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ANALYSIS OF SEX PREFERENCE IN RELATION WITH CONTRACEPTIVE USE IN TURKEY

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ÖZET

Bu çalışmada, Türkiye Nüfus Sağlık Araştırması-2008 kapsamında, Türkiye'de yaşayan halen evli ve doğurgan kadınlara ait veri kullanılarak çocuklarda cinsiyet tercihi incelenmiş ve ardından karmaşık örnekleme metodolojisi göz önüne alarak yaşayan çocuk sayısına göre lojistik regresyon modeler kurulmuş ve gebeliği önleyici yöntem kullanımını etkileyen faktörler belirlenmiştir. Sonuçlara göre, özellikle kırsal alanda ve Doğu bölgelerde kısmen erkek çocuk tercihi gözlenmiş fakat Türkiye genelinde tercihin her iki cinsiyetten çocuklara sahip olma yönünde olduğu saptanmıştır. Arnold metodu kulllanılarak cinsiyet tercihinin gebeliği önleyici yöntem kullanımı ve geleceğe yönelik üreme tercihleri üzerindeki etkisi ölçülmüştür. Betimsel analizler cinsiyet tercihinin, gebeliği önleyici yöntem kullanımı ve geleceğe yönelik üreme tercihleri üzerindeki etkisinin önemsiz olduğunu göstermiştir. Kadınların yaşayan çocukların cinsiyet komposizyonuna bağlı olarak çocuk doğurmaya karar verdikleri saptanmıştır. Lojistik regresyon model sonuçları, yaşayan çocukların cinsiyetleri, kadının eğitimi, kadının anadili, yaşanılan bölge, kadının yaşı ve geleceğe yönelik üreme tercihlerinin gebeliği önleyici yöntem kullanımının anlamlı tahmin edicileri olduğunu göstermiştir.

Anahtar Kelimeler: Cinsiyet tercihi, gebeliği önleyici yöntemler, aile planlaması

ABSTRACT

This study firstly examined the sex preference in Turkey by using currently married and fecund women data and then by employing logistic regression model considering the complex sample, the determinants of contraceptive use were identified for different parities with taking advantage of TDHS-2008 data. The results showed that there is some preference for sons especially in rural areas and East region though generally those women prefer to have children of both sexes. The impact of sex preference on sex ratio (number of males per 100 females) of living children by type of place of residence, region, and fertility preferences was investigated. In addition, by using Arnold's method the effect of sex preference on fertility preference and contraceptive use was discussed. The descriptive analysis results suggested that impact of sex preference and fertility preference on contraceptive use is trivial. Depending on sex composition of living children, currently married and fecund women decide to continue bearing child(ren). The logistic regression models indicated that current sex composition of living children, education of women, mother tongue of women, region, age of women and fertility preferences are statistically significant in predicting the contraceptive use.

Keywords: Sex preference, contraceptive use, family planning

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CHAPTER 1

INTRODUCTION

Though the sex of a child is determined biologically and cannot be altered, most parents in most part of the world, especially in developing and less developing countries, desire to have particular sex or sex distribution which is called as sex preference. Sex preferences for children have been widely noticed across the world. The existence of a sex preference for children, particularly preference for sons, has been documented in many reports and studies of less developed countries in South Asia, East Asia, North Africa, and the Middle East. Sex preference is also evident in developed countries such as in the U.S. and Western Europe where individuals tend to have a preference for at least one child of each sex. Japan, Latvia, Lithunia and Czech Republic are the countries where daughter preference exceeds son preference.

Sex preference of children can be categorized into four groups which are son preference, daughter preference, balance preference, and no preference. Son preference is the most prevalent form of sex preference observed in the world, while the desire for balanced number of daughters and sons is other prevalent type of preference. To measure the extent as well as type of sex preference a review of literature reveals that there are various methods for measuring sex preferences for children. According to Soeradji and Hatmadji (1994), information on the desired number of sons and daughters provides a way of exploring couple's preference for a certain sex of children. Among various indicators, desired number of sons and daughters sex ratio of child mortality (Goodkind 1994), parity progression ratios and sex ratio at birth (Chahnazarian 1988) are some of the measures.

