A SOCIO-ECONOMIC STUDY OF SON PREFERENCE AND THE DESIRE FOR ADDITIONAL CHILDREN IN PAKISTAN

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ABSTRACT

This study examines the role that son preference plays in determining the desire for an additional child in Pakistan. It argues that the desire for an additional child is among other factors largely determined by women's ideal number of sons which shape both her future fertility decisions and behavior. Using the 2017-18 PDHS data, the study investigates the role of son preference by employing logistic regression analysis on 9,674 currently married women. Controlling for factors such as women's education level, her employment and wealth status, the empirical evidence strongly suggests the prevalence of son preference and its significant impact on future fertility decisions. The evidence points out that compared to women who want less than or equal to one son, those who want 2 sons are 1.27 times more likely to desire another child; and those whose ideal number of sons is 3 or more are 2.0 times more likely to want another child. Similarly, women who have not yet reached their ideal number of sons are more likely to want an additional child, as opposed to those whose living number of sons has exceeded their ideal number. Additionally, the study also looks at the role that number of living children play in shaping future fertility decisions. It finds that even among women with 4+ living children the desire to continue childbearing remains high among those with a larger number of desired sons; those whose ideal number of sons was 3 or more were 2.35 times more likely to want an additional child. It is suggested that investments in female education and employment along with social security schemes that support older persons could help in reducing the high level of demand for sons in the country.

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Contents

Chapter One

Introduction

According to the Population Census of 2017 Pakistan's population is growing at a worrisome rate of 2.4 percent annually since the year 1998. This trend in the growth of the country's population is indeed alarming. However, what is even more disturbing is that the future projections suggest a continued growth in the country's population. According to the World Population Data Sheet 2022 by the Population Reference Bureau, the rate of natural increase of the country's population stands at 2.0% in 2022 -second only to Afghanistan in South Asian region and above the region's average of 1.4% (PRB, 2022).

The Pakistan Population Situation Analysis Report 2020 by the UNFPA suggests a higher growth. It voices concern for the future of the country and serves as a call of action for both government officials and policy analysts alike:

"…the United Nation's Population Division's medium projection shows that Pakistan's projected population will reach 263 million by 2030 and 383 million by 2050, i.e., an increase by about 84% during the 2017-2050 period, unless serious actions are undertaken to halt population growth and rationalize population dynamics." (UNFPA, 2020).

With a total fertility rate of 3.6 births per woman, Pakistan is only second to Afghanistan in the region of South Asia. Being the fifth most populous country of the world, Pakistan already faces grave challenges when it comes to meeting its sustainable development goals (SDGs), and the growing pressure of an ever-increasing population only adds to the burden. More specifically, a swelling population size acts as hindrance towards meeting the SDGs related to ending poverty (goal 1); ensuring food security (goal 2); reducing maternal, neonatal and under-5 mortality (goal 3); ensuring quality education (goal 4); achieving gender equality (goal

5); ensuring availability of water and sanitation (goal 7); promoting productive employment and decent work (goal 8); and finally it acts as a barrier in the efforts to combating climate change and its impacts (goal 13).

Thus, in order to halt population growth, it is imperative to bring down the fertility rate and for that an understanding of the fertility intentions, behaviors and preferences is required. Fertility intentions have also been identified as a precursor of couples' and individual's fertility behaviors and are thus important in predicting future fertility trends (Friedman et al., 1994; Bongaarts, 2001; Bashir, 2017; Tanvir & Arif, 2018).

This thesis thus builds up on the rationale that an understanding of the guiding motives behind making a fertility-related decision is the key to addressing the issue of what some demographers and economists have termed 'population explosion' that Pakistan faces today. With the food supply growing at an arithmetic rate and the population growing exponentially, Pakistan perfectly fits the demographic theory posited by Malthus (Baig, 2021). Hence, there is an urgent need to devise a sound and effective population policy which targets the growing demand for additional children so that the exponential growth of population is controlled. What adds to the urgency is the fact that the decline has seen a very slow pace -of only 1.3 children- in Pakistan since the year 1990-91 when women in Pakistan had an average of 4.9 children as compared to the present average of 3.6 (PDHS, 2017-18).

In a patriarchal society like Pakistan, son preference is believed to be one of the leading factors guiding the couples' desire for additional children which drives the fertility rates upwards. Hence, Pakistan makes an interesting case study for the analysis that fertility itself is driven by a strong desire for sons as an increased number of births indicates there is a higher probability of having at least one son (Zaidi, 2013). Another study supports this argument of son preference being a driver of fertility as it reveals that prevalence of modern contraceptive use among

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women in Pakistan would have been 19% higher in the absence of son preference (Channon, 2017). A more recent study by Javed and Mughal (2020) reveals that son preference also has a strong impact on birth spacing in Pakistan, and women whose first two children were boys were 13 – 17% more likely to delay the next birth when compared with those whose first two children were girls.

Thus, the perception of sons for household welfare and a better standard of living in a patriarchal society consequently reinforces the view that sons are an asset to the family while daughters are merely a burdensome liability and an expense on the family.

An interagency statement by the OHCHR, UNFPA, UNICEF, UN Women and WHO outlines the many ways patriarchal societies place sons at a higher pedestal than daughters:

"The tradition of patrilineal inheritance in many societies coupled with a reliance on boys to provide economic support, to ensure security in old age and to perform death rites are part of a set of social norms that place greater value on sons than daughters." (WHO, 2011)

In Pakistan too, the society is highly patrilineal, that is, it is largely dominated by males who are the ultimate decision makers -whether it be in the public or the private sphere. This produces a power structure which relies on male authority and subverts control on the women of the society (UNFPA, 2012; Population Council, 2015).

Furthermore, patriarchy by its very nature produces a certain web of social relations which relies upon, produces and reproduces gender discrimination. Being a social construct, this system relies heavily on gender stereotypes, imposing the attitudes and behaviors which are aimed at uplifting male members of the society -thereby, surviving on the subordination of the female members. Hence, it is not uncommon to find an overwhelming preference for male offspring in most of the South Asian countries, like Pakistan, as the society relies on male members to steer the wheel of patriarchal practices forward (UNFPA, 2012; Zaidi, 2013).

The above discussion highlights the argument that among other attitudes, fertility behaviors and decisions too are largely guided by beliefs of patriarchy, thereby it is not an anomaly to observe an overarching preference for sons displayed by couples in patrilineal societies. With a TFR of 3.6, Pakistan faces immense challenges in the face of increasing demands of an ever-growing population which not only poses a demographic threat but also hinders economic growth and development. Hence, this study will attempt to analyze the role that son preference plays in determining the desire for additional children in Pakistan.

1.1 Problem Statement

A quick glance at Pakistan's population picture suggests that fertility transition in the country has been quite sluggish as the decline in the fertility rate has been very slow-paced during the last one and half decades. This poses grave challenges for not only the lives of the individuals involved, especially women, but it also has lasting impacts on the development prospects of the country. Thus, an unplanned and rapid increase in Pakistan's population calls for serious attention and consequently probes the question of son preference which is one of the driving forces behind the prevalence of such high growth rates (UNFPA, 2020).

In patriarchal societies like Pakistan, son preference and fertility often go hand in hand and in turn even determine the contraceptive prevalence rates as the desire for achieving a particular number of sons plays a significant role in maintaining high fertility (Westley & Choe, 2007). A study by Wazir (2018) also found that in Pakistan son preference and contraceptive use are significantly associated with each other, women with two sons had a contraceptive prevalence rate of 42 percent as compared to those women who had two daughters (29.2%).

Bongaarts (2013) used various successive rounds of Demographic & Health Surveys to estimate the Desired Sex Ratio for Boys (DSRB) of 61 countries, out of which Pakistan was

ranked as having the second highest DSRB. With a total fertility rate of 3.6, and women age 40 and over giving birth to 5.3 children on average (NIPS, 2019), it is imperative to analyze the guiding motives behind this prevalent culture of son preference in order to arrive at the bigger question of population explosion in the country (Population Council, 2015). Therefore, the current study aims to highlight the problem of the exponential growth of population in Pakistan in light of the prevalent patriarchal culture of son preference.

1.2 Research Question

The main research question of this study is: *What is the role of son preference in determining the desire for an additional child in Pakistan?*

Sub-Questions:

In particular,

1. To what extent does the ideal number of sons of a respondent impact her desire for an additional child after controlling for her socioeconomic characteristics?

2. To what extent does the ideal number of sons of a respondent impact her desire for an additional child after controlling for her socioeconomic characteristics, as well as her living number of children?

3. To what extent does the comparative number of ideal vs. living sons of a respondent influence her desire for an additional child after controlling for her socioeconomic characteristics?

1.3 Research Objectives

To address the afore-mentioned research questions, the study's main objective is to empirically investigate the role of son preference in determining the desire for an additional child in

Pakistan using the Pakistan Demographic and Health Survey 2017-18. Controlling for socioeconomic determinants of the respondent, the thesis aims to investigate the impact of different indicators of son preference on respondent's desire for an additional child. The study also aims to identify potential socioeconomic characteristics of a respondent that can influence her desire for an additional child (after reviewing relevant literature). Lastly, this research may help in providing insights for future research and policy making for all the stakeholders involved.

