

IMPACTS OF FAMILY PLANNING PROGRAMMES ON FERTILITY IN PAKISTAN

Hassan Raza ^a, Babur Wasim Arif ^b

^a Iqra University, Islamabad, Pakistan.

^b Pakistan Bureau of Statistics, Islamabad, Pakistan.

Corresponding author: hrza200992@yahoo.com

©Ontario International Development Agency ISSN: 1923-6654 (print)
ISSN 1923-6662 (online). Available at <http://www.ssrn.com/link/OIDA-Intl-Journal-Sustainable-Dev.html>

Abstract: This study attempts to find out the impacts of family planning programmes, after controlling for, socio-economic and demographic variables on fertility in Pakistan. Cross-sectional data of about ten thousand ever married women of 15 to 49 years of age, collected through Pakistan Demographic and Health Survey (PDHS), is used for analysis. Moreover, to gauge comparative impact of these factors in different localities, rural and urban samples are analyzed separately. The results of multinomial regression advocate that there is negative relation between the use of contraceptive methods and fertility. These results signify substantial importance of family planning programmes for reducing population growth. It is evident that increase in parents' education brings fertility to lower side while son preference and unwanted births are more likely to increase fertility. In addition, wealth-status of women and number of visits of family health worker has also inverse effects on fertility level which is quite expected. Qualitatively similar results for rural and urban samples are observed.

The study concludes that there is great need to strengthen family planning programmes and overcome weaknesses embodied in these programmes. This can be achieved through mobilizing people in both urban and rural areas and especially the supply side needs to be more strengthened. Moreover, policies to provide family planning education to females need to be undertaken. This will sensitize and aware females about small family size before marriage and will help to change

their attitudes toward family size in appropriate manner. Son preference can be resolved through empowering women and providing them more economic opportunities which will improve their social status within family and remove parents' perception that only sons are breadwinner at home. Unwanted births can be controlled by providing comprehensive awareness about reproductive health and use of contraception while access to contraceptive methods is also very crucial to achieve this goal. For this purpose, electronic media can play important role while family health workers need to be trained extensively and their services must be ensured in rural areas.

Keywords: Fertility, Family Planning Programmes, OLS Regression

INTRODUCTION

Reducing rapid population growth has substantial significance for every country to maintain and improve its social and economic welfare. To reduce fertility, governments design various programmes including use of birth control methods. The world's population, however, is growing rapidly and recorded at about 6.9 billion in 2010.¹

¹ Population Reference Bureau-World Population Data Sheet, 2010

With the population of 180 million, Pakistan ranked world's sixth most populous country. During 1950 to 2010, total population of Pakistan increased more than fourfold, while its urban population expanded over sevenfold. Although family planning programmes have been working in country since early 1960s, Pakistan is still unable to achieve sufficient progress as compared to other neighboring countries like India, Bangladesh and China those started family planning programmes much later but succeeded to reduce fertility rate and growth in population. According to the latest Pakistan Demographic and Health Survey (PDHS) conducted in 2006-07, the contraceptive prevalence rate in country is stagnant at about 30 percent while the unmet need for contraception still stands at 25 percent. Apparently, Pakistan is not likely to meet its population stabilization goal within time frame fixed in its Population Policy 2002 until some extraordinary measures are adopted.² In this context, the prime objective of this study is to find out the impacts of family planning programmes on fertility, after controlling for socio-economic and demographic variables in Pakistan. Moreover, this study sets out to identify factors underlying the fertility behavior over the time and gauge the changing composition of these factors.

LITERATURE REVIEW

Cuca and Stud (1980) reported that much decline in fertility was the result of adopting family planning programmes. But if the governments launched these programmes after getting sufficient level of development then these programmes would be more beneficial and result oriented. There is substantial decline in fertility due to socio economic variables like health, education, economic status, urbanization and modernization Mauldin and Berlson (1975). Son preference makes great effect on use of contraception and fertility while education and place of residence change the attitudes of couples which are more likely to have son rather than daughter Arnold and Zhaoxiang (1986). Women with no education and woman, who live in the poorer area face severe constraints on travel and high opportunity cost of time, are especially affected by family planning workers' visits Mary (2001).

Moreover, improvements in contraceptive technology can lead to change in the career choices, the timing of marriage and age at first birth Goldin and Katz (2000). Age-specific fertility rates after unification indicates that the most drastic baby bust occurred among 18- to 28 years old women while age at marriage and age at first birth play crucial role to increase fertility Mtinz and Ulrich (1995). It is

evident that, of the demographic variables, age and age at marriage is the most important determinant of fertility in Pakistan. In addition, among socio-economic variables, the education level of both husband and wife are significant and important determinants of cumulative fertility in Pakistan Abdul Hakim (1994).

Furthermore, the clinics are far closer on average for women in urban areas but deficiency of access is a serious obstacle nevertheless because of the many restrictions on women moving about outside their dwellings. The upshot is that only a small minority of women report having had contact with a family planning worker Ministry of Population Welfare and Population Council (1995) and this is essentially unchanged since the late 1970s Syed (1979). Radio and television campaigns promoting family planning have picked up momentum in terms of both their frequency and the explicitness of the messages. The percentage of women who reported that they have heard or seen a family planning message more than doubled between 1990-91 PDHS and 1994-95 PCPS, exceeding 60 percent in the latter survey NIPS/IRD (1992), Ministry of Population Welfare and Population Council (1995).

In addition, another indicator of marriage, the median age at marriage for women aged 25-49 years increased from 18.6 to 19.1 PDHS (1991, 2007). Urban-rural differences persist among marriage indicators. The increase in median age is sharpest for major urban areas where median age at marriage increased by one year to 20 compared to less than half a year to 19.4 and 18.8 for other urban and rural areas respectively. Differentials in age at marriage are larger across income groups and education levels. On average a woman with no education gets marry one year before a woman with primary education and more than 6 years earlier than a woman with higher education PDHS (2007).