Sex preferences for children have been a great concern to many researchers because of their potential negative social and demographic results. For example, prominent sex preferences can lead to sex-selective abortions which result in skewed sex ratios at birth which is called as an index of male-female imbalance in population which is defined as the number of boys being born per one hundred girls. Under normal biological circumstances, a normal sex ratio at birth lies between 104-106 boys for every 100 girls and remains quite stable over time. However, along with continuous developments in ultrasound technology which enables to identify the gender of babies before the birth, this ratio can result in a sexual imbalance. Prominently, one of the ways of reaching a preferred sex of children passes through resorting sex selective abortions. Such cases have been observed in countries like China, South Korea, Georgia, Armenia, and Azerbaijan where a strong son preference accounts for skewed sex ratios (Goodkind 1996; Duthe, Mesle, Vallin, Badurashvili, Kuyumjyan 2011).

The extent of sex preference can be measured by two ways which are behavioral and attitudinal measures. Sex selective abortions, imbalance in sex ratios, sex differentials in infant/child mortality, and gender disparity in the health of children is considered as behavioral measures. Regarding attitudinal measures, a direct question is to be asked to learn the desired number of sons and daughters and responses to this question is used to gauge the extent of sex preference. In order to measure sex preference, these measures are used and both of them have advantages and disadvantages depending on aim of the study. Attitudinal measures are better if it is aimed to measure individual sex preference however, in case of measuring underlying sex preference structure; behavioral measures are more appropriate (Lee 1995). Especially, in

low fertility countries, the likelihood of desire for second or third child is lower because of social and economic limitations. In such cases, indirect measures may not capture the actual preference. Due to these reasons, this thesis will measure sex preference of individuals using both attitudinal and behavioral measures.

Moreover, Shiryock and Siegel (1973) stated that sex ratio at birth can easily be affected by demographic characteristics of the child and parents, such as age of the mother, birth order of the child as well as socio-economic status of parents. Furthermore, it should be noted the data quality of sex ratio statistics might be low depending on data sources.

A significant amount of sex preference research has focused in Asia due to a prevalent son preference in the region which resulted in adverse social and demographic consequences related to mortality and fertility. According to global report of the 1970s and 1980s, South Asia had the lowest male-female child mortality of all regions, indicating pronounced female disadvantage in mortality (United Nations 1998). By the help of sex-selective abortions as well as existent sex preference bias in countries where cultural norms value male children more than female, nearly 102 million females were missing across the world. Among 102 million missing women, India, Pakistan, Bangladesh and Nepal accounts for almost 47,7 million of them alone. Sex preferences especially son preference, can also result in sex differentials in infant and child mortality. Since female children are biologically less vulnerable than males (Waldron 1983), female children typically have lower mortality rates than male children. Nonetheless, female infant/child mortality rates exceeded male infant/child mortality in some societies suggesting that discriminatory practices by adults favoring boys over girls may be taking place (United Nations 2000; Waldron 1998).

The implication of sex preference in countries which are experiencing rapid fertility decline has attracted much attention. It has been argued whether son preference in countries where fertility rates are declining will eventually prevent further fall as couples will sustain to have additional children until they bear a child of preferred sex. Sex preferences for children may also have social and demographic implications in developed and developing countries with low fertility. Countries with strong son preference joined with strict fertility regulations (e.g. China's One Child Policy) have encountered an issue of uneven distribution in sex ratios (Coale & Banister 1994; Johansson & Nygren 1991). Therefore, an emergence of skewed sex ratios at birth is a likely scenario if a specific sex preference is prominent in a society with low fertility.

The impact of sex preference is highly observed in countries in which a strong son preference is quite prevalent and coupled with low fertility rates (Leone 2003). In the context of very low fertility where most women have only one child, it may become more critical for their first or only one child to be of the sex they desire. With the assistance of reproductive technologies, parents can control the sex of their offspring and ensure that the sex of a child is of their choice. If a certain sex preference persists in these countries, it can lead to skewed sex ratio of the population. This will raise further issues such as gender imbalance in the marriage market with potential ramifications for future fertility, and in the labor market requiring a reorganization of traditionally predominantly female sectors of the economy. At this point, given the fact that there is not a clear sex preference especially in favor of sons (Unalan 1993; Kagitcibasi and Ataca 2005) which has already not accompanied with low fertility rates, it is too assertive to claim that impact of sex preference is easily observed in Turkey.

The presence of sex preference is deeply rooted in the structure of the society. In general, reasons of sex preference can be grouped as two factors which are cultural; social and religious attitudes, and economical respectively. Cultural factors are mostly related to family system of the society. Of the family systems, patrilineality which is more prominent as well as prevalent one in less developed and developing countries, prompts communities to have more tendencies in favor of son preference. Patrilineality is a system in which one belongs to one's father's lineage (Benokraitis 2011). It generally involves the inheritance of property or names through the male line as well. The root of son preference in China, South Korea and India is rigid patrilineal family system (Das Gupta and Li 1999; Das Gupta et al.2002). In this system, son is preferred over daughters due to disincentives to raise daughters as well as presence of dowry systems.

