use of family planning methods by increasing the degree of communication between spouses [Martin (1995)]. Recall that in last two decades a substantial improvement in women education is observed in Pakistan. Therefore, it is important to examine whether women's empowerment is transferring into their reproductive life sphere. In this perspective, I hypothesised that educated women will be less likely to experience an unintended pregnancy/birth. The results show that, compared to women with no formal education, educated women are more likely to have mistimed birth rather than a wanted or unwanted birth (Table 4, Model 2). These results are consistent with other studies that found that education is strongly associated with desire for smaller families, leaving educated couples more exposed to the risk of unwanted childbearing [Adetunji (1998); Westoff (1981)]. This could be the result of measurement error as well; less educated women are more likely to rationalise their behaviour after having a birth than educated women [Cleland (2002)]. It is also possible that educated women may more accurately assess their reproductive intentions (or are willing to report their true intentions) and thereby more likely to report their recent birth as mistimed as compared to uneducated women.

Another plausible reason for the increase in mistimed births among educated women is the questionnaire wording on fertility intentions. DHS questionnaires are written in English but designed for a foreign country cultural setting before being translated into the local languages of the respective countries. The translation into local languages may signify different meanings in different cultural context, and this may bias women's reporting of intendedness

of birth. In this context, educated women may be in a better position to understand the question accurately and thus more likely to accurately report their pregnancy intentions compared to less educated women.

Of course, more mistimed fertility among educated women could result from ineffective contraceptive methods or contraceptive failure, perhaps due to limited access to family planning services especially in rural areas. A recent study on abortion estimates in Pakistan shows that women resort to induced abortion to avoid unintended fertility (2.25 million abortion annually). In Pakistan, women are not generally allowed to move out of home alone especially in rural areas and also health centres are usually not at close distance. So, even though women may want to use contraceptives, they may not be able to access these facilities. Even though the Lady Health Worker (LHW) program was launched in Pakistan in 1994 to provide family planning services to women at their doorsteps in rural areas. Despite, the program success, LHW program is facing serious challenges such as poor infrastructure, inadequate management, scarce and low quality of services along with financial problems, and low density of workers (one LHW is responsible for a population of 1000 women in a community) [Hafeez, *et al*. (2011); OPM (2009)]. In addition to financial and management problems, program faces challenges in recruiting LHWs to work in hard-to-reach or remote areas mainly in these areas candidates do not meet the educational criteria set by the program [OPM (2009)].

The third objective of this chapter was to see whether educational gradient of unintended fertility has changed over time. Diffusion of smaller family ideals and access and availability of family planning methods has resulted in decline in unintended fertility [Westoff and Bankole (1996)]. However, studies show that diffusion could not account for socio-economic differentials and observed that educational gradient of unintended fertility has increased over time, with less educated being more likely to experience unintended fertility [Finer and Henshaw (2006)]. The result shows that the educational gradient in the risk of having unintended birth has changed over time (Hypothesis 3). There is a strong educational gradient for unwanted higher-order births over time. Women with a secondary education are less likely to have unwanted birth over time. This result is in line with my expectation, as in 1990-91, women with secondary education are a select group and therefore under immense social pressure to conform to cultural norms. But at the same time, this group may be more vocal and clear about their fertility intentions and behaviour.

Another possible concern is that, in this context, using a current measure of women's perception about her partner's desired family size is a poor proxy to study the role of gender in reproductive intentions and behaviours especially when gender roles and relations are changing at societal level. This measure does not fully capture the gendered dimension of fertility, specifically in the context of a highly male dominated society. In male dominated societies,

women's reports of their fertility intentions likely incorporate, to some unknown degree, broader cultural norms. Therefore, reliance on women's reports and the virtual absence of published information on men's fertility desires in Pakistan is a great limitation of the existing knowledge base. A couple-level study that has measures of fertility preferences and intentions will help in identifying whose fertility preferences influence fertility intendedness.

LIMITATIONS

The major limitation of the study is the cross-sectional nature of the data. In cross-sectional data, it is difficult to develop causal relationship between variables of interest. Unfortunately, no panel level study is available in Pakistan that has collected detailed data on birth intentions and corresponding couple-level variables. One of the disadvantages of cross sectional nature is the temporal ordering of outcome and independent variables; the independent variables are derived from current status of the respondent rather than at the time when the event happened. As such, perceived spousal concordance in desired family size is measured at the time of survey, not before the pregnancy was conceived. Borrowing from literature analysing cross-sectional data [e.g. Williams and Sobieszczyk (2003); Testa (2014)], I assume that women's perception about their husband's fertility desires at the time of survey are the same around the time of conception, but this may not necessarily be true. Further, due to non-availability of panel data, I am unable to examine how fertility preferences and intentions change over women's reproductive life course. Research has suggested that women continually change their fertility intentions and preferences as different life events unfold [Yeatman, *et al.* (2013)].