Similarly, Mubashir Ali (2008) concludes that the demand for additional children is influenced by the presence of sons within family. This study is based on cross-sectional data of 9416 currently married women under age below 50 from a Pakistan national survey in 1979-80. The analysis suggests that having at least one son in the family influences the demand for additional children. Urban and rural comparisons indicate a higher preference for sons in urban areas. Unless the socio-economic environment changes son preference is likely to remain strong in Pakistan.

Likewise, family planning programmes have significant impact on fertility reduction. In rural areas although they have slight effect on first birth but contributes substantially for 3rd and 4th birth and also in spacing and decreasing higher birth order Barkat et al. (2009). Modern family planning programmes have

² Pakistan report, 2010

favorable effect on choice of use of modern contraceptive methods while individual level control variables such as age, education and household assets valued much as would be predicted especially female education almost universally yielded desirable outcomes lowering ideal family size, increasing modern contraceptive use and decreasing fertility Angeles et al. (2001). Preference for sons has been documented in Muslim and Christian populations of North Africa and the Middle East which affects fertility level Arnold (1985). The TFR levels are higher in rural areas while the peasant population refused to go below that level Miller (2005). Socio-economic and mortality transformations increased use of fertility control and rapid fertility reduction Friedlander et al. (1980).

Additionally, Sathar et al. (2000) conducted a study in Punjab and KPK which concludes that gender equity in the schooling environment as measured by the number of public primary schools for girls in the community or by the ratio of the number of girls schools to boys schools has a statistically significant effect on the probability that a woman will express a desire to stop childbearing and by extension on the probability that she will operationalize those desires by practicing contraception. Indeed, the achievement of gender equity in primary school access in rural Punjab and KPK could lead to a 14–15 percentage point rise in contraceptive use in villages where no girls' public primary school currently exists and an 8 percentage point rise in villages with one primary school for girls. Sathar and Batool (2009) suggests by conducting a study that societal changes such as rapid urbanization, expansion of education, employment for women, proliferation of information through television and other communication channels and some improvement of the economy over time have changed social values. These influences are believed to underlie the changes in marriage behavior with the rising age at female marriage and the proportions of women that do not marry at all. They also affect reproductive intentions more directly with the large rise in desires to control fertility within marriage and the high proportions of women who either want no more children or want to space their next birth.

DATA INTRODUCTION

Table 1 presents brief description of variables used in study. The dependent variable is "fertility", it was open ended question included in PDHS questionnaire. Several responses were counted against this question. This variable was converted into a new variable through categorization while in multivariate model the variable is taken in its original form because of the requirement of regression models. Similarly, the construction of independent

variables is undertaken. "Current use of family planning method" is one of the main variables of the study. This was close ended question while 11 different responses came against this question. So this variable is constructed into 4 categories which are not using FP, using FP, using traditional method, using modern method while the frequencies came under others category are converted into system missing values. Moreover, variable "women education level" had originally 5 categories as no education, primary, middle, secondary and higher. This variable is also constructed into 3 categories as no education, primary/middle, secondary/higher and same holds for husband education level.

After this, "Women ideal number of children" was also open ended question while having some pre-coded categories as not yet decided, up to God, Non-numeric response and DK. This variable is categorized as no children, 1 to 2 children, 3 to 4 children, 5 and above children while the next four categories, not yet decided, up to God and Non-numeric response and DK are merged into "others" category because these four categories are not matched to the actual response of the variable which became a problem during bi-variate and also in multivariate analysis while comparing with the base category.

Husband desire for children divided into three main categories namely both want same, husband wants more; husband wants fewer along with DK. The sample distribution as observed in frequencies was appropriate to the analysis, so only the DK category was converted to system missing values. Women ideal number of sons and ideal number of children are constructed , 1 to 2 children, 3 to 4 children, 5 and above children while the other four categories are transferred as system missing.

Respondent working status was already dichotomous variables having two categories of Yes and No which was appropriate for data analysis. Adding further, Women occupation was found to have 9 categories as not working, prof./ tech./ manage./, clerical, sales, agric-employee, household & domestic, services, skilled manual, unskilled manual. After taking frequency, it was found that there were fewer responses against four categories clerical, sales, skilled manual and unskilled manual as compared to other categories which might become a problem in multivariate analysis. So this variable was constructed with new categories of not working, prof./tech./manag./services, household and domestic/unskilled manual, clerical/sales/skilled manual and agric employee.

In addition, one of the demographic variables is current age of the respondent. This was also open ended question which constructed as up to 20 years,

21 to 30 years and 31 to 49 years which make the sample distribution among these categories appropriate for multivariate analysis. Moreover, age of women at first marriage and age at first births are categorized in similar way as up to 18 years and 19 and above years.

Likewise, unwanted birth is the last demographic variable which is constructed as women ideal number of children subtracted from number of living children. This variable was further categorized into three categories as achieved ideal size, having more than ideal number of children, not yet achieved ideal number of children.

After this, variable, wealth index is treated as background variable in this study. This variable had five categories in its original form as poorest, poorer, middle, richer and richest. The poorest, poorer categories and richer, richest categories were not seemed to be properly defined. They could not be

differentiated as separate categories so the variable was constructed with new categories as Poor, Middle and Rich which became more clear and justifiable.

Subsequently, region is the second background variable that had four categories. Region is considered as province level so obviously there were four categories according to each province as Punjab, Sindh, KPK and Balochistan. Type of place of residence had two categories as urban and rural which would be sufficient for Bi-variate and Multivariate analysis. Additionally, information about media is considered from two sources T.V. and Radio. These both variables were in dichotomous form having two categories (No, Yes). Finally, visit of family planning worker that was also found in dichotomous form and included without any change.