1.4 Significance of Study

The present situation of Pakistan's population profile calls for immediate measures to be taken to control the rapidly growing population. However, without an understanding of fertility intentions and desires, this problem cannot be solved. This study attempts to understand fertility desires driven by son preference in Pakistan which ultimately translates into higher fertility and rapid population growth. This implies that the phenomenon emerges out of an evident gender bias after birth as opposed to high sex ratios at birth. Hence, it is the patriarchal structures prevalent in the society which reinforce son preferring behaviors and attitudes, thereby creating a climate of discrimination against women and girls in the country (Population Council, 2015).

This study can be of great significance for people of academia, policy makers and population management authorities as the study will add to the literature on fertility and population growth. It can also help aid in building the forward-looking analysis for the role that son preferring attitudes play in shaping the fertility behaviors of couples and consequently the future demand of children in the country. Furthermore, the study would help to formulate specific policy proposals in a coherent and holistic way incorporating possible significant variables to understand fertility-related choices and behavior of women in Pakistan.

Following the brief introduction and objectives outlined in Chapter 1, the rest of the study is structured as below. Chapter 2 highlights comprehensive literature giving a brief review on the topic both from across the world and Pakistan, and by discussing the findings of previous studies the chapter picks up on the research gap in the body of literature. This chapter also discusses the subject matter in the light of theoretical inspiration thereby giving a gendered lens to the analysis by incorporating a discussion of patriarchal theories proposed by some of the renowned feminist writers. The next chapter 3 discusses the research methodology including data source, research design, sample design and size, data source, description of variables, data analysis and econometric techniques used to investigate the role of son preference in shaping the demand for future children in Pakistan. Chapter 4 presents results both in the form of descriptive analysis and empirical findings of the data from regression analyses. Lastly, chapter 5 provides the conclusion along with possible policy proposals based on the findings of study and provides the limitations of the study.

Chapter Two

Review of Literature

2.1 Introduction

Fertility decisions are guided by certain set of conditions and attitudes or behaviors of couples around the world. However, when it comes to the couples' preference towards attaining a specific gender of the child, a preference for sons seems to be quite prevalent in some parts of the world, particularly South and East Asia. At the same time, countries like South Korea, China, India, Nepal, Bangladesh and Pakistan experience male dominance and control as patriarchy and gender inequality prevails in the region.

2.2 Literature related to son preference around the world:

Most countries in the East and South Asian regions are areas of strong cultural preference for sons. Studies from countries like Bangladesh, India, Pakistan, Nepal, Sri Lanka, China and South Korea have repeatedly confirmed a persistence of son preferring culture which has translated into reproductive attitudes promoting sex preference (Jayaraman et. al., 2009). The practice of patrilineal family system is described to be very rigid in countries like China, South Korea, and Northwest India (Gupta et al., 2003).

A cross-country study of China, India and the Republic of Korea investigated the persistence of son preference by comparing the extent of gender discrimination through sex composition of children, differential stopping behavior, sex-selective abortion and sex-selective infanticide (Gupta et al., 2003). Through their interviews with the oppressed and marginalized women, the authors asserted that the kinship system and the rigidity in the construction of gender -driven by patriarchal forces- pushed women to desire a male offspring in order to elevate their familial

status. Similarly, an earlier study observed a strong prevalence of son preference in some developing countries -North India, Nepal and Morocco. Results from Indian cities of Lucknow, Uttar Pradesh, Delhi, as well as from Bangladesh and Morocco indicated that ensuring the survival of one or more sons became the ultimate factor upon which the decision to lower fertility was hinged (Repetto, 1972).

Demographic & Health Survey data from Nepal, India, and Bangladesh was used in a 2009 study to examine how the family size and composition impacted reproductive behavior in these South Asian countries. Jayaraman et al. (2009) maintain the relevance of number of sons in determining the desire for another child and subsequently the use of contraceptives. Moreover, they point out that the association between parity and number of sons with reproductive decisions was stronger in case of Bangladesh and Nepal than India. However, within India the associations were generally stronger in northern states than in South India (Jayaraman et al., 2009).

Chadhuri (2012) also noted that the desire for sons was the main driver of excess fertility in India and suggested policies aimed at challenging son preferring attitudes in the country. The extent of influence that son preference can exert on the country's fertility rates can be gauged by the author's estimates from the National Fertility and Health Survey 2005-06; whereby parity progression driven by son preferring fertility behavior resulted in 7% more births in the country.

The phenomenon of son preference has such a strong hold over the fertility behavior and decisions of people in the South and East Asian region that it influences the parity progression and contraceptive use of couples too. This implies that the number of sons borne already exert an overarching influence over the future fertility-related decisions of couples -with India and Nepal showing the strongest results (Jayaraman et al., 2009; Channon, 2015). Moreover, a

study conducted in Thailand among ethnic Chinese and Thai couples showed that preference for the sex of children varied among male and female respondents, with men on average having a stronger inclination towards son preference -however, it varied by region and area of residence (Knodel & Parachuabmoh, 1976). While husbands and wives seem to have slightly different opinions on son preference, it is worthwhile to note that wife's attitudes towards future childbearing played a crucial role in fertility-related decisions (Knodel & Parachuabmoh, 1976; Chaudhuri, 2012).

Interestingly, the cultural norms and beliefs guided by patriarchy have such strong hold over people's lives that they seem to have persisted even on foreign soil. Studies have revealed that there is a strong persistence of cultural norms among Asian immigrants to Canada (Almond et al., 2013), US (Almond et al., 2008; Abrevaya, 2009) and the UK (Dubuc et al., 2007) as the sex ratios tend to be substantially elevated at higher parities when previous children are all girls. Religion too has been studied as a factor promoting son preferring behavior among Asian immigrants to Canada. While Christians and Muslims did not appear to be using abortion for selecting sons, they nevertheless showed a desire for male offspring (Almond et al., 2013) as these communities tended to continue childbearing until they reached a desired number of male offspring -a phenomenon known as differential stopping behavior. Basu and De Jong (2010) also asserted that where sex-selective abortion was not socially acceptable, couples usually resorted to continuing their fertility until their desired number of sons was reached.

2.3 Literature related to son preference in Pakistan:

Keeping in mind that patriarchy is deeply entrenched in Pakistan, it is imperative that we understand the workings of the society through an analytical lens to arrive at answers for understanding son preferring attitudes. Guilmoto (2009) found that son preference in Pakistani society was largely a result of the persisting patriarchal norms and an overwhelming reliance

on non-egalitarian gender roles. Another study asserted that it was the prevalence of the perception of men's role as bread winners, providers of social security and maintenance of kinship ties which placed the male child at a higher pedestal than a female child (Agha, 2018).

As mentioned earlier, Bongaarts (2013) reported after an examination of 61 countries that Pakistan was the second highest son preferring country in his sample. Some oft-cited reasons in the literature indicating a strong inclination towards preference of sons range from inheritance issues, parents' expectations of son's support in old age, and the desire for the son to carry on the family's name (Ali, 1989; Saeed, 2015). Moreover, the patrilineal structure of the Pakistani society brings into consideration the stigmas and stereotypes attached to bringing up daughters such as the aspect of their greater social vulnerability and the financial burden of marriage and dowry costs (Ganatra et al., 2001; Population Council, 2015; Ahmed et. al. 2021).

The association between son preference and female participation in the household decision making is a well-researched subject in Pakistan. Socioeconomic topographies exhibiting son preferring behavior and their impact on women's familial status and their household bargaining position is an issue of great relevance in the country. Basu and Koolwal (2005) further argue that bearing a male child plays a pivotal role in a woman's life, especially regarding her stay and say in the house.

Women desire male children as sons bring with them the prospect of improved familial status for the mother, thereby opening a gateway of freedom and power in the household. Thus, the resulting shift in power and improved familial status are two key factors for women to pursue sons and not daughters (Barber, 2000; Purewal, 2010; Butt & Asad, 2017; Javed & Mughal, 2018; Zimmerman, 2018). More recently, Ahmed et. al. (2021) while studying the impact of patriarchal family tendencies in Pakistan also asserted that male children are preferred over

female ones in the country, thereby confirming the presence of son preference in the social fabric of the country.

The effects of son preference on fertility behaviors and preferences are also reflected in the stagnating rates of contraceptive prevalence in Pakistan (Population Council, 2015). Similarly, several studies have revealed that pregnancies become increasingly unwanted as the number of surviving sons increases which shows that couples in Pakistan are in a continual pursuit of sons (Zaidi & Morgan, 2016; Javed & Mughal, 2020). In other words, the sex of the surviving children is a key factor in the desire for continued childbearing (Javed & Mughal, 2022) and it consequently determines the progression to higher birth parities as well as the use of contraception (Khan & Sirageldin, 1977; Rukanuddin, 1982; Hussain et al., 2000; Saeed, 2015; Zaidi & Morgan, 2016).

While couples in India, Nepal and China resort to sex-selective practices and use of NRTs - new reproductive technologies- (Purewal, 2010), those in Pakistan tend to continue childbearing till they reach their ideal or desired number of sons as discussed above (Zaidi and Morgan, 2016; Channon, 2017; Javed & Mughal, 2020; Javed & Mughal, 2022). Javed and Mughal (2020) examined the change in son preference over the past three decades in Pakistan and found strong evidence of differential stopping behavior at earlier parities and longer birth intervals amongst women who had sons as first or second born child.

Thus, it can be seen that the scholarship on the subject of son preference in Pakistan is in line with the international literature, that is, fertility behaviors get affected by desires in terms of future goals. However, what is interesting to note in case of Pakistan is the way son preference manifests itself, that is through differential stopping behavior, reflected in continued childbearing until the desired number of sons is achieved.