Another major limitation of the study is the lack of data on husbands' attitudes regarding the intentions of the most recent pregnancy/birth, husbands' perceptions of their wives' desired family size, and information about spousal communication on reproductive health matters. There may be biases inherent in the retrospective measurement of pregnancy intentions; women may not recall correctly about their feelings at the time of conception or the feelings about the earlier unwanted or mistimed conception could change over time. Some women may not wish to report a pregnancy as unwanted or mistimed especially after the birth of a child from that pregnancy. In addition, women probably do not report unintended pregnancies that do not end in a live birth (i.e., in induced abortion or some other outcome) [Bongaarts (1990); Joyce, *et al.* (2000)].

This chapter also highlighted the need for more refined measures of women's empowerment other than women's education. For instance, women's decision making power, freedom of mobility, gender attitudes and beliefs of a woman or her husband, women's educational and career aspirations, interspousal communication, and community level gender specific measures, to

name a few, may provide a better insight into the role of women's empowerment on fertility behaviour. Although the PDHS 2012-13 asked women in detail about their attitudes toward wife-beating and their role in household decision making, I was unable to study change over time because the PDHS 1990-91 did not have these variables. Also, because I pooled 1990-91 and 2012-13 PDHS, some of the variables which I could use to measure women's empowerment were not standardised across both surveys. In other words, the question phrasing was not the same which could bias, slant, or alter the meaning and understanding of the question.

CONCLUSION

Further research is required to understand the extent to which spousal concordance influences the intendedness of births and other reproductive health behaviours. Some studies have shown that fertility preferences are generally concordant across couples and that women's fertility preferences can accurately serve as a proxy for men's fertility preferences [Diro (2013); Yadav, *et al.* (2010)]. However, given the social changes in Pakistani society over the last two decades (especially increases in women's education), husbands and wives may have become increasingly likely to differ in their reproductive roles (Planning Commission, 2015). 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)]. Therefore, for a broader understanding of the dynamics influencing fertility behaviour, it is imperative to study fertility within the perspective of the current gender systems, ideally with data from both men and women [Dyson and Moore (1983); Miller (1997)].

Education is believed to provide tools and resources to women to make informed choices. However, results suggest that despite the improvement in female education in Pakistan over the past few decades, many women seem to be unable to assert their preferences even though they seem to be communicating more about fertility preferences (as evidenced by fewer women reporting they do not know their spouse's fertility preferences).

The findings suggest that the government and social organisations need to put their efforts into ensuring that the changes happening at societal level (i.e., increasing women's education) are translating into interpersonal relationships by changing the cultural milieu of the society that accepts and celebrates women's empowerment. Improvement in women's education alone does not seem to be enough to fully and truly empower women, since higher levels of education are confined to a relatively small section of the urban population. The number of such educated women as a proportion of the country's population is still quite small. For such change, educating men about the importance of women

education for their family well-being is important. This can be achieved by including men in the fertility dialogue and meeting the reproductive demands of the men, especially young generations, may prove a way forward. This will not only increase spousal communication on reproductive matters but also reduce misconceptions about family planning and help avoid unwanted pregnancies. A recent qualitative study in Punjab, Pakistan found that men are willing to talk about their fertility intentions and behaviours and to participate in family planning, highlighting the need for male health workers to cater to men's reproductive health needs [Kamran, *et al*. (2013)]. Organised advocacy alongside an inclusive couple-level strategy, therefore, appears to be the two-pronged approach that could bring understanding, harmony, and spousal concordance between equally empowered men and women with regard to fertility decisions and other reproductive health behaviours.

Table 4

Pooled Multinomial Logistic Regression Predicting Higher-Order Unintended Birth/Pregnancy
by Perceived Spousal Concordance, Education, and Demographic and
Socio-economic Background Characteristics

Variables	Model 1 Mistimed Vs. Wanted	Model 1 Unwanted vs. Wanted	Model 2 Mistimed Vs. Wanted	Model 2 Unwanted vs. Wanted	Model 3 Mistimed Vs. Wanted	Model 3 Unwanted vs. Wanted	Model 4 Mistimed Vs. Wanted	Model 4 Unwanted vs. Wanted
Year (omitted=1990)								
2012	1.05	0.55***	0.89	0.55***	0.95	0.63***	1.05	0.69**
Perceived Spousal Concordance (omitted= Both want same)								
Husband wants more	0.88	0.92	1.00	0.92	1.02	0.84	1.01	0.83
Husband wants fewer	1.26	1.02	1.30	1.02	1.42	1.04	1.36	1.01
Don't know	0.58*	0.69**	0.70*	0.69**	0.73	0.77*	0.74	0.79*
Wife's education (omitted= No formal education)								
Primary			2.04***	1.06	1.40*	1.14	1.37	1.07
Secondary			2.58***	1.00	1.50*	1.01	2.26***	1.58
Higher			2.63***	0.80	1.44	0.72	0.85	0.96
Husband vs. wife's education (omitted=Both have no formal education)								
Husband education less than wife					1.72**	1.58*	1.72*	1.60*
Husband education higher than wife					1.09	1.15	1.08	1.14
Both have same level of education					1.41	1.24	1.40	1.25
Wife's Age (omitted=15-24)								
25 and 34					0.92	2.71***	0.91	2.77***
35+					0.60**	7.49***	0.60**	7.46***
Age difference(Husband-wife) (omitted=Wife is younger by 0-4 years)								
Wife is older by 1-9 years					1.08	0.77	1.08	0.76
Wife is younger by 5-9 years					1.00	1.07	1.00	1.07
Wife is younger by 10+years					0.99	1.51***	0.99	1.52***