In regards to economic reasons, since sons are more likely than daughters to provide labor on the farms or in a family business, earn wages, and support their parents during old age, some societies such as Indian, Korean, and Chinese desire to have at least one son in their family composition. High costs of dowry, low level of female labor force, poverty as well as need for old age support play an important role in leading couples have son preference in India (Chatterjee 1990; Desai 1994; Horowitz and Kishwar 1985; The World Bank 1996). Likewise, old age support is seen as the most important economic reason of son preference in South Korea because they always stress the need for continuing the family-line. In China, the reality of power of men in farm work and old age support are the main economic reasons of son preference.

Contraceptive use involves temporary, long term or permanent use methods which are a tool to prevent pregnancy. In regards to use

of contraceptive methods, the reason of method use can vary couple to couple. The known and possible reasons may be couples may have decided that they don't wish to have children, couples may choose to use birth control methods to help space the timing of the births of their children or couples may feel like their family is complete, so they wish to protect against the possibility of becoming pregnant again.

As a matter of fact, contraceptive use and preferred sex preference is deeply correlated because if couples reach the desired sex composition of children, they start to practice contraception especially modern methods to refrain from having an additional child. Despite the presence of regional disparity, along with the steady decrease in fertility rate which was 4.3 in 1978 and 2.16 in 2008, the contraceptive use has reached a high level even above the world figures(HUIPS-2008). Though there are not more studies aiming to introduce sex preference, Unalan (1993) suggested that there is a moderate son preference in Turkey. However, in similar studies conducted by Kagitcibasi and Ataca (2005) the preference of son has dramatically decreased and daughter preference has become more popular. Almost all studies concerning sex preference in Turkey, the relationship between contraceptive use and sex preference has not been assessed together. In other words, there are no more studies which shed light on the issue of sex preference and contraceptive use in Turkey. Therefore, this study aims to explore the relationship between sex preference and contraceptive use. In order to investigate the existence of sex preference, sex ratio at birth statistics compiled from Turkish Statistics Institute (TURKSTAT) databases and General Population and Housing Censuses are checked then the determinants of contraceptive use is identified by employing logistic regression model based on TDHS-2008 dataset.

As a result of this study, a literature on sex preference issue in Turkey would be enhanced.

The TDHS-2008 complex sample is of representative to allow for analysis on some of the survey topics at the level of 12 geographical regions (NUTS1). In the selection of sample, a weighted, multi-stage, stratified cluster sampling approach was employed. Totally 13,521 households and 7,405 ever-married women who are in 15-49 ages were interviewed

With available literature focusing on Turkey, it is not easy to claim that there is pronounced sex preference in Turkey. However, steady decrease in total fertility rate and moderate increase in contraception use may reveal an unknown sex preference in Turkey.

Given the picture, the objective of the thesis is to examine presence of sex preference as well as the relation between sex preference and contraceptive use by using descriptive statistics and establishing logistic regression model.

The hypothesis of this study is that there is a statistically significant relation between sex preference and contraceptive use rather than other factors. The more sons a family has, the more likely to use contraception because it is more likely to have satisfied preference for sons while the term contraceptive use covers folkloric, traditional and modern methods of contraception.

Within the frame of the study, the following specific objectives are addressed in the study:

- Is there any evidence of sex preference in Turkey or do parents want a balance of son and daughter?

- How does sex preference affect contraceptive use?
- What are the determinants of contraceptive use?

This thesis is organized as follows; Chapter 2 serves as an introduction to the literature about sex preference in Asian, European, and African countries as well as Turkey. In this chapter, information about the types, reasons, and impacts of sex preference is elaborated. Then, brief information about the data source and variables included in multivariate analysis as well practiced methods are told including brief theoretical background information are explained in Chapter 3. Chapter 4 firstly includes descriptive analysis of sex preference and contraceptive use by individual, husband related, children related, family formation and household and community factors. Then, sex ratio statistics by place of residence, region and contraceptive use by parity, type of place of residence and regions is discussed including Arnold's method. The multivariate analysis, considering complex design of the survey, logistic regression analysis is conducted and results are also interpreted in chapter 4. Finally, the findings of study are discussed in Chapter 5.