Table 1: Description of data

S.No.	Original Variable	Constructed Variable
Dependent Variable		
1	Children Ever Born	No Children, One Children, Two Children, Three Children, Four Children, Five Children, Six and above Children
Independent Variables		
2	Women current use of FP method	Not using, using FP, using traditional method, using modern method
3	Women education level	No education, Primary/Middle, Secondary/Higher
4	Husband education level	No education, Primary/Middle, Secondary/Higher
5	Women Ideal number of children	Up to two children, 3 to 4 children, 5 and above children
6	Husband desire for children	Both want same, Husband wants more, Husband wants fewer, DK
7	Women Ideal number of sons	No son, 1 to 2, 3 to 4, 5 and above sons
8	Respondent working status	No, Yes
9	Women occupation	Not Working, Prof./Tech./Manage./Services, Household and Domestic/Unskilled Manual, Clerical/Sales/Skilled Manual, Agric-Employee
10	Age of women at first birth	Up to 18 years, 19 and above years
11	Age of women at first marriage	Up to 18 years, 19 and above years
12	Current age of respondent	Up to 20, 21 to 30, 31 and above
13	Unwanted births of women	Achieved ideal size, Having more than ideal number of children, Not yet achieved ideal number of children
14	Wealth Index of the household	Poor, Middle, Rich
15	Region	Punjab, Sindh, KPK, Balochistan
16	Type of place of residence	Rural, Urban
17	Heard FP message on radio	No, Yes
18	Heard FP message on T.V.	No, Yes
19	Visit of FP worker	No, Yes

THEORETICAL FRAMEWORK

The dependent variable of the study is “fertility”. This variable is measured through total number of children ever born. Fertility is the prime indicator of population, as fertility goes up the population growth rate becomes high and vice versa. So the reason to take this factor as outcome variable of the study is to check its relationship with other variables which have sufficient potential to affect fertility. One of the major independent variables is family planning programme which is measured through current use of any contraceptive method whether it is traditional or modern. The reason to select this variable is to check its effectiveness because it has the potential to directly affect fertility level as evident from previous studies. Comprehensive family planning programmes have much effect for reducing fertility than the substantial improvement in school quality Guilkey and Mroz (2003). Family planning programmes are proved to be very essential in reducing fertility rate all over the world especially in developing countries Amy Ong Tsui (2000). Access to family planning programmes in Ethiopia has a statistically significant and economically large impact on fertility of women with no schooling. The reduction in fertility is concentrated among the youngest women and the oldest women indicating that access to family planning programmes lead to postponement of birth among younger women and a reduction in completed fertility Claus (2011). So in order to assess the extent to which family planning methods are useful and effective to reduce fertility in Pakistan, this variable has been selected for current study.

Moreover, education level of women and husband are measured through total number of completed classes passed by men or women. They both have substantial importance to reduce fertility in the past as previous researches showed controlling for access to services there is a strong positive association between education and contraceptive use and a negative association between education and fertility RB-5013 (1997). Education has strong inverse effect on fertility as slight increase in education has significant decrease in fertility while primary education does not have much impact in fertility reduction. Education proves to be a great source of high earning that empowers women and gives them the exposure of family planning programmes from school level which results in fertility reduction John P, Tuma (2005). This relationship between education and fertility in Pakistan perspectives will provide us prestigious information to deal with this factor for fertility reduction.

Furthermore, Woman ideal number of children is considered the number of children she would choose to have in her whole life regardless of the number

that she has already born. The reason for its selection is as evident from past studies that women ideal number of children play important role to design family size. Because at the time of marriage or before it women have planned for her total number of children and this consciousness is attributed with the social and cultural dimensions of the society which would cause large family size ignoring economic constraints at household level and various social issues at national level. So studying this variable will prove to be very essential to assess the intensity of its impact in Pakistan.

Likewise, husband desire for children also a crucial factor to decide about family size. Because most of the societies especially in developing countries there are still patriarchal systems exist at community level through which male have dominance over women. Husband does have control over woman’s reproductive decision making. So in order to fulfill husband desire women have to bear large number of children. In this regard, to check its level of significance in Pakistan this variable also included in this study.

Son preference caused higher fertility almost in every society. This variable is measured through woman ideal number of sons in her whole reproductive period. In every society, sons do have more importance within the family and the society than girls. So the desire for more sons makes the family size larger. It was found that the ideal number of sons exceeds the ideal number of daughters by 20 to 80 percent in all states. The preference for sons is particularly high in most of the northern states as well as in Uttar Pradesh, Bihar and Gujarat Mutharayappa et al. (1997). Sex preference encourages high fertility as women who have no son or lesser sons are more likely for child bearing in future as son preference is made under economic and social consideration Chowdhury and Bairagi (1990).

Then women working status and employment level is measured through “respondent currently working”. Women working status is also very important in shaping fertility level because those women who are currently working have much more opportunity cost than those who are not working and stay home. Having source of earning become women more empowered while their influence and participation in decision making especially for child bearing also increases which results in small family size and fertility reduction. On the other hand, woman with no working status is completely dependent on her husband. She has to obey all decisions and fulfill all wishes raised from her husband and in-laws especially to bear more children that become the core reason to increase fertility at household level as well as at national level as evident from past that although

the fertility rate declines by an increasing factor of education but the level of education itself was governed by the economic position of the household Colombia (2005) and Peru (2000). Economic security and job factors are very important which guide the individuals how to mould their family structure Adler (1997), Mau and Zapf (1998) and Munz and Ulrich (1995).

Three demographic variables” women current age”, “age at first marriage” and “age at first birth” are included after constructed into new variable through categorization. Age is the most important components of population dynamics while age at first marriage and age at first birth are very crucial for total fertility. As woman gets married in younger age her reproductive period increases and so the chances for more children during her reproductive period get increased. The first visible outcome of the fertility process is the birth of the first child. It plays a significant role in the future life of each individual woman and has a direct relationship with fertility. The age at which child bearing begins influences the number of children a woman bears throughout her reproductive period in the absence of any active fertility control. The reduction in infant and child mortality, rising numbers of women attending schools and a rise in age at first birth are among the factors responsible for the decline in fertility in Tanzania Ngalinda (2009) and Portner (2011). So to assess the situation in Pakistan, these demographic variables as important factors for design fertility are included in present study.