2.3 Research Gap

Although some previous studies have attempted to highlight the impact of son preference on fertility transition in the country, recent data has not been incorporated in the analysis to understand the process in Pakistan. Using the PDHS 2017-18 data, this thesis provides an updated empirical investigation of the issue. Moreover, this thesis aims to investigate the role of son preference in determining future childbearing goals by employing different indicators of son preference; namely, the respondent's number of ideal sons and their ideal vs. living number of sons. Finally, the thesis will add to the literature by assessing how the ideal number of sons of a respondent impact her future fertility desires once her living number of children are controlled for.

2.4 Theoretical Inspiration

In the above context, the theoretical grounds of the study remain rooted in patriarchal structures which govern the very system in which son preferring attitudes thrive. Hence, the study builds upon the notion of understanding that it is indeed the patriarchal forces which guide and motivate couples to pursue sons in Pakistan.

The concept of patriarchy has been put forward by many feminist theorists as an ideology of men's control and women's subordination. Prominent feminist figures such as Firestone (1971), Delphy (1977) and Barrett & McIntosh (1979) consider the hierarchical influence of male domination with an ideology of women's subordination and oppression as the true colors of patriarchy. Thus, it has been used in various ways within the literature by both radical and Marxist feminists in order to arrive at answers for the oppression and subordination of women.

In her groundbreaking feminist work *"Sexual Politics"* Kate Millet describes the concept of patriarchy as the way power operates within sexual relationship to produce certain power

dynamics in which men dominate women (Millet, 1969). Millet argued that the family should be considered as the most basic unit of analysis as it functioned to socialize children into sexually differentiated roles, temperaments and statuses, thereby, ensuring that women's subordinated status remains intact (Beechey, 1979).

McDonough & Harrison (1978) in *"Women Take Issue"* have also observed the role of patriarchy in controlling wife's sexuality and fertility in both the proletarian and the bourgeois family by concerning them with the production of heirs (Beechey, 1979). This is much in line with the proposed idea of patriarchy driving son preferring attitudes. The classic theory of patriarchy which Deniz Kandiyoti (1988) refers to in her paper *"Bargaining with Patriarchy"* discusses the prevalence of the phenomenon in countries like Turkey and Pakistan, as follows:

 "The young bride…. can establish her place in the patriliny only by producing male offspring." (Kandiyoti, 1988).

In this way, she mentions how the women are trapped inside this deeply entrenched culture of patriarchal forces and the only way to counter subordination and control in this societal structure is through the production of sons. Thus, it is rather ironic too how women themselves end up becoming participants in promoting the same system which oppresses them (Kandiyoti, 1988).

Thus, the present study picks up on the idea that patriarchy is indeed a major force driving couples to continue adopting son preferring attitudes. The relationship between patriarchy and son preference is a very strong one and the two often go hand in hand. Some feminists and demographers have even studied son preference as an indicator of patriarchy to formulate the Patriarchy Index in order to study the extent of gender inequality and power relations within the family (Gruber & Szoltysek, 2016). Indeed, son preference derives its strength from the

level of patriarchy prevalent in the society: the higher the levels of patriarchy and gender discrimination, stronger the son preference element in the people of that society (Cain, 1993).

2.5 Framework of the Study

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┌─────────────────────────────────────┐
│     Background/Control Variables     │
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┌───────────────────────────────────────────────────────────────┐
│                 Socioeconomic Characteristics                  │
│                                                                │
│   1.  Age          2. Woman's Educational Level    3. Wealth Status │
│                                                                │
│        4.  Current Employment Status    5. Urban/Rural Residence │
└───────────────────────────────────────────────────────────────┘
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┌──────────────────────────┐                    ┌──────────────────────────┐
│  Independent Variable(s)  │                    │    Dependent Variable     │
└──────────────────────────┘                    └──────────────────────────┘
            ⇩                                                ⇩
┌──────────────────────────┐                    ┌──────────────────────────┐
│   Ideal Number of Sons   │                    │                          │
│          (IS)            │   ⇨                │                          │
└──────────────────────────┘                    │                          │
                                                 │ Desire for an Additional Child │
┌──────────────────────────┐                    │          (AC)            │
│   Ideal Number of Sons   │                    │                          │
│           Vs.            │   ⇨                │                          │
│  Number of Living Sons   │                    │                          │
└──────────────────────────┘                    │                          │
                                                 │                          │
┌──────────────────────────┐                    │                          │
│                          │   ⇨                │                          │
│ Number of Living Children │                    │                          │
│          (LC)            │                    └──────────────────────────┘
└──────────────────────────┘
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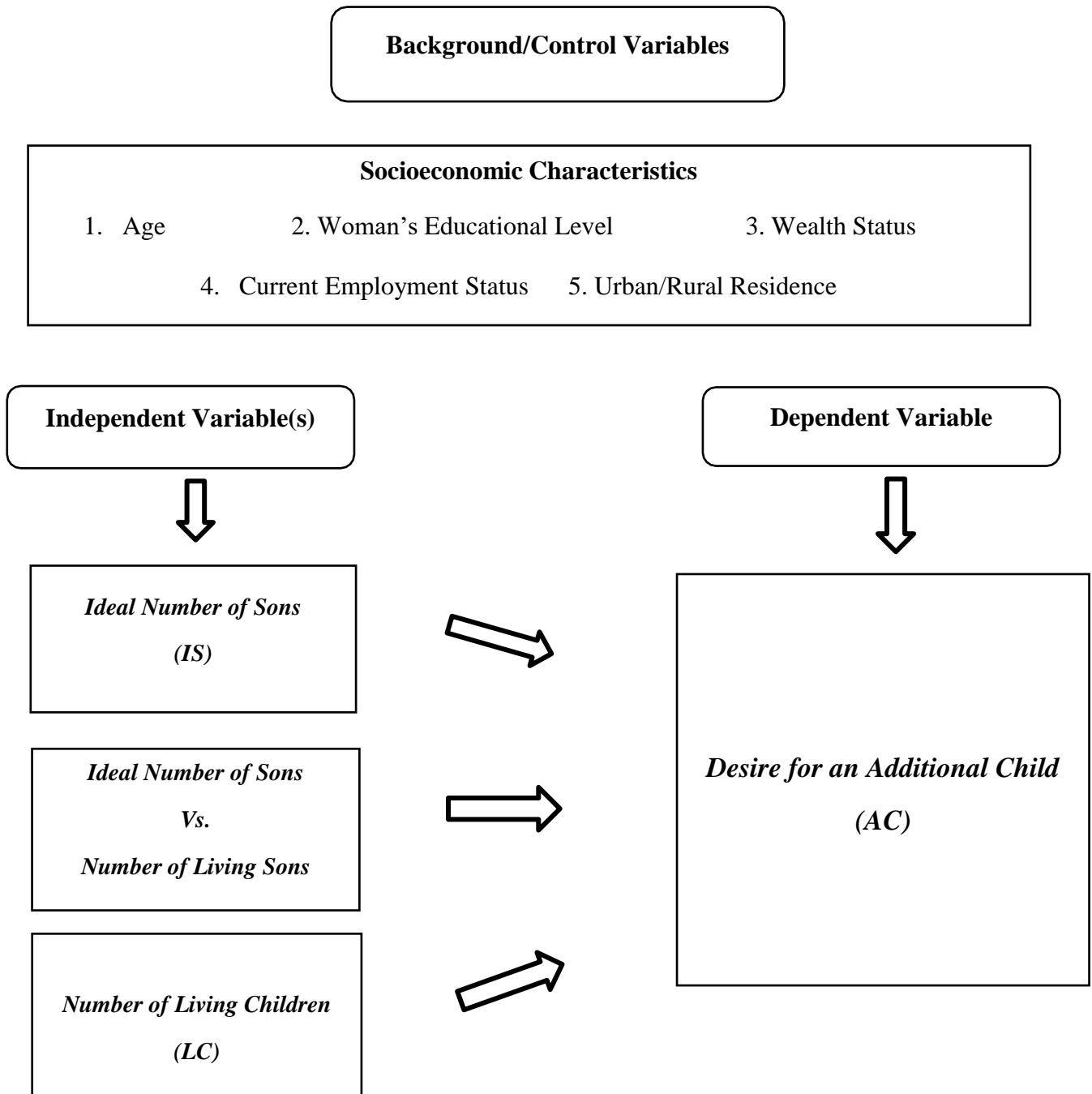
Chapter Three

Research Methodology

This section highlights the research methods employed by the present study. It includes the research design, sampling technique, data and sources, and lastly the data analysis technique.

3.1 Research Design:

The overall design of this study is quantitative as it is a survey-based study. The data for the socio-economic characteristics as well as the intervening variable of son preference and the outcome variable of additionally desired children was extracted from the Pakistan Demographic and Health Survey (PDHS) for the year 2017-2018.

3.2 Sampling Technique:

The 2017-18 PDHS followed a two-stage stratified sampling technique. This was achieved by separating each of the eight geographical regions of the country into urban and rural areas. The survey was successfully carried out in 561 clusters, after dropping 19 clusters due to security concerns during the fieldwork. The survey interviewed 15,068 ever-married women aged 15-49 in the country (including Azad Jammu and Kashmir and Gilgit-Baltistan). Information on the socioeconomic characteristics of the household population in the 2017-18 PDHS provides the context to interpret demographic and health indicators.