CHAPTER 2

LITERATURE REVIEW

The existence of sex preference for children across the world has been well documented particularly in fewer developed countries. Moreover, most studies are based on the country specific studies and/or regional studies. Among certain sex preference, son preference is the most prevalent form across the world.

A son preference is usually preferred to due its benefits to parents in providing old age support, status, security and influence to family, bringing dowry[1], a continuation of family line. In regards to daughter preference, the underlying factors are the likelihood of being more productive than men, bringing bride price, and old age support.

Based on the outcomes of the Demographic and Health Surveys, a crude index of sex preference was calculated. Among countries of surveyed Bangladesh, Jordan, Nepal, Pakistan, South Korea, and Syria showed the strongest son preference. A moderate son preference was also evident in Dominican Republic, Egypt, Mexico, Sudan, Turkey, Tunisia, and Yemen. Moreover, some countries such as Colombia, Ghana, and Indonesia show no son preference while slight preference for daughters takes place in Jamaica and Venezuela.

In the following sections, sex preference and its consequences on mortality, fertility, and contraceptive use are reviewed by continents and if available then by countries.

[1] In India, dowry is the payment in cash or some kind of gifts given to bridegroom's family along with the bride. Generally they include cash, jewellery, electrical appliances, furniture, bedding, crockery, utensils and other household items that help the newly-wed set up her home .

2.1. Asian Countries

Due to the fact that most studies concerning sex preference is based on Asian countries, it would be better to start with the following countries.

India has a great reputation to have strong son preference. Therefore, a number of studies have documented a preference for sons in Indian society, and the degree of this preference is very strong in the northern, north central and western regions of India (Lahiri 1974; Bhatia 1978; Das 1987; Mutharayappa et al. 1997; Arnold et al. 1998). Researchers have observed son preference in India through sex-selective abortions that lead to abnormally high sex rations at birth (Arnold, Kishor, and Roy 2002), differential fertility and contraceptive use behavior (Clark 2000; Arokiasamy 2002), female disadvantage in juvenile mortality (Das Gupta and Bhat 1997), and gender bias in the allocation of food and health care (Das Gupta 1987; Mishra, Roy, and Retherford 2004).

Das Gupta (1997) found that excess female child mortality had existed since 1940s despite socioeconomic development. She reported an evidence for female ‘neglect’ in which sons received better nutrition, clothing, and medical treatment than girls. Likewise to Dyson and Moore, she relates the strong and persistent son preference to regions kinship system in which patrilineal and patrilocal arrangements are predominantly available.

In a study conducted by Dyson and Moore (1983), they illustrated more juvenile sex ratios at birth, higher fertility, lower female age of marriage, and a clear female disadvantage in infant and child mortality in the northern states when compared with

southern states of India. They attributed this difference in kinship systems and female autonomy.

In recent past, sex preference studies in India have concentrated on exploring the relationship between sex preference and fertility. Bhat and Zavier (2003) suggested that the increasing ability of couples to avoid having children of the unwanted sex will result in an intensification of the manifestation of gender bias in actual behavior. Particularly, they indicate that girls made up 60 % of unwanted fertility in northern India and estimate that sex ratios at birth would rise to 130 boys per 100 girls if all unwanted births were prevented with the use of sex-selective technologies. A strengthened sex bias with declining fertility is that girls born in families with surviving daughters are particularly at adverse risk due to the fact that they are likely to be unwanted. In fact, these daughters born to families that already have one or more daughters are especially at risk of mortality (Das Gupta 1987).

Arokiasamy (2002) studied sex preference in India to see the relation of contraceptive use and fertility with sex preference. According the result of study, the actual sex composition of children compared with developmental indicators has the largest influence towards increasing contraception and reducing fertility. The regional pattern indicates that there is a close correspondence between the degree of son preference and its effect on contraceptive use and fertility which supports the conclusion found in many other studies that son preference is the most important determinant of contraception and fertility. Son preference is lower among educated women, urban women and southern Indian women. In contrast, increase in economic household status has a negative influence on preference.

Strict birth control policy and decline in fertility rates made the sex preference more prominent in China and therefore, it has been a primary interest of scholars.