Adding further, “unwanted births” has substantial importance to increase fertility level. The other indicators like age at marriage or age at first birth are attributed to the social and cultural environment of the society but this cause is directly associated with the lack of knowledge and awareness. Although sometimes men and women become agreed to have small family size but due to their lack of health education women conceive undesirably and in this regard, she has to bear the new born child which causes an increase in her total fertility and results in large family size as proved from past studies. One-third of births are unwanted, ranging from a low of 21% (Paraguay) to a high of 60% (Bolivia), and women experience on average about one unwanted birth during their reproductive career (synthetic cohort estimates), ranging from a low of 0.60 to a high of 2.5 unwanted births per woman which consequences in increasing fertility level. It seems clear that the prevention of unwanted fertility would have had a substantial impact on fertility reduction and consequently on the population growth while education and income have significant negative relation with unwanted births Larry and Westoff (1970). This variable is measured as women ideal

number of children subtracted from total number of living children and further categorized. Due to its extreme important showed by past studies, this variable is included in the study to check its effectiveness in Pakistan.

Among background variables, wealth index has significant role in shaping fertility. This variable is measured through a pre-designed index comprising of various things which are commonly used at household level. Then households are given five different levels after calculating this index which further constructed into three categories for make descriptive analysis more clear and justified. This variable has substantial role in shaping fertility. As evident from previous studies that the higher wealth status of the women household, the lesser chances she has for large number of children. Because rich women have higher opportunity cost and their sources for entertainment are much more which make them busier as compared to those women who belong to poor household and have sexual activity as the only source of entertainment. Poor woman spend most of the time at home so she prefers to stay at home while bearing and caring her children. In addition, poor families consider children as the prime source of income and due to social and cultural environment women supposed to have higher social status within the family and the society with large number of children especially sons as evident from previous researches. Women with no education and women who live in the poorer area face severe constraints regarding traveling and high opportunity of time have large family size are especially affected by family planning worker's visits Mary (2001).

Similarly, type of place of residence is also very crucial in relation to fertility. Those people who live in rural areas are restricted with social constraints and traditional affairs. They have lack of education and health knowledge while women have no access to health facilities and also other social factors are directly influenced her fertility level. In contrast, people living in urban area become more educated and mobilized they have more easy access to private and public health facilities and other sources of information which might affect in reducing family size that result in lower fertility level. The effect of urbanization itself is strong, evident and complex and persists after controlling for the effects of age, cohort, union status and education. Urban women exhibit fertility rates that are on average 11% lower than those of rural women but the effects vary by parity. Difference in urban population traits would augment the effects of urban adaptation itself White and Muhidin (2008). So in order to account the effect of type of place of residence on fertility in Pakistan perspectives this variable is also included in present study.

Furthermore, media message, this variable is measured through two media sources, radio and T.V. Media is playing significant role to motivate married couples for decision making about small family size. It also provides awareness about birth spacing along with the use of contraceptive. Through this source of information unmarried men and women also get sufficient awareness about the importance of small family size which prove to be very essential for them after marriage. Media has also decreased unwanted fertility which ultimately resulted in lower fertility level. This significance of media has also proved from past studies as there is strong association of media message and fertility reduction. Women who have heard or seen any family planning message have lesser children as compared to those who did not receive or see any media message. According to the results, 15 percent women who say that they have neither seen nor heard media messages on family planning or currently using contraceptive method, this proportion rises to 25 percent among those who have heard media messages, to 40 percent among those exposed to both radio and print messages and to 50 percent those exposed to radio, print and television messages. This suggests that the mass media can have an important effect on fertility behavior Charles F. et al. (1995). So keeping in view the importance of this factor for fertility reduction, this variable is also included in the study to observe its impact on national level.

Finally, visit of family health worker, this variable is measured through visit of health worker during last month preceding the survey. Lady health worker or any health person visit at household level has substantial importance and effectiveness with respect to fertility level. On the one hand, the lady health worker gives motivation and awareness about small family size and provides access to contraceptive and its use. She also helps to eliminate the complications and doubts of dangers in woman's mind regarding the use of contraceptives. Moreover, she also encourages the woman to consult and convince her husband to have small family size as good for her health and her children. So as evident from previous studies, visit of family planning worker does have extreme significance in reducing fertility level. Access to family planning services substantially reduces the number of children ever born for women without education. Most of the reduction is concentrated

among the youngest and the oldest women. Women younger than 20 years with long-term access to family planning services have one child fewer than those without access indicating postponements of births Claus (2011).

METHODOLOGY

This study envisages analyzing family planning programmes as determinant of fertility. Cross sectional data from Pakistan Demographic and Health Survey, 2006-07 is used for analysis providing a comprehensive data set of 10,023 ever married women of 15-49 years of age across the country respectively. The outcome variable of current study is measured through women total children ever born. Moreover, currently married women are studied as unit of analysis which reduced to 9556 while the study is further expanded for rural and urban domains. In this regard, sample size for currently married women is further condensed to 6365 and 3191 respectively. The data was taken from National Institute of Population Studies which is research based national level organization.

EMPIRICAL RESULTS

In order to check one to one association between dependent and each independent variable and the percent distribution among these variables, Bi-variate analysis is being undertaken. There were 10023 ever married women who interviewed in PDHS. These observations are related to those women who ever used of any contraceptive method but this study focus on current use of contraceptive method so the total number of observations are decreased to 9556 and further to analyze both domains (Rural, Urban) separately with respect to these study variables, these observations further drop down to 6365 and 3191 for rural and urban case respectively.