3.3 Sample Selection:

Since the present study required an analysis of the woman's desire for an additional child, it was imperative that data on currently married women was used. Hence, after checking for the current marital status of the woman (variable v501), a sample of currently married women was

drawn from the ever-married woman's dataset. ==Women who reported that they or their husband was sterilized or infecund were excluded from the analysis.== The data for the regions Gilgit Baltistan and Azad Jammu and Kashmir were also excluded from the dataset. The above regions were excluded on the advice of the concerned officials at the National Institute of Population Studies, Islamabad. The currently married women sample used in this thesis thus comprises of 9,674 women.

3.4 Data Source:

The current study uses the Pakistan Demographic and Health Survey data for the year 2017-18. The data has been extracted from the official DHS Program website.

3.5 Description of Variables:

All the variables in the current study were carefully chosen and constructed after reviewing the literature on the subject. Son preference is based on the attitudes towards fertility behaviors which are in turn affected by desires. Hence, it is imperative that son preference is studied in conjunction with desires to understand how the phenomenon manifests itself in Pakistan.

The mappings of all variables that are used in the current study is given in the following section.

3.5.1 Dependent variable

- *Desire for an Additional Child:* The respondent's desire for an additional child is used as a dependent variable in the logistic regression analysis to study the role that son preference plays in determining the demand for additional children in Pakistan. The variable is binary in nature as it is measured from the woman's response to a direct question asking if she desires an additional child or not – with the response being either yes or no.

3.5.2 Control variables

This study employed five control variables which broadly come under the umbrella of respondent's socioeconomic or background characteristics. These control variables are the respondent's age, residence, education level, wealth status and her current employment status.

3.5.3 Independent Variables

The main independent variables used in the current study were the respondent's ideal number of sons, ideal vs. living number of sons, and number of living children. A brief description of these variables is given below followed by a table showing operationalization of all variables used in the study.

- Ideal number of sons:

The ideal number of sons of the respondent are derived from her response to a question asking the woman about her ideal number of sons. After looking at the frequency distribution of the variable, the categories for the variable were defined as: ideal sons ≤ 1; ideal sons $= 2$; ideal sons ≥ 3. Accordingly, the data on the variable was recoded in Stata to assign the new categories to the responses with codes 0, 1 and 2 for the three respective categories.

- Ideal vs. living number of sons:

The variable ideal vs. living number of sons is a new variable constructed by making use of the data for the variables ideal sons and living sons of the respondent. While the variable ideal number of sons was used as stated above, the variable of living sons was constructed. The PDHS woman's questionnaire asks the respondent about their sons who live with them and those sons who are alive but do not live with them. Adding these two variables together

a new variable was formed which gave complete information on living number of sons of the woman. Using the ideal sons variable and the new variable of living sons the variable ideal vs. living sons was constructed with the categories defined as: ideal = living; ideal > living; and ideal < living. The variable ideal vs. living sons was then assigned codes with respect to the three categories as codes 0, 1 and 2.

- Number of living children:

The number of living children of the respondent are derived from her response to a question asking the woman about her number of living children. After looking at the frequency distribution of the variable, the categories for the variable number of living children were defined as: between 0 and 1; between 2 & 3; 4 and/or more children. Accordingly, the data on the variable was recoded in Stata to assign the new categories to the responses with codes 0, 1 and 2 for the three respective categories.

3.5.4 Variable Operationalization

Variable Name	Variable Type	Variable Measurement	Variable Definition
Outcome/Dependent Variable (Y)			
Desire for an Additional Child (AC)	Binary	DHS Question: Would you like to have another child, or would you prefer not to have any more children? (After the child you are expecting now).	Currently-married women who desire to have another child (including the ones who are currently pregnant).
Independent Variables (X)			
Ideal Number of Sons (IS)	Categorical	DHS Questions: (1) If you could (go back in time you did not have any children and)	Ideal number of sons of a currently-married woman. Categorized as:

		choose exactly the number of children to have in your whole life how many would that be?	*Ideal sons ≤ 1* *Ideal sons = 2* *Ideal sons ≥ 3*
		(2) How many would you like to be boys, how many would you like to be girls and for how many would it not matter if it's a boy or a girl?	
Ideal vs. Living Number of Sons (IL)	Categorical	DHS Questions: (1) How many would you like to be boys, how many would you like to be girls and for how many would it not matter if it's a boy or a girl? (2) How many sons live with you? How many sons are alive but do not live with you?	New variable generated by using the data on these questions. It gives the currently-married woman's ideal versus living number of sons. Categorized as: *Ideal Sons = Living Sons* *Ideal Sons < Living Sons* *Ideal Sons > Living Sons*
Number of Living Children (LC)	Categorical	(1) How many sons live with you? (2) And how many daughters live with you? (3) How many sons are alive but do not live with you? (4) And how many daughters are alive but do not live with you?	New variable generated by using the data on these questions. It shows the number of living children of a currently-married woman. Categorized as: *Between 0 & 1* *Between 2 & 3* *4 and more*
Socioeconomic Characteristics (Control variables)			
Age (A)	Categorical	(1) In what month and year were you born? (2) How old were you at your last birthday?	Age of currently married women in the range of 15-49 years of age. Categorized as:

			Ages less than 25 Ages between 25 and 34 Ages 35 and above
Education Level (EL)	Categorical	(1) Have you ever attended school? (2) What is the highest class you completed?	Highest level of schooling attended by the currently-married woman. Categorized as: *0 = no education* *1= primary* *2= secondary* *3= higher*
Current Employment Status (ES)	Binary	(1) Aside from your housework, have you done any work in the last seven days? (2) As you know, some women take up jobs for which they are paid in cash or kind. Others sell things, have a small business or work on the family farm or in the family business. In the last seven days, have you done any of these things or any other work?	Currently-married woman's (current) status of work or employment. Categorized as: *0 = no* *1= yes*
Wealth Status (WS)	Categorical	DHS Wealth Index placing households on a continuous scale of relative wealth. Households are separated according to five wealth quintiles.	Currently-married woman's wealth status of household. Categorized as: *1 = poorest* *2 = poorer* *3 = middle* *4 = richer* *5 = richest*
Urban/Rural Residence (R)	Binary	Type of place of residence where the household resides as either urban or rural.	Urban or Rural type of residence. Categorized as: *1 = urban* *2 = rural*

3.6 Data Analysis

The data analysis is divided into two sections. The first part includes a comprehensive descriptive analysis of all the control and independent variables with respect to the main

dependent variable, that is, the desire for an additional child. The second part consists of regression analysis, where logistic regression analysis is used to estimate the relationship between the respondents' desire for an additional child and independent variables, while controlling for their socioeconomic characteristics.

3.7 Regression Technique(s)

Since the outcome variable for the current study *"desire for an additional child"* is binary in nature, indicating whether or not the respondent desires another child. Logistic model of regression is applied when the outcome variable is structured in a binary response variable with multiple independent variables that may be categorical or continuous in nature.

3.7.1 Regression Equation & Functional Form(s):

Equation for the logistic regression analysis with *"desire for an additional child"* as dependent variable has the following functional form:

$$Ln\left(\frac{P}{1-P}\right) = \beta_0 + \beta_1 SE_1 + \beta_2 IS_2 + \beta_3 IL_3 + \beta_5 LC_5 + \epsilon\epsilon$$

 where,

P = Currently-married woman with a desire for having an additional child, such that y= (0, 1).

SE_1 = Socioeconomic characteristics of women (explained in the table below)

IS_2 = Ideal number of sons

IL_3 = Ideal vs. Living number of sons

LC_5 = Number of living children

ϵ = error term

β_0 = constant value

β_1 β_2 β_3 β_4 & β_5 =partial regression coefficients.

3.7.2 Regression Models

Following the functional form of the regression equation given above, this thesis employs three regression models to test for the independent effects of each of the independent variables on the *"desire for an additional child"* as stated in the conceptual framework of the study. The regression equations for the independent models take the following functional form:

$$\text{Ln} (P / 1 - P) = \beta_0 + \beta_1 X_1 + \quad + \beta_8 X_8 + e$$

Where:

P = probability of currently-married woman with the desire of having an additional child, such that y = (0, 1).

β_0 = regression constant

β_1, β_2, β_3 …, β_n = Regression coefficient for the particular independent variable 1,2,3…n respectively

X_1 = Woman's Age

X_2 = Residence

X_3 = Woman's Education level

X_4 = Wealth Status

X_5 = Woman's Employment Status

X_6 = Woman's Ideal No. of Sons; Ideal vs. Living No. of Sons.

Model 1 is used to test for the independent effects of the currently-married woman's background socioeconomic characteristics. Models 2 and 3 are used to test the independent effects of the variables Ideal No. of Sons and Ideal vs. Living No. of Sons respectively.

In addition to the above regression models, an additional logistic regression analysis is carried out using the following regression equation to test how the respondent's number of ideal sons influences their desire of having an additional child after controlling for their number of living children.

$$\text{Ln} (P / 1 - P) = \beta_0 + \beta_1 X_1 + ... + \beta_8 X_8 + e$$

Here, the variable X_8 denotes the *Number of Living Children* of the currently married woman.

3.8 Research Hypotheses

The following research hypotheses are tested in this study:

H1: Desire for an additional child is significantly influenced by the number of ideal sons of the respondent.