Klasen and Wilk (2004) reported that the number of missing women in China has increased from 34.6 million in 1990 to 40.9 million in 2000. Confucian traditions are prevalent in the country and it promotes patriarchal family system. In ignoring and exclusion of girls, prenatal strategies, sex selective abortions, and postnatal strategies, unregistered girls, abandoned or killed girls, are used. Coale and Banister (1994) have used census and survey data to show that abnormal sex ratio of the Chinese population arises from excess female risks at very early ages. Likewise, examining censuses, surveys, and hospital records, Zeng et al. (1993) find that differential underreporting and differential abortion explains almost all of the increase in the sex ratio at birth, and they argue that female infanticide and abandonment are not contributors to China's high reported sex ratios at birth. Analyzing the number of reported infant deaths and practiced children from the 1988 two-per-thousand fertility survey, Johansson and Nygren (1991) estimate that the number of practiced children accounts for only about a half of the missing girls in China.

Another study which examines the effect of son preference on parity progression, Chinese women whose first child was a girl were most likely to have a second birth; and a women with two daughters had higher probabilities of having another birth than with two sons (Poston 2002).

According to a research by Arnold and Zhaoxiang (1986) which utilized National Fertility Surveys shows that many couples exhibit a strong son preference for having at least one son, and some

couples show a desire to have at least two son. The study shows that couples with one girl are less likely to obtain one child certificate than couples with one son, and after receiving a certificate they are more likely to violate its provisions by having a second child. Couples without a son are less likely to use contraception than are couples with at least one son, and pregnant women without a son are likely to have an abortion than those with at least one son. In general, son preference is lower among more educated women, and it is relatively low in urban areas as well (Arnold and Zhaoxiand 1986).

South Korea is sometimes attributed to Confucian values and it is well known that there is a strong son preference in the country. The strong son preference in Korea have not changed until recent times (Cho and Ahn 1993).The fact of low fertility rate which is below replacement level urged scholars to elaborate on sex preference and fertility in Korea.

According to study of Sung Yong Lee (1995) which utilized 1974 Korean National Fertility Survey data, a haphazard model was established to identify the factors of son preference. The results suggested that the group having no son was expected to have higher fertility than other groups when children parity was controlled. As a result, couples having only daughters do not give up trying their chance to have at least one son. Another finding suggested that there is no evidence of couple desire for at least one daughter in Korea. Moreover, even old age security and family lineage are regarded as the important reasons of desire for sons in Korea; it is almost difficult to measure the impact directly by using individual level data.

Examining the effect of sex composition of children on fertility behavior, Larsen, Chung and Das Gupta (1998) women who have a son are less likely to have subsequent births and are more likely to space the next birth.

In recent study of Chung and Das Gupta (2007), the relationship between development and son preference was examined because of steady decline in sex ratio at birth after mid-1990s. The data set of Korea National Fertility and Family Health Surveys of 1991 and 2003 were used throughout the study. The results of models suggested that education, and occupation of woman and husband, urban/rural residence, religion, whether the husband is his parent's only son, whether couple live with their parents, whether parents arranged marriage, woman's birth cohort as well as woman age at marriage are significant factors of son preference. However, study indicated that it only measured the intensity of son preference rather than manifestation of actual births.

According to study (Das Gupta, Zhenghua, Bohua, Zhemming, Chung, Baehwa-Ok 2003) which is a qualitative research, the kinship systems play an influential role in the rise of son preference. For example, the burden of family line is mostly placed on shoulders of eldest son and they are regarded as old age support of their parents. Thus, most parents have more tendencies to have a son rather than a daughter.

In general, South Asian countries exhibit son preference over daughter or balance preference. Among those countries, Bangladesh has the highest intention of son preference over daughters. Similar to other Asian countries, the underlying reason of son preference are economic and socio cultural factors. However, there are studies

aimed to obtain concrete determinants of son preference by using collected datasets.

Bairagi (2001) studied effects of sex preference on contraceptive use with using Matlab Demographic Surveillance System data. The assumption of his study is that couples were most satisfied with their number of sons and daughters at the parity at which contraceptive use and the abortion ratio were highest and at which fertility was lowest. The results of study implied that contraceptive use increased less with parity (and sometimes decreased) among women with no sons than among other groups. Interestingly, data also suggested that although the preference for sons was quite strong, couples liked to have a daughter after having two sons. In addition, this study confirms results of earlier research indicating that sex preference is not a major constraint to contraceptive use in Bangladesh.

In one of the study conducted by Khan and Khanum (2000), they used 1996-1997 Demographic and Health Survey which is the most comprehensive of all national surveys conducted in Bangladesh. Multivariate analyses were conducted to examine the effect of son preference on the practice of contraception. The results showed that sex composition of surviving children moderately influences women's decision on contraceptive use. The more son woman has, the more likely she is to use contraception. Couples who have all daughters are less likely to terminate their childbearing and continue having more children until they have at least one son.