Table 2: Percent distribution of independent variables with total children ever born (response variable) for Pakistan

Variable	Category	Children Ever Born							Total	χ
		No	One	Two	Three	Four	Five	Six		
Women current use of FP method	Not Using	17.2	14.1	14.2	12	10.5	8.5	23.5	100	0.000
	Using any FP Method	0.1	5.4	10.6	14.2	17.5	15.1	37.1	100	
	Traditional Method	0	9.5	12.5	15.8	16	13.9	32.6	100	
	Modern Method	0.1	4	10.1	13.7	17.8	15.5	38.7	100	
Women education level	No Education	10.3	9.8	10.6	10.9	12.3	11.3	34.8	100	0.000
	Primary	12.6	13.8	16.3	12.7	11.8	11.2	21.6	100	
	Secondary	16.9	15.9	17.2	15.1	14.1	8.5	12.3	100	
	Higher	19.0	13.7	22.3	23.9	12.8	4.9	3.3	100	
Husband education level	No Education	9.7	9.5	10.5	10.3	11.6	11.4	37.0	100	0.000
	Primary	12.3	10.7	12.1	11.5	12.7	11.1	29.7	100	
	Secondary	13.8	13.5	15.2	13.1	12.4	10.1	21.9	100	
	Higher	14.2	12.7	15.5	18.3	14.9	8.9	15.5	100	
Women ideal number of children	No Children	8.6	6.2	17.3	11.1	13.6	11.1	32.1	100	0.000
	Up to two children	22.2	17.8	21.6	12	9.1	5.6	11.7	100	
	3 to 4 children	11.5	12.4	14.2	16	15.2	10.1	20.6	100	
	5 and above children	9.1	7.8	8.1	8.1	9.9	13	44	100	
Husband desire of children	Both want same	13.9	13.5	15.1	14.7	13.3	9.7	19.8	100	0.000
	Husband wants more	8.4	10.3	12.7	13.7	12	10.6	32.3	100	
	Husband wants fewer	5.9	10	19.4	16.7	12	9.7	23.4	100	
Women ideal number of sons	No Children	19.9	15.3	12.4	12.2	11	6.6	23.7	100	0.000
	1 to 2	13.1	13	15.9	15.3	13.4	9.6	19.7	100	
	3 to 4	10.4	9.1	9	9	12.6	13.3	36.5	100	
	5 and above	9.6	9.2	9.4	6.5	8.1	7.7	49.5	100	
Respondent working status	No	12.7	12.2	13.9	12.9	12.8	9.7	25.8	100	0.000
	Yes	14.5	14.4	13	12.8	11.8	8.7	24.8	100	
Current age of respondent	Up to 20 years	50.1	32.6	14.2	2.4	0.7	0.1	0	100	0.000
	21 to 30 years	14.4	17.7	21.9	18.3	13.1	8.2	6.4	100	
	31 to 49 years	3.6	3.2	6.5	10.3	14.2	14	48.1	100	
Women age at first marriage	Less than 19 years	19.1	9	10.8	11.6	12.9	12.1	34.5	100	0.000
	19 and above years	16.3	14.9	16.4	14	12	8.3	18.1	100	
Age of women at first birth	Up to 18 years		7.8	10.9	12.2	13.8	12.8	42.4	100	0.000
	19 and above years		15.8	17.1	15.5	14.5	11.4	25.7	100	
Unwanted births of women	Achieved Ideal size	0.4	0.6	13.6	17.5	30.6	15.6	21.7	100	0.000
	Having more than Ideal number of children	0	13.4	25.7	20.8	18.7	14.8	6.6	100	
	Not yet achieved Ideal number of children	2	2.2	2.9	5.9	8.8	15.5	62.7	100	
Visit of FP worker	No	13.1	11.8	13.2	12.5	12.4	10.1	26.9	100	0.000
	Yes	11.4	11.8	19.1	13.0	12.8	9.5	22.4	100	
Heard FP message on T.V.	No	12.2	11.1	12.1	11.3	11.8	10.5	30.9	100	0.000
	Yes	12	12.1	14.7	14.6	13.5	10.4	22.7	100	
Wealth Index of the household	Poor	12.0	11.0	12.0	10.8	11.6	10.8	31.9	100	0.000
	Rich	12.4	12.3	14.8	15.3	13.9	10.1	21.4	100	
Region	Punjab	11.6	11.4	13.2	12.9	12.9	11.2	26.9	100	0.007
	Sindh	12.9	11.8	13.7	13.2	12.9	9.5	26	100	
	KPK	12.3	12.2	11.8	11.1	11.2	9.8	32.4	100	
	Balochistan	14.2	13.3	13.3	10.8	10.6	9.3	28.4	100	
Type of place of residence	Urban	11.2	11.8	14.3	15.1	14.1	9.8	23.8	3119	0.000

	Rural	12.6	14.3	12.6	11.4	11.8	10.8	29.4	6365	
--	-------	------	------	------	------	------	------	------	------	--

Table 3: OLS Regression Results

Variables	Model 1 (Pakistan)	Model 2 (Rural)	Model 3 (Urban)
Current use of FP (Not using FP method®)			
Using modern FP method	-0.075** (0.051)	-0.68** (0.075)	-0.120* (0.067)
Using traditional FP method	-0.165* (0.065)	-0.029* (0.096)	-0.324*** (0.082)
Women education (No Education®)			
Primary	-0.218*** (0.059)	-0.206*** (0.077)	-0.253*** (0.087)
Secondary	-0.382*** (0.077)	-0.370*** (0.130)	-0.385*** (0.091)
Higher	-0.454*** (0.092)	-0.331*** (0.176)	-0.473*** (0.107)
Husband education level (No Education®)			
Primary	-0.163*** (0.058)	-0.231*** (0.073)	-0.032 (0.096)
Secondary	-0.249*** (0.051)	-0.281*** (0.066)	-0.130* (0.078)
Higher	-0.353*** (0.070)	-0.360*** (0.098)	-0.245** (0.097)
Women's Ideal number of Children	0.609*** (0.019)	0.573*** (0.025)	0.694*** (0.031)
Woman's Ideal number of Sons	0.140*** (0.025)	0.150*** (0.032)	0.085** (0.041)
Husband desire for Children (Both want same®)			
Husband wants more	0.170*** (0.045)	0.185*** (0.061)	0.148** (0.064)
Husband wants fewer	-0.323*** (0.088)	-0.333*** (0.118)	-0.292** (0.126)
Women working status (Not working®)			
Currently Working	-0.178*** (0.044)	-0.222*** (0.058)	-0.118* (0.068)
Women age at birth (Up to 18 years®)			
19 and above years	-0.327*** (0.42)	-0.314*** (0.055)	-0.338*** (0.064)
Unwanted births (Achieved Ideal Size®)			
Achieved more than Ideal Size	-1.93*** (0.49)	-2.016*** (0.066)	-1.79*** (0.069)
Not yet achieved ideal size	2.25*** (0.053)	2.334*** (0.071)	2.147*** (0.077)
Visit of FP worker (No®)			
Yes	-0.013 (0.043)	-0.023 (0.057)	-0.057 (0.066)
Heard FP message on T.V. (No®)			
Yes	-0.099* (0.043)	-0.091 (0.057)	-0.123** (0.066)