H2: Desire for an additional child is significantly influenced by the number of living vs. the ideal number of sons of the respondent.

H3: Desire for an additional child is significantly influenced by the respondent's ideal number of sons after controlling for their number of living children.

Results & Discussion

This chapter provides a detailed presentation of the descriptive analysis and the logistic regression results of the present study. The first section focuses on the descriptive statistics of all the key variables.

4.1 Descriptive Analysis

This section determines a range of key variables that features respondents' socioeconomic characteristics and the dependent variable. Tables 4.1a to 4.5 displayed below give the cross-tabulation results for all the key variables in the current study. Cross tabulations have been used for understanding the nature of the data.

Table 4.1a: Ideal Number of Sons of Currently Married Women aged 15-49 by their socioeconomic characteristics

Background Characteristic	Ideal Number of Sons				
	Ideal Sons ≤ 1	*Ideal Sons = 2*	*Ideal Sons ≥ 3*	*Total*	*p-value using chi-square test*
Total	29.06	40.25	30.69	100.0	
Age					
Less than 25	31.1	42.9	26.0	2,258	*0.000*
Between 25 & 34	29.1	42.2	28.8	4,176	
35 and above	27.7	35.9	36.4	3,240	
Residence					
Urban	34.2	41.9	24.0	4,896	*0.000*
Rural	23.8	38.6	37.6	4,778	
Education Level					
No Education	21.2	33.1	45.7	5,005	
Primary	29.8	47.3	23.0	1,307	*0.000*
Secondary	36.1	50.8	13.2	1,915	
Higher	46.2	40.3	9.0	1,447	
Wealth Status					
Poorest	18.8	27.2	54.0	1,848	
Poorer	19.0	38.0	43.0	1,860	
Middle	26.4	45.3	28.3	1,809	*0.000*
Richer	34.5	45.5	20.0	1,937	
Richest	43.3	44.3	12.3	2,220	

Currently Employed					*0.003*
Not Employed	29.5	39.6	30.9	8,403	
Employed	26.3	44.6	29.1	1,271	

*Significance determined by using chi-square test: significant if < 0.05

Table 4.1a above shows the percentage distributions of the respondent's socioeconomic characteristics by their ideal number of sons. The ideal number of sons was positively associated with the woman's age; 36% of the older women, aged 35 or higher, desired 3 or more sons compared with 26% of the youngest women aged less than 25.

As expected, a larger percentage of women in rural areas desired an ideal of 3 or more sons (37.6%) as opposed to urban women (24.0%). The educational level of woman was negatively, and linearly, associated with the ideal number of sons with only 9.0% of women with higher education reporting an ideal of 3 or more sons. In case of wealth status, the percentage distributions follow somewhat similar pattern as that of education, with the poorest reporting 3 or more sons as opposed to the richest -54.0% and 12.3% respectively. In case of employment status, the employed women reported a smaller ideal number of sons as opposed to the currently unemployed -29.1 and 30.9 percent respectively.

Thus, the above table revealed that the proportion of women reporting a significantly larger ideal number of sons were mostly those who were either from rural areas, or those with lower levels of education and belonged to a poorest or poorer wealth status.

Table 4.1b: Mean Ideal Number of Sons of Currently Married Women aged 15-49 by Respondent's Socioeconomic Characteristics

Background Characteristics	Ideal Number of Sons				
	Mean	Median	Std. Dev.	Total	F-statistic
Age					
Less than 25	0.9	1	0.8	2,258	
Between 25 & 34	1.0	1	0.8	4,176	0.006
35 and above	1.1	1	0.8	3,240	
Residence					
Urban	0.9	1	0.8	4,896	0.000
Rural	1.1	1	0.8	4,778	
Education Level					
No Education	1.2	1	0.8	5,005	
Primary	0.9	1	0.7	1,307	0.000
Secondary	0.8	1	0.7	1,915	
Higher	0.6	1	0.6	1,447	
Wealth Status					
Poorest	1.4	2	0.8	1,848	
Poorer	1.2	1	0.8	1,860	
Middle	1.0	1	0.7	1,809	0.000
Richer	0.9	1	0.7	1,937	
Richest	0.7	1	0.7	2,220	
Currently Employed					
Not Employed	1.0	1	0.8	8,403	0.553
Employed	1.0	1	0.7	1,271	

Significance determined by using chi-square test: significant if p-value < 0.05

The table 4.1b above displays the respondent's mean ideal number of sons according to her background socioeconomic characteristics. Overall, the pattern for ideal number of sons shows that women who belonged to the richest wealth quintile wanted an average of 0.7, while those from the poorest quintile desired 1.4 sons on average. Moreover, women with the highest level of education wanted an average of 0.6 sons compared with 1.2 desired by those with no education. Employment status, however, does not appear to have a significant association with respondents' desired mean ideal sons (p=0.553).

Table 4.2: Ideal vs. Living Number of Sons of Currently Married Women aged 15-49 by their Socioeconomic Characteristics

Background Characteristic	Ideal = Living	Ideal > Living	Ideal < Living	Total	
Total	29.10	25.75	45.15	100.0	**Significance**
Age					
Less than 25	33.1	48.8	18.2	2,258	
Between 25 & 34	31.5	24.1	44.4	4,176	
35 and above	23.2	11.8	65.0	3,240	*0.000*
Residence					
Urban	30.4	21.8	47.9	4,896	*0.000*
Rural	27.8	29.9	42.3	4,778	
Education Level					
No Education	24.9	29.0	46.2	5,005	
Primary	29.2	25.4	45.4	1,307	
Secondary	32.7	22.4	45.0	1,915	*0.000*
Higher	38.8	19.5	41.7	1,447	
Wealth Status					
Poorest	23.8	33.4	42.8	1,848	
Poorer	26.0	31.9	42.2	1,860	
Middle	28.9	24.6	46.5	1,809	*0.000*
Richer	31.3	22.3	46.4	1,937	
Richest	34.3	18.2	47.5	2,220	
Currently Employed					
Not Employed	29.3	26.0	44.7	8,403	*0.081*
Employed	28.1	23.9	48.0	1,271	

Significance determined by using chi-square test: significant if p-value < 0.05

The percentage distributions of the respondent's socioeconomic characteristics by their ideal vs. living number of sons is shown in table 4.2. Ideal was compared with living to see whether ideal was less than, equal to, or in excess of living children. The pattern revealed that older women were likely to have exceeded their ideal number of sons.

In case of residence, a larger proportion of urban women (47.9%) happened to have more living sons than their ideal number- for rural women this percentage was 42.3%. Furthermore, better educated and richer women were more likely to have achieved their desired number of sons, since their achieved number was the same as their ideal number.

Thus, table 4.2 has revealed that the proportion of women reporting an equal number of ideal and living sons were mostly those who were either from younger age groups and lived in urban areas.

Table 4.3: Desire for an Additional Child of Currently Married Women aged 15-49 by Respondent's Socioeconomic Characteristics

Background Characteristic	Desire for an Additional Child			Significance
	Have Another (Yes)	*No More (No)*	*Total*	
Total	62.09	37.91	100.0	
Age				
Less than 25	92.1	7.9	2,258	
Between 25 & 34	68.2	31.9	4,176	*0.000*
35 & above	33.4	66.6	3,240	
Residence				
Urban	59.0	41.1	4,896	*0.000*
Rural	65.4	34.6	4,778	
Education Level				
No Education	62.7	37.3	5,005	
Primary	59.1	40.9	1,307	*0.123*
Secondary	62.1	37.9	1,915	
Higher	62.8	37.3	1,447	
Wealth Status				
Poorest	70.7	29.3	1,848	
Poorer	65.8	34.3	1,860	
Middle	59.4	40.6	1,809	*0.000*
Richer	59.9	40.0	1,937	
Richest	55.9	44.1	2,220	
Currently Employed				
Not Employed	63.5	36.5	8,403	*0.000*
Employed	53.0	47.1	1,271	

*Significance determined by using chi-square test: significant if p-value < 0.05

Table 4.3 shows the percentage distributions of the respondent's socioeconomic characteristics by their desire for an additional child. The desire to have another child was inversely associated with the woman's age; 92% of younger women, aged less than 25, desired another child compared with 33% of the oldest women aged 35 or higher. In case of residence, 59% of women in urban areas wanted to have an additional child, however, for rural areas this figure was 65.4%.

Wealth status was inversely associated with the respondent's desire to have an additional child with a larger proportion of the poorest women wanting an additional child (70.7%) as opposed to the richest (55.9%). In case of employment status, a larger proportion of unemployed women (63.5%) reported a desire for an additional child as opposed to those who were currently employed (53%).

Thus, table 4.3 revealed that the proportion of women with a desire to have an additional child were mostly those who were either from younger age groups and rural areas, or those who had a poorer or poorest wealth status.
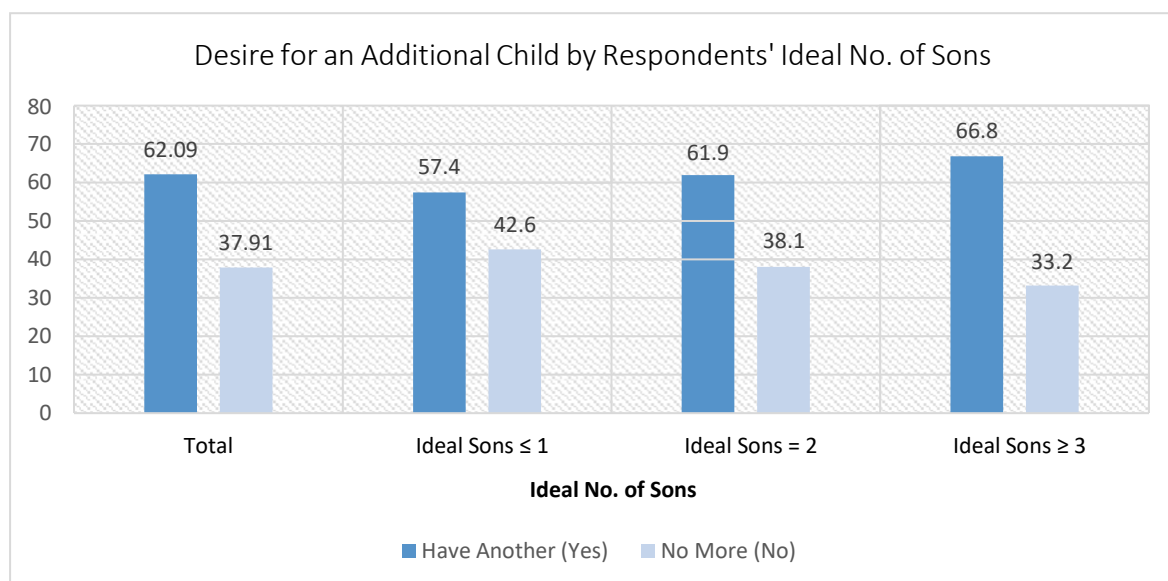
Table 4.4: Desire for an Additional Child among Currently Married Women aged 15-49 by Respondent's Ideal Number of Sons

Ideal Number of Sons	Desire for an Additional Child			
	Have Another (Yes)	No More (No)	Total	Significance
Total	62.09	37.91	100.0	0.000
Ideal Sons ≤ 1	57.4	42.6	2,811	
Ideal Sons = 2	61.9	38.1	3,894	
Ideal Sons ≥ 3	66.8	33.2	2,969	

Significance determined by using chi-square test: significant if < 0.05

Table 4.4 above shows the percentage distribution of respondent's ideal number of sons by their desire for an additional child. Respondents who wanted to have another child were mostly those whose ideal number of sons were 3 and more (66.8%).

Figure 4.1: Desire for an Additional Child by Respondents' Ideal Number of Sons in a clustered bar chart

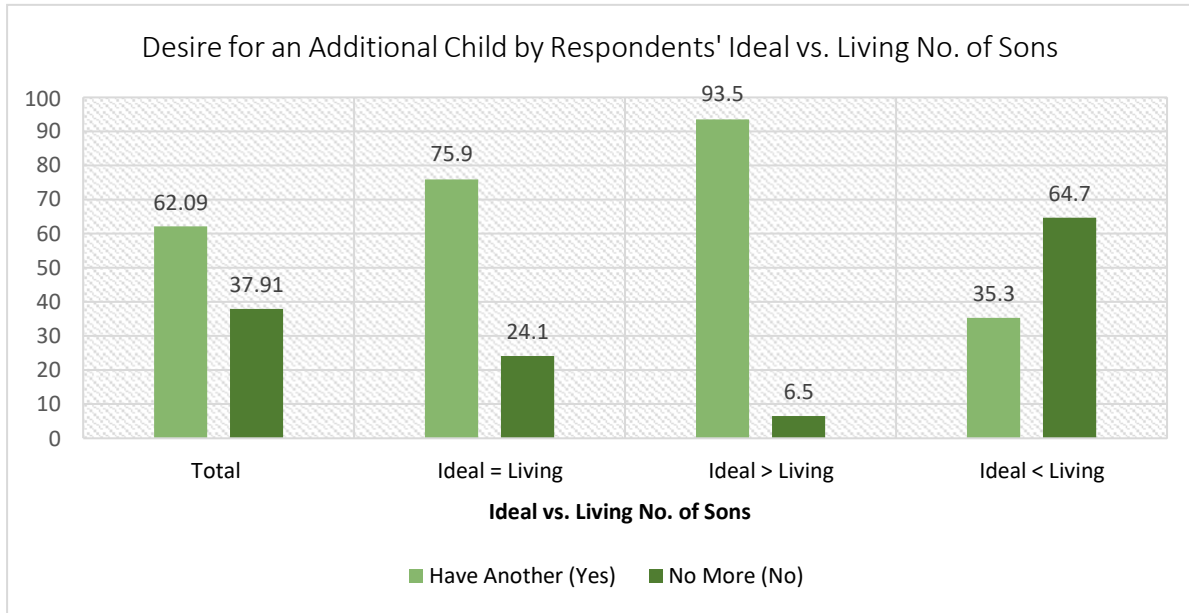*Source: Based on author's own calculations*

As shown by figure 4.1 above the respondents who wanted to have another child were mostly those whose ideal number of sons were 3 and more (66.8%). Similarly, a higher proportion of women who did not want to have another child belonged to the category of those women whose ideal number of sons were less than or equal to 1.

Table 4.5: Desire for an Additional Child among Currently Married Women aged 15-49 by Respondent's Ideal vs. Living Number of Sons

Ideal vs. Living Number of Sons	Desire for an Additional Child			
	Have Another (Yes)	*No More (No)*	*Total*	*Significance*
Total	62.09	37.91	100.0	
Ideal = Living	75.9	24.1	2,815	*0.000*
Ideal > Living	93.5	6.5	2,491	
Ideal < Living	35.3	64.7	4,368	

*Significance determined by using chi-square test: significant if p-value < 0.05

Figure 4.2: Desire for an Additional Child by Respondents' Ideal vs. Living No. of Sons in a clustered bar

Source: Based on author's own calculations

Both table 4.5 and figure 4.2 above show the percentage distribution of respondent's ideal vs. living number of sons by their desire for an additional child. Respondents who wanted to have another child were substantially those who were yet to achieve their ideal number of sons (93.5%). Contrary to this, women who did not want another child were mainly those who had exceeded their ideal number of sons (64.7%).

4.2 Regression Results & Analyses

This section provides a detailed presentation of the multivariate regression results of the study. The aim is to evaluate the role that son preference plays in determining the desire for an additional child in Pakistan after controlling for the background and independent factors. After controlling for the socioeconomic determinants of the respondent, logistic regression analysis is carried out to analyze the impact of respondents' ideal number of sons, ideal vs. living number of sons, and number of living children on their desire for an additional child.

4.2.1 Logistic Regression on Desire for an Additional Child:

Table 4.6 below shows the impact of son preference on the currently married woman's desire for an additional child in the presence of variables such as woman's age, her age at marriage, education level, wealth status among others. Four different models are used to analyze the robustness of the findings. These are explained in detail in the paragraphs that follow the table below.

Table 4.6: Adjusted Odds Ratio for Logistic Regression on Desire for an Additional Child

Variables	Dependent variable is Desire for an Additional Child		
	(1)	(2)	(3)
	Socioeconomic Characteristics	Ideal No. of Sons	Ideal vs. Living No. of Sons
Ideal No. of Sons (Ref: ≤ 1 sons)			
Ideal Sons = 2		1.270***	
		(0.0752)	
Ideal Sons = 3 +		2.012***	
		(0.1377)	
Ideal vs. Living Sons (Ref: Ideal = Living Sons)			
Ideal > Living			3.575***
			(0.3407)
Ideal < Living			0.206***
			(0.0122)
Age (Ref: < 25 years)			
25 – 34 years	0.183***	0.174***	0.291***
	(0.1562)	(0.0149)	(0.0263)
35 + years	0.043***	0.039***	0.0782***
	(0.0038)	(0.0034)	(0.0073)
Residence (Ref: Urban)			
Rural	1.006	1.010	0.921
	(0.0567)	(0.0572)	(0.0568)
Education Level (Ref: No Education)			
Primary	0.826**	0.898	0.822**
	(0.0634)	(0.0698)	(0.0698)
Secondary	1.009	1.137	1.049
	(0.0749)	(0.0868)	(0.0859)
Higher	1.493**	1.743***	1.426**
	(0.1288)	(0.155)	(0.1379)
Wealth Status (Ref: Poorest)			
Poorer	0.759***	0.791**	0.708***
	(0.0624)	(0.0656)	(0.0666)
Middle	0.540***	0.592***	0.510***
	(0.0467)	(0.0518)	(0.0492)
Richer	0.543***	0.614***	0.503***
	(0.0511)	(0.0587)	(0.0522)
Richest	0.468***	0.543***	0.429***

	(0.0475)	(0.0559)	(0.0484)
Currently Employed (Ref: No)			
Yes	0.759**	0.776***	0.685***
	(0.053)	(0.0545)	(0.0538)
Constant	18.702***	12.588***	25.252***
	(2.0442)	(1.4852)	(3.1827)
Observations	9,674	9,674	9,674

*Note: Robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1.*

The first model (1) includes the socioeconomic characteristics of the respondent and shows their impact in affecting the woman's desire for an additional child. In model 2, the first intervening variable *'Ideal Number of Sons'* is added to test for its independent effect while model 3 is used to check for the independent effect of the variable *'Ideal vs. Living Sons'*.

The regression estimates for the first model show that women belonging to *25 – 34 years* age group are 82 percent less likely (*OR= 0.182****), whereas those from the *35 + years* age group are 96 percent less likely (*OR= 0.043****) to want an additional child when compared to the reference age group of *less than 25 years* old women. Similarly, when compared with the poorest households, the desire for an additional child decreased by 58 percent among those from richest households (*OR= 0.419****).

Logit regression estimates for the second model show that the odds of wanting another child substantially increased when the respondent's ideal number of sons increased. Compared to the reference category of 'Ideal Sons ≤ 1', the odds of wanting an additional child increased by 1.3 times (*OR= 1.270****) for women with an ideal of 2 sons, while they increased by 2 times (*OR= 2.012****) for women with an ideal of 3 or more sons.

Model 3 reveals that the likelihood of having the desire for an additional child is less in case of women who have already achieved their ideal number of sons, as opposed to those who are yet to reach their ideal number of sons. Compared to those whose ideal sons was equal to their

living number, the odds of women wanting an additional child increased by 3.6 times (*OR= 3.575****) when their ideal number of sons was greater than their living sons. In contrast, for those whose living sons had exceeded their ideal number, the odds of wanting another child was 79% less when compared to the reference category of *Ideal = Living Sons* (*OR= 0.206****).

4.2.2 Logistic Regression on Desire for an Additional Child - After Controlling for Number of Living Children:

Table 4.7 below shows the impact of son preference on the currently married woman's desire for an additional child after controlling for their number of living children. Three different models are used to analyze the robustness of the findings; here the models differ according to the living children category the respondents fall into, hence the number of observations *(N)* varies in each model.

Table 4.7: Adjusted Odds Ratio for Logistic Regression on Desire for an Additional Child after controlling for Number of Living Children

Variables	Dependent variable is Desire for an Additional Child		
	Number of Living Children		
	(1) **0 – 1**	(2) **2 – 3**	(3) **4 and more**
Ideal No. of Sons (Ref: ≤ 1 sons)			
Ideal Sons = 2	4.328***	2.323***	0.730***
	(1.0551)	(0.2110)	(0.0901)
Ideal Sons = 3+	6.296***	6.023***	2.349***
	(2.855)	(0.7982)	(0.2602)
Age (Ref: < 25 years)			
25 – 34 years	0.739	0.574***	0.852
	(0.1839)	(0.0684)	(0.2652)
35 + years	0.188***	0.143***	0.337***
	(0.0469)	(0.0192)	(0.1046)
Residence (Ref: Urban)			
Rural	0.793	1.069	0.776**
	(0.1855)	(0.1029)	(0.0751)
Education Level (Ref: No Education)			
Primary	0.631	0.751**	0.857
	(0.2363)	(0.1006)	(0.1135)
Secondary	0.515*	0.886***	0.847
	(0.1895)	(0.1074)	(0.1320)

Higher	0.567*	0.946**	0.976
	(0.2166)	(0.1331)	(0.2207)
Wealth Status (Ref: Poorest)			
Poorer	0.394*	0.791	0.653***
	(0.1958)	(0.1346)	(0.0730)
Middle	0.626	0.539***	0.473***
	(0.3499)	(0.0912)	(0.0609)
Richer	0.614	0.552***	0.346***
	(0.3458)	(0.0990)	(0.0523)
Richest	0.473	0.482***	0.285***
	(0.2740)	(0.0907)	(0.0534)
Currently Employed (Ref: No)			
Yes	0.892	0.700**	0.774*
	(0.2721)	(0.0836)	(0.0943)
Constant	60.898***	3.618***	1.343
	(30.138)	(0.6677)	(0.4462)
Observations	2,966	3,356	3,352

Note: Robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 4.7 shows the regression results for three models where each tests the currently married woman's desire for an additional child according to her ideal number of sons once her number of living children is controlled for.

The odds ratios from logistic regressions in model 1 reveal that the likelihood of wanting an additional child among women with 0 – 1 living children increases by 4.3 times (*OR= 4.328****) for those whose ideal number of sons is 2 when compared with those whose ideal sons are less than or equal to 1. Similarly, when compared to the ideal of less than or equal to 1 son, those whose ideal sons were 3+ were 6.3 times (*OR= 6.296****) more likely to want an additional child if they had 0 – 1 living children.

Model 2 reveals that for 3,356 women who had between 2 – 3 living children, the likelihood of wanting an additional child among respondents with 2 ideal sons increased by 2.3 times (*OR= 2.323****) when compared to the reference category of less than or equal to 1 ideal son. Similarly, for women with 3+ ideal sons the likelihood of wanting another child increased by 6 times (*OR= 6.002****) when compared to the reference of less than or equal to 1 ideal son. Thus, it can be seen that ideal number of sons has a significant and direct impact on the desire for an additional child even if we take into account the respondents' number of living children.

The logistic estimates for model 3 reveal that among 3,352 women who had 4+ living children, the likelihood of wanting an additional child among women with 2 ideal sons decreases by 27% (*OR= 0.730***) when compared to those whose ideal sons were less than or equal to 1. However, for women whose ideal number exceeded 3 sons the probability of wanting an additional child increased by 2.3 times (*OR= 2.349****) when compared to those whose ideal sons were less than or equal to 1. Thus, even among those with 4+ living children, there was no desire to stop childbearing until the desired number of sons had been reached among those wanting a minimum of 3 sons.

Chapter   Five

Discussion and Conclusions

The descriptive and empirical analyses from the previous chapter indicate that the desire for an additional child is indeed largely driven by the ideal number of sons a respondent wishes to have, after controlling for her socio-economic characteristics. The principal point emerging from this thesis is that ideal number of sons, and consequently son preference, is a significant factor which has a direct bearing on the future fertility decisions.

Previous research indicates that a culture of son preference has been prevalent in Pakistan as women adjust their demand for additional children based on reaching their ideal number of sons. Previous literature on the topic has also suggested that a culture of son preference strongly affects the fertility control decisions taken by couples as dictated by their preferences (Khan & Sirageldin, 1977; Rukanuddin, 1982; Friedman et al., 1994; Tanvir & Arif, 2018).

The empirical results of the present study on the question of son preference and its impact on the desire for an additional child reinforce the previous literature indicating that son preference is one of the driving forces behind higher fertility rates in the country. It was found that the impact of son preference on desire for an additional child was reaffirmed through the varying indicators of son preference, namely the number of ideal sons and ideal vs. living number of sons of the respondents.

The conclusive evidence from these regression estimates points out that the desire for an additional child is strongly affected by son preference. Compared to women who wanted less than or equal to one son, those who wanted 2 sons were 2.32 times more likely to desire another child; and were 6 times more likely to want another child if their desired number of sons was three or more. Furthermore, women who had not yet achieved their ideal number of sons were

3.6 times more likely to want another child than those who had achieved their ideal number of sons. On the contrary, women who had achieved their ideal number of sons were 79% significantly less likely to desire another child.

The evidence provided in this paper is further supported by previous literature on son preference both from around the world and Pakistan specific studies. It is argued that future fertility decisions are taken to approximate an ideal number of sons (Hussain et al., 2000; Zaidi & Morgan, 2016) which consequently results in couples resorting to differential stopping behavior in this continuous pursuit of sons in Pakistan (Zaidi & Morgan, 2016).

In order to understand the net effect of son preference on desire for another child, the analysis was carried out separately according to the respondents' number of living children. A significant, positive association was found between the desired number of sons and the desire for another child at each level of parity among those with 0 – 1, 2 – 3, and 4+ living children. For example, women who had 2 – 3 children but wanted 3+ sons were six times more likely to desire another child compared to those who desired ≤ 1 son. Thus, even among those at higher levels of parity, the desire to continue childbearing was significantly higher for those who desired more sons.

The above findings clearly indicate that ideal number of sons is a very real and meaningful concept that is likely to have a direct bearing on the future fertility behavior. Moreover, the regression estimates also reveal that the desire for another child was significantly lower among women who were wealthier as well as those who were currently employed. For instance, those who were currently working were 24% less likely to desire another child as opposed to those who were not employed. Economic considerations play an integral part in women pursuing sons and ultimately drives the demand for additional children upwards. Hence, efforts directed at curbing the fertility rates must cater to this aspect of son preference as the results of this

study have revealed that women belonging to wealthier strata of the society are significantly less likely to desire more sons and want additional births.

This brings me towards the conclusion of the current study, as I argue that the discourses circling around population growth as well as demography in the country must pay due attention to the strong and persistent presence of son preference in our country. The evidence from this study suggests that women in Pakistan make their future fertility decisions based on whether they have achieved their ideal number of sons or not.

Consequently, this disproportionate preference for boys over girls has major effects at the national level which must be addressed immediately. For instance, it drastically reduces any efforts to curb the country's fertility rate thereby slowing down Pakistan's fertility transition. Moreover, it also slows down the country's progress towards achieving the targets of the SDG 3 in particular, which requires ensuring and promoting healthy lives for all at all ages. In this regard, son preferring attitudes have far and wide-reaching impacts on the country's maternal and child mortality rates, which are among the highest in the region.

Therefore, a concerted effort is required by all the stakeholders to direct their resources towards investing in women's education and encouraging female labor force employment as the results from the regression estimates have revealed that women with higher levels of education and those participating in the labor force are significantly less likely to exhibit son preferring behavior. Women pursue sons for the economic benefits they bring along such as having a breadwinner in the form of a male member and for old age security. Investments in these areas should be a top priority of the state and all stakeholders involved in framing the population policy of Pakistan should prioritize female education and employment. At the same time, social security schemes that support older persons need to be adopted as they could reduce the high level of demand for sons in the country.

The findings thus indicate that investments in the SDGs related to promoting gender equality and empowerment of women (SDG 5) with the provision of quality education (SDG 4) and promoting full and productive employment (SDG 8) can contribute to reduce son preference and desire for additional children. Efforts to alter son preference should therefore be an important part of the overall goals of programs designed to offer family planning to reduce the rate of population growth in the country.

Limitations of the Study

The current study has a few limitations which must be noted that may have influenced the model estimates. First, the results of the study can reflect omitted variable bias due to some missing variables interacting with the variables of interest. Secondly, the study may have experienced reporting bias as the desired number of sons can be affected by the respondents' living number of children and/or sons.

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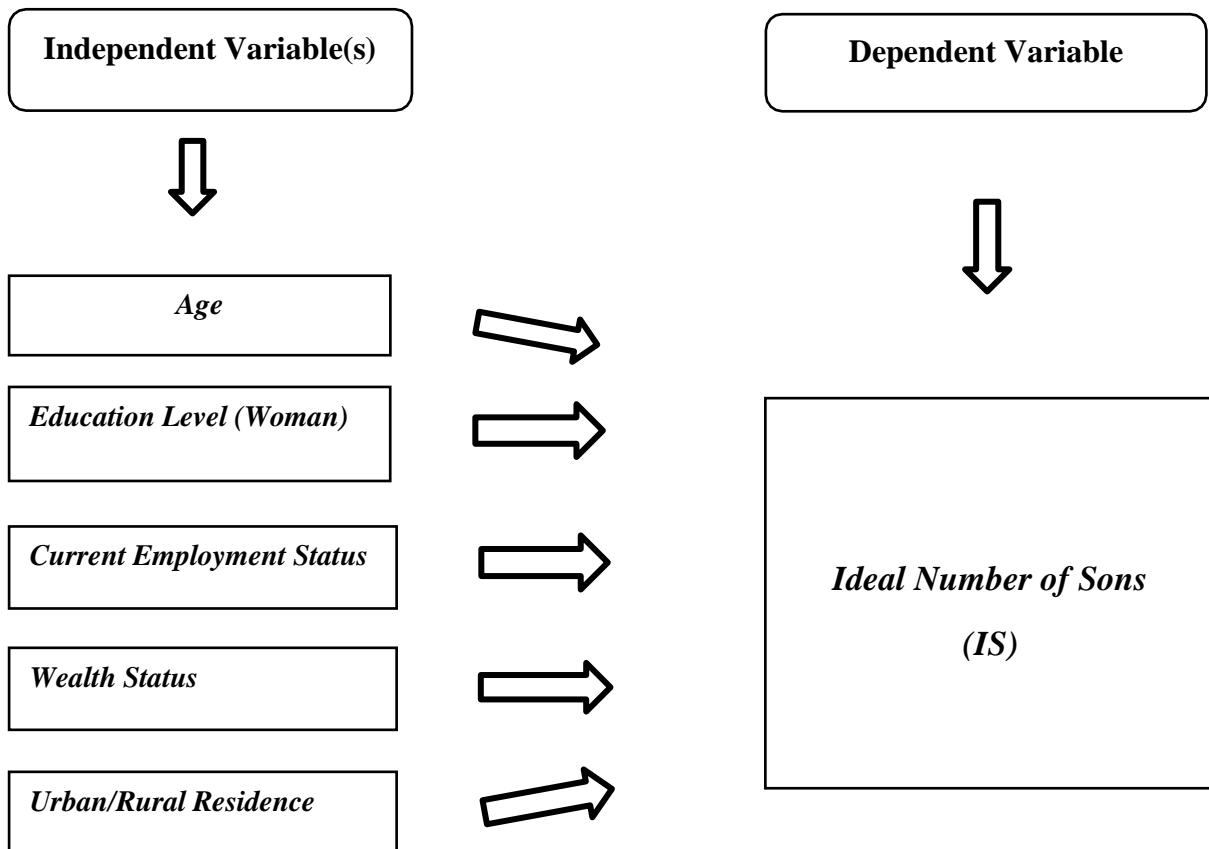
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Appendix

Socioeconomic Determinants of Respondents' Ideal Number of Sons:

This section provides some supplementary analysis I carried out to understand the desire for sons in our society. The analysis reveals the respondents' socioeconomic characteristics as possible determinants of their ideal number of sons. These include variables such as woman's age, her education level and wealth status among others. The conceptual framework for the supplementary analysis is shown below.

Independent Variable(s)	**Dependent Variable**

Age

Education Level (Woman)

Current Employment Status

Ideal Number of Sons

(IS)

Wealth Status

Urban/Rural Residence

Here, the variable Ideal No. of Sons of the respondent is used as the outcome variable. Using the above framework, the hypothesis for this analysis is as follows:

H_0: The ideal number of sons of a respondent is significantly influenced by the respondents' socioeconomic characteristics.

Since the dependent variable has an ordinal outcome, ordered logit regression analysis is applied here and the following regression equation is used for with "Ideal No. of Sons" as dependent variable:

$$\text{Logit } (P \, (Y \le j)) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5$$

where Y= Ideal No. of Sons is an ordinal outcome with J= 3 categories and $P \, (Y \le j) = $ cumulative probability of Y less than or equal to a specific category of ideal no. of sons, j= category of ideal no. of sons (Ideal Sons $\le$ 1; Ideal Sons = 2; Ideal Sons $\ge$ 3), β_0 is the intercept term, whereas β_1, β_2, β_3, β_4 and β_5 are the regression coefficients for respondents' Age, Education Level, Current Employment status, Wealth status, and Rural/Urban residence respectively.

Table A below shows the results for ordered logit regression carried out on the socioeconomic characteristics of the respondent to estimate the possible determinants of the ideal number of sons of a respondent.

Table A: Odds Ratio for Ordered Logit Regression on Determinants of Ideal Number of Sons of the Respondent

Variables	Dependent variable is Ideal Number of Sons
Age (Ref: less than 25 years)	
Between 25 & 34	1.280*** (0.0623)
35 and above	1.564*** (0.084)
Residence (Ref: Urban)	
Rural	0.985 (0.0436)
Education Level (Ref: No Education)	
Primary	0.602*** (0.0361)
	0.504***

Secondary	(0.0279)
Higher	0.394***
	(0.0268)
Wealth Status (Ref: Poorest)	
Poorer	0.755***
	(0.0525)
Middle	0.502***
	(0.0364)
Richer	0.390***
	(0.0302)
Richest	0.313***
	(0.0265)
Currently Employed (Ref: No)	
Yes	0.880**
	(0.0490)
Observations	9,674

Note: Robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

For the variable *Age*, we see that if age increases from *less than 25* group to between *25 & 34 years*, the odds of Ideal No. of Sons being *3+* versus the combined odds of *≤ 1 and 2 ideal sons* categories are 1.280 times greater, given that all other variables are held constant in the model. Likewise, if *Age* increases from *less than 25* years to *35 and above* age group, the odds of Ideal No. of Sons being *3 and above* versus the combined odds of *≤ 1 and 2 ideal sons* categories are 1.564 times greater, given than all other variables are held constant in the model. The variable *Residence* did not produce any significant results.

In case of the respondents' education, a one unit increase in *Education Level*, i.e. going from 0 to 1 (*No Education* to *Primary* category), the odds of Ideal No. of Sons being *3+* versus the combined odds of *≤ 1 and 2 ideal sons* categories are reduced by 0.602 times, given that all other variables in the model are held constant. Similarly, it can be inferred that if *Education Level* increases from *No Education* to *Higher* level, the odds of respondents' Ideal No. of Sons being *3+* versus the combined odds of *≤ 1 and 2 ideal sons* categories are 0.394 times less, given that all other variables are held constant in the model.

In case of the variable *Wealth Status*, the results come out in the expected direction as a one unit increase in woman's wealth status, i.e. going from 0 to 1 (*Poorest* to *Poorer* category), the odds of Ideal No. of Sons being *3+* versus the combined odds of *≤ 1* and *2 ideal sons* categories are reduced by 0.755 times, given that all other variables in the model are held constant. Likewise, if respondents' wealth status

increases from *Poorest* to *Richest* category, the odds of respondents' Ideal No. of Sons being *3 and above* versus the combined odds of *≤ 1* and *2 ideal sons* categories are 0.313 times less, given that all other variables are held constant in the model. Thus, wealth status was negatively associated with the number of ideal sons, and the richer women were significantly less likely to desire a larger number of sons.

The regression results for the variable showing current employment status of the respondent also produced significant results in the expected direction. With a change in the respondent's employment status, i.e. going from 0 to 1 (*Not Employed* to *Employed* category), the odds of her Ideal No. of Sons being *3+* versus the combined odds of *≤ 1* and *2 ideal sons* categories are reduced by 0.88 times, given that all other variables in the model are held constant.

Thus, it can be inferred that a currently married woman's socioeconomic characteristics, such as her age, education level, wealth status among others are highly likely to determine the ideal number of sons she wants to have in her life. This can consequently influence her future fertility decisions and childbearing goals as well, as we have seen from the regression results of the thesis that the respondents' ideal number of sons can significantly influence her future fertility decisions.