In the wake of 2005, increase in birth masculinity has become more visible and the proportion of male births exceeded Vietnam where the rise in sex ratio began more than 20 years ago. This rapid

rise in Vietnam raised several questions about the factors which triggered this surprising change in favor of male births.

In one of the study conducted by Guilmoto (2012), it was aimed to explore regional differentials in birth masculinity present in Vietnam as well as impact of sex preferences and local kinship systems. Throughout the study, 15 percent of population census data of 2009 was used. By using the data, multivariate statistical model was established and correlates of high sex ratios were identified. According to result of this study, there is an obvious regional variation in the sex ratio at birth in Vietnam similar to East and South Asian countries. Multivariate model suggested that the effect of son preference on fertility progression, ethnic minority status, and bilateral marriage systems are the strongest predictors of variations in the sex ratio at birth. Especially, demand for sons is the most important reason of prenatal sex selection among couples. In general sense, parental sex selection can be attributed to low fertility, socio economic development while the reason of prompt rise in sex ratio can be attributed to easy access and widespread availability of ultrasound technology. In regards to variation of sex preference and its relation to patrilineal family structure, Guilmoto (2012) suggested that ”the majority status of Kinh ethnicity as encapsulated in official statistics conceals significant socio-cultural diversity with parts of the country characterized by bilateral arrangements common in Southeast Asia”.

In contrast most sociologists and demographers’ view which supposes that son preference is prevalent, sex preference in Japan has exchanged from son preference to daughter preference over the past few decades. According to Japanese National Fertility Survey results, in 1982, 48.5 % of married couples whose ideal number of children was one child preferred a daughter and this percentage is

increased to 75% in 2002. Likewise, the same change can be observed among families have two or three children (National Institute of Population and Social Security Research 2003).

Another survey called Japanese National Character which is conducted with adults revealed that 29 %of them prefer a girl in 1988 and this percentage rose to 47 % in 2003 (Institute of Statistical Mathematics, 2004).

The Japanese General Social Survey (JGSS) a national public opinion survey of adults 20 years of age or older also gathers information about the preferred sex of child(ren). In 2000 survey results indicates that among men, 60.5% wanted a boy and 35 % wanted a girl, while among women, 26 % preferred a boy and 70% wanted a girl child (Iwai and Sato 2002).

In a study conducted by Fuse (2001), there is significant interaction between educational attainments and sex preference. For both men and women, low levels of educational attainment appear to be associated with daughter preference. In regards to urban/rural residence, sex preference does not appear to be associated with sex preference while it is associated with the presence of a male sibling for men. Gender role attitudes are also examined and it was found that traditional attitudes increase the odds of having balance preference or son preference rather than being gender different.

In an analysis of pregnancy histories and reproductive intentions of married women, Sato and Iwasawa (1998) found that those who do not have any boys or any girls at any given pregnancy

were more likely to had intended to become pregnant, suggesting a tendency for a “balance preference”.

Sakai (1987) analyzed parity progression ratios using 1985 data of retrospective birth histories of married women 40 years of age or older. The results suggested son preference among the oldest cohort in the sample (60+ years old), he found a pattern for balance preference among the younger cohorts (40+ years old cohort and 50+ years old cohort).

It is widely considered that there exists a strong son preference in Pakistan which is attributed to attaching more value to sons due to socioeconomic and cultural reasons. Previous studies in Pakistan have revealed a strong preference for sons among married couples (Ali 1989; Sathar 1987; Miller 1984; Detray 1984). Especially, in rural areas, sons are valued highly for their inputs to farm work.

According to results of Pakistan Demographic Health Survey (1990) advanced analysis, it was confirmed that there is a continuing preference for sons. Almost half of all women who want another child say that the sex of the next child does not matter to them. Among those who prefer a child of particular sex, however, ten times as many prefer a son to a daughter. In addition, a highly strong desire for a son is observed among women with two or more children all of whom are daughters.

In a study of Mahmood and Ringheim (1996), which utilized the Pakistan Demographic and Health Survey of 1990-1991, they examined the effect of socio-cultural factors and supply factors on contraceptive use. Besides socio-cultural factors, sex preference of

married couples also included in the model to find out how it affects contraceptive use. Sex preference variable consists of two components which are the number of living daughter and son. Logistic regression model was employed to determine significant factors and results of the model suggested that the number of living son and daughter are important