	(0.043)	(0.058)	(0.059)
Wealth status of household (Poor®)			
Rich	-0.015 (0.053)	-0.003 (0.071)	-0.057 (0.077)
Type of place of residence (Rural®)			
Urban	-0.002 (0.049)		
Region (Punjab®)			
Sindh	-0.136*** (0.048)	-0.133* (0.72)	-0.111* (0.061)
KPK	-0.103* (0.058)	-0.125* (0.071)	-0.029 (0.109)
Balochistan	-0.538*** (0.128)	-0.633*** (0.161)	-0.255 (0.208)
Intercept	2.621 (0.085)	2.831 (0.106)	2.038 (0.145)
Adjusted R2	0.677	0.664	0.708
Note: Numbers in brackets are standard errors. *, **, *** represent significance level at 10%, 5% and 1% respectively.			

Multivariate Analysis

For multivariate analysis, OLS regression was applied due to the count nature of response variable. In order to check the composed effect of independent variables on outcome variable, they were modeled together. Moreover, three models were run for total sample of Pakistan, rural and urban sample to expand the analysis for each domain.

Current use of contraceptive, women education level, husband education level, ideal number of children, ideal number of sons, Husband desire for children, women working status, age at first birth, unwanted births, visit of FP worker, heard FP message on T.V., wealth index, type of place of residence, region are modeled together.

According to the results, modern contraceptive methods have negative effect on fertility. It maintains its negative effect in rural and urban area but the magnitude is high in rural sample with high level of significance which indicates that modern methods are more effective in rural areas to reduce fertility level. Moreover, traditional method is also found to have negative and significant effect on fertility in both rural and urban areas. But surprisingly, the magnitude is high in urban area and it is highly significant which reveals that traditional methods are more effective in urban area. Both methods have negatively and highly significant effect on fertility which implies that they can play substantial role in fertility reduction if they are accessible for women. The results are evident with Amy Ong Tsui (2000). Similar results are

observed in Pakistan in previous studies (Robinson and Shah (1981), Rukanuddin and Hardee-Cleaveland (1992), Population Council (1997a) and National Institute of Population Studies (1997).

Women education has always been useful to empower them and increase their social status within the family. As evident from the facts that all level of education have negative and highly significant effect on fertility but higher level of education has high magnitude than low educational level as higher level of education has the highest magnitude in all three models than other two lower levels of education which means that the higher education women has, the more empower they expected to be in order to take reproductive decisions which will result in lower fertility level. Similar results are found in Pakistan by Zeba et al. (2000), Rashida and Adamchak (1996), Ali (2000), Sathar et al. (1988) and Sathar and Kazi (1997).

Furthermore, husband education is also very important in relation to fertility reduction. Because an educated husband can realize the importance of small family size and he will support his wife to have small number of children. The data furnishes that husband education is also affecting fertility in similar way as its wife's does. This suggests that the husband education will prove to be very functional for fertility reduction. Similar outcomes are obtained by Mauldin and Berlson (1975).

Women ideal number of children is more likely to increase fertility level. The results explain that

women ideal number of children is positively affecting fertility while having high level of significance in all three models. The high magnitude of this variable all three models is showing its effectiveness for contributing to high fertility level. Identical results are found in past Farooqui (1990), Sathar and John (1998), Naushin and Durr-e-Nayab, (1998) and (Mahmood, 1996).

Women ideal number of sons is contributing in same way as it is positively affecting fertility with high level of significance and maintaining its effect in all three models which is proved by Mussawar Shah (2007) and Mubashir Ali (2008). As Pakistan is male dominant society so husband desire for children plays important role in reducing fertility. The statistics elicits that those husbands who want more children than their wives, they are contributing to higher fertility with high level of significance while those who want fewer children than their wives, they are negatively affecting fertility with high level of significance. These results are matched with Mahmood and Ringheim (1997), Ezech (1993), Thomson *et al.* (1990), Mason and Taj (1987), Mott (1985), Beckman (1983) and Coombs and Fernandez (1978).

Age at births is also very important indicator of fertility as those women who gave first birth in late age (19 and above years), they are negatively affecting fertility which means that if they give birth in later age, their reproductive period will automatically reduce which will results in lower fertility. Identical results are established by Sathar (1975), Sathar and Akhtar (1998) and Sathar (2007) in Pakistan. Moreover, unwanted births is one of the major determinants of fertility as those women who yet to achieve ideal family size, they are contributing to high fertility with great magnitude which stands at 2.25. Alike results are manifest from past study in Pakistan Sathar and Kazi (1997), Casterline and Mendoza (2009).

Women working status provides them high social status due to sufficient economic position and enables them to take decisions about their reproductive health. The data clearly furnishes that working status of women is negatively affecting fertility level and it is also high significant which signals the importance of this factor and motivates to focus on demand side factors as well in order to control high fertility. The results are evident with John P. Tuma (2005).

Visit of FP worker is always helpful to reduce fertility because she belongs to same community and people respect her very much. She can directly interact with woman and her husband for contraceptive use. As evident from the consequences

that FP visit is negatively affecting fertility but there is important thing to note that it is not significant in all three models which indicates that although it has substantial importance to reduce fertility level but it is not showing appropriate effect to reduce fertility because of many factors as LHWs have high work burden from health department which diverts their attention from FP services while they always face issues like delay in salaries and lack of incentives which de-motivate them to perform efficiently. Comparable results are observed in Pakistan by Naushin and Karin (1996) and Mary (2001).

In addition, wealth provides alternative sources of enjoyment rather than just sexual activity while it also increases opportunity cost of married couples which results in low fertility level of women. The outcomes explain correspondingly as wealth index is negatively affecting fertility but it is not significant which means that this factor is not adequately acting. It may be due to high son preference in our society which also cause large number of girls and ultimately cause in high fertility level.

Adding further, type of place of residence plays vital role in molding woman's attitude towards different fertility behaviors. As reflect from figure that urban area is making negative impact on fertility because those women who live in urban area, they have more opportunities for education, source of information and access to contraceptives which consequently reduce fertility level. The results are evident from Syed (1979), Sathar and Mason (1993), Yusuf and Retherford (1981), Sathar (1979). In Pakistan, more than half of the population lives in rural areas where there is lack of education, health services and source of information.

In Poisson regression to check the robustness of the outcomes, we found qualitatively similar results. The results of Poisson regression are mentioned in annexure.

RECOMMENDATIONS

(a) Supply side of contraceptive must be strengthened so that current demand can be met and unmet need may be dropped down. This can be achieved by approaching married couples at household level who do not have access to contraceptives because women do have knowledge about contraceptives but due to social constraints they either hesitate to go in family welfare centers because the stigma of births spacing is attached to this or it is economically difficult for them. (b) There is great need to institutionalize the family planning programmes. Lady health worker could play vital role in this regard. Due to lack of appropriate health knowledge and sufficient education along with work burden from health

department, these lady health workers are unable to show adequate progress as expected from them. So they should provide substantial trainings and financial assistance (increase in salary and incentives) so that they can perform their duties with full dedication and commitment. Additionally, in rural area these LHWs are supposed to be most important source of communication with women because they belong to the same community and people have respect for them while the women can discuss their reproductive issues freely with them. Moreover, she can also convince the husbands in order to limit their family. (c) Education of both women and husband is extremely important which indirectly affect fertility level. Female education is the most important factor which comes across in shaping her family size. An educated woman would have more economic opportunities while on the other hand her opportunity cost also goes at higher level as compared to an uneducated woman. Moreover, she can realize the importance of small family size keeping in view the economic condition of household as well as macro level since she would have sufficient exposure and she becomes more modernize studying in schools and colleges. In contrast, uneducated woman consider her total number of children as her real power within the household because of the social environment of the society. She spends most of the time at home and due to lack of education and source of earning she becomes disempowered among her family members. In this regard, she has to obey the wishes of her husband and in laws. Further, education automatically delays the age at marriage for female which ultimately reduce her reproductive period and results in fewer fertility level. (d) Son preference can only be reduced by empowering women and providing them economic opportunities as parents especially from poor household consider their sons as the prime source of earning. So when women get more jobs and they will earn for their families, the reception will be reversed. (e) Ideal family size which men and women set in their minds matters a lot in shaping their family size in future. This issue can be resolved by providing health education and importance of small family size at school and college level. Media and LHW can be very useful source to motivate and convince men and women to limit their family size. (f) In Pakistan, societies are attributed to have patriarchal systems. Man is the real head and breadwinner of the household. He makes decisions and imposes his wishes on woman within house. In most of cases, woman cannot take decision even about her reproductive behavior but her husband who usually decides this. So there should be more focused to mobilize male members so that they would support their wives for small family size. Here again, health education for male can play vital role to motivate them accordingly. (g) It is the poor economic

condition which becomes prime reason to disorder and disruption of any household. There is almost fifty percent of female population exist in the county. Illiterate women are totally rejected as far as economic opportunities are concerned but on the other hand despite having sufficient education women do not get jobs which affect their social and economic condition very badly. In this regard, sufficient economic opportunities for females must be introduced in order to empower them. (h) Age at first birth can only be increased by providing female education with health awareness at initial state before marriage while parents should be mobilized about the dangers of early marriages through electronic media and community workers. Professional doctors are the one who can prove to be extremely beneficial to achieve this goal. People obey their instruction at any cost and prefer their suggestions. So population department should be sensitized to doctors in every area especially in rural community and deliver this message through them. In addition, education is the factor which affects age at marriage and ultimately age at first birth increases. (i) Women especially uneducated women, who do not know about family planning programmes, face unwanted pregnancy due to lack of knowledge and accessibility to any health service or contraceptives. This phenomenon can be overcome through mobilization and knowledge at household level. Lady health workers should provide awareness and access to contraceptives at household level directly to women and keep in touch with married women on regular basis while educating her family members especially husband about the use of contraceptive. Lady health workers are more important in the sense because she belongs to the same community and have respectable status within the community. They can increase the confidence of married couples for using contraceptives and remove the doubts of dangers which are attributed to contraceptive usage. (j) Electronic and print media is always very important to educate and mobilize people all over the country. This source of information is considered the most reliable and people do trust whatever information they receive from these sources while the scope and coverage of these sources is also very high. So media should be utilized while community health workers should enforce these efforts to be more effectual all over the country in order to change the attitude of women towards small family size. (k) Although supply factors are very important to reduce fertility and increase use of contraceptive but without demand factors they lose their appropriate impact which cannot be ignored. It would be extremely useful to combine demand and supply factors for policy formation and programmes implementation.

REFERENCES

- [1] Cuca, R. and Stud, S. P. (1980) "Family Planning Programmes and Fertility Decline" winter 5(4):183-90
- [2] Mauldin. W. P and Berelson. B "Conditions of fertility decline in developing countries", 1965-75. Stud Fam Plann. May; 9(5):90-147.
- [3] Arnold. F and Zhaoxiang, L (1986) "Sex Preference, Fertility, and Family Planning in China", Population and Development Review, Vol. 12, No. 2, pp. 221-246.
- [4] Mary Arends-Kuenning (2001) "How Do Family Planning Workers' Visits Affect Women's Contraceptive Behavior in Bangladesh" Demography, Vol. 38, No. 4, pp. 481-496.
- [5] Goldin, C. and L. Katz, (2000) "Capturing the Demographic Bonus in Ethiopia: The Role of Gender Equitable Development and Demographic Actions" Green Cover 36434-ET, the World Bank, Poverty Reduction and Economic Management 2 (AFTP2), Country Department for Ethiopia, Africa, "Career and Marriage in the Age of the Pill," American Economic Review, Vol. 90, No.2, May, pp. 461-5.
- [6] Abdul Hakim (1994) "Factors affecting fertility in Pakistan". The Pakistan Development Review 33:4 Part II (Winter 1994) pp.685-709.
- [7] Ministry of Population Welfare and the Population Council. 1995. "Pakistan Contraceptive Prevalence Survey 1994-95". Population Council, Islamabad.
- [8] Syed, Sabiha H. (1979) "Communications channels and family planning in Pakistan," Studies in Family Planning 10, no. 2: 53-60.
- [9] National Institute of Population Studies (NIPS) and IRD/Macro International Inc. 1992. "Pakistan Demographic and Health Survey 1990/1991". Columbia, MD: IRD/Macro International.
- [10] Pakistan Demographic and Health Survey, 1990-91 "National Institute of Population Studies Islamabad".
- [11] Pakistan Demographic and Health Survey, 2006-07 "National Institute of Population Studies Islamabad". Syed Mubashir Ali (2008) "Does son preference matter". Journal of Biosocial Science, 21: pp 399-408.
- [12] Barkat-e-Khuda, Roy, N, C. Dewan, Rahman, M. Md (2009) "Family planning and fertility in Bangladesh" Asia-Pacific Population Journal.
- [13] Angeles, G et al. (2001) "A meta-analysis of the impact of family planning programmes on fertility preferences, contraceptive method choice and fertility"
- [14] Arnold, F. (1985) "Measuring the effect of sex preference on fertility: The case of Korea". Demography 22, 280-288.
- [15] Miller, G. (2005) "Contraception as development, New evidence from family planning in Colombia" NBER working paper w11704
- [16] Zeba Sathar, Cynthia B. Lloyd, Cem Mete, Minhaj ul Haque (2000) "Schooling Opportunities for Girls As a Stimulus for Fertility Change in Rural Pakistan". 2000 No.143.
- [17] Zeba Sathar and Batool Zaidi (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 2-4 December 2009.

ANNEXURE

Table 6: Poisson Regression Results

Variables	Model 1 (Pakistan)	Model 2 (Rural)	Model 3 (Urban)
Current use of FP (Not using FP method@)			
Using modern FP method	-0.034* (0.018)	-0.031* (0.025)	-0.045* (0.026)
Using traditional FP method	-0.045* (0.023)	-0.034* (0.033)	-0.064** (0.033)
Women education (No Education@)			
Primary	-0.061*** (0.022)	-0.051* (0.029)	-0.068** (0.034)

Secondary	-0.137*** (0.031)	-0.120* (0.053)	-0.143*** (0.039)
Higher	-0.194*** (0.037)	-0.125* (0.072)	-0.210*** (0.047)
Husband education level (No Education®)			
Primary	-0.027 (0.020)	-0.040* (0.024)	-0.002 (0.034)
Secondary	-0.070*** (0.018)	-0.076*** (0.023)	-0.052* (0.030)
Higher	-0.067*** (0.025)	-0.087*** (0.033)	-0.035** (0.038)
Women's Ideal number of Children			
	0.109*** (0.006)	0.099*** (0.007)	0.136*** (0.010)
Woman's Ideal number of Sons			
	0.020*** (0.007)	0.021** (0.009)	0.017 (0.014)
Husband desire for Children (Both want same®)			
Husband wants more	0.054*** (0.015)	0.059*** (0.019)	0.052** (0.025)
Husband wants fewer	-0.071** (0.031)	-0.083** (0.040)	-0.038 (0.050)
Women Occupation (Not working®)			
Currently Working	-0.053*** (0.016)	-0.059*** (0.020)	-0.042 (0.026)
Women age at birth (Up to 18 years®)			
19 and above years	-0.083*** (0.014)	-0.083*** (0.018)	-0.072*** (0.024)
Unwanted births (Achieved Ideal Size®)			
Achieved more than Ideal Size	-0.571*** (0.019)	-0.578*** (0.025)	-0.561*** (0.031)
Not yet achieved ideal size	0.413*** (0.017)	0.414*** (0.023)	0.418*** (0.028)
Visit of FP worker (No®)			
Yes	-0.001 (0.015)	-0.007 (0.019)	-0.001 (0.025)
Heard FP message on T.V. (No®)			
Yes	-0.022 (0.016)	-0.030 (0.021)	-0.014 (0.024)
Wealth status of household (Poor®)			
Rich	-0.004 (0.019)	-0.021 (0.025)	-0.021 (0.028)
Type of place of residence (Rural®)			

Urban	-0.003 (0.016)	omitted	omitted
Region (Punjab®)			
Sindh	-0.025* (0.017)	-0.059 (0.020)	-0.030 (0.026)
KPK	-0.019* (0.018)	-0.017 (0.024)	-0.013 (0.032)
Balochistan	-0.010*** (0.031)	-0.126*** (0.039)	-0.067 (0.052)
Intercept	1.15 (0.029)	1.21 (0.035)	1.12 (0.)
Adjusted R2	0.571	0.623	0.748
Note: Numbers in brackets are standard errors. *, **, *** represent significance at 10%, 5% and 1% respectively.			