Continued—

Table 4—(*Continued*)

Wife's Work Status (omitted= Not working)					
Working		0.87	1.18	0.86	1.17
Birth Interval (omitted=Less than 18 months)					
18-24 months		0.53***	0.81	0.53***	0.81
24 months +		0.32***	0.81	0.32***	0.82
Number of living sons (omitted=No living sons)					
1		1.03	2.17**	1.04	2.19**
2		1.09	4.61***	1.09	4.63***
3+		1.11	9.16***	1.11	9.22***
Experienced any child death (omitted=No)					
Yes		0.69**	1.07	0.69**	1.08
Place of Residence (omitted=Rural)					
Urban		1.21	1.37**	1.19	1.35**
Household Wealth(omitted=Poor)					
Middle		1.18	1.27	1.20	1.29*
High		1.22	1.44**	1.23	1.47**
Currently Pregnant (omitted=No)					
Yes		1.80***	1.59***	1.81***	1.61***
Wife's Education x Year (Omitted= No Formal education, 1990)					
Primary				1.02	1.06
Secondary				0.57*	0.49*
Higher				1.70	0.68
N	9004	9004	9004	9004	

† (p<0.10), * (p<0.05), ** (p<0.01), *** (p<0.001).

Table 6

Multinomial Logistic Regression Predicting fertility Intentions of Higher order Birth/Pregnancy by
Perceived Spousal Concordance, Education, and Demographic and Socio-economic
Background Characteristics: PDHS 1990-91 and PDHS 2012-13

Variables	1990-91			2012-13		
	Mistimed vs. Wanted	Unwanted vs. Wanted	Mistimed vs. Unwanted	Mistimed vs. Wanted	Unwanted vs. Wanted	Mistimed vs. Unwanted
Perceived Spousal Concordance (omitted= Both want same)						
Husband wants more	0.95	0.75	1.25	1.04	0.87	1.20
Husband wants fewer	1.53	0.62	2.47*	1.27	1.42	0.90
Don't know	0.80	0.80	1.00	0.72	0.72	1.00
Wife's education (omitted= No formal education)						
Primary	1.12	0.92	1.21	1.49*	1.21	1.23
Secondary	1.72*	1.37	1.26	1.43	0.94	1.53
Higher	0.59	0.82	0.71	1.68*	0.81	2.07*
Husband vs. wife's education (omitted=Both have no formal education)						
Husband education less than wife	2.78**	1.33	2.08	1.41	1.75*	0.81
Husband education higher than wife	1.16	1.06	1.10	1.01	1.18	0.85
Both have same level of education	1.27	1.65	0.77	1.33	0.97	1.37
Wife's Age (omitted=15-24)						
25 and 34	0.96	2.39**	0.40**	0.88	3.07***	0.29***
35+	0.72	6.47***	0.11***	0.54**	8.99***	0.06***
Age difference(Husband-wife) (omitted=wife is younger by 0-4 years)						
Wife is older by 1-9 years	1.07	0.64	1.68	1.10	0.85	1.29
Wife is younger by 5-9 years	1.37	1.21	1.13	0.88	0.99	0.89
Wife is younger by 10+years	1.28	1.62***	0.75	0.88	1.42*	0.62*
Wife's Work Status (omitted= Not working)						
Working	0.90	0.87	1.03	0.85	1.39*	0.61*

Continued—

Table 4—(*Continued*)

Birth Interval (omitted=less than 18 months)						
18-24 months	0.75	1.17	0.64	0.46***	0.59*	0.78
24 months +	0.46***	0.92	0.50**	0.28***	0.77	0.36***
Number of living sons (omitted=no living sons)						
1	3.12***	2.42*	1.29	0.73	2.48*	0.30*
2	3.31***	3.58***	0.92	0.78	6.80***	0.11***
3+	2.93***	7.70***	0.38*	0.82	12.64***	0.06***
Experienced any child death (omitted=no)						
Yes	0.69*	1.25	0.55**	0.70*	0.947	0.74
Place of Residence (omitted=rural)						
Urban	1.88**	1.77***	1.06	0.98	1.05	0.94
Household Wealth(omitted=poor)						
Middle	1.08	1.15	0.94	1.31	1.42*	0.92
High	1.13	1.47	0.77	1.33	1.42	0.93
Currently Pregnant (omitted=no)						
Yes	1.79**	1.52*	1.18	1.90***	1.74**	1.09
N		**3,293**			**5,711**	

† (p<0.10), * (p<0.05), ** (p<0.01), *** (p<0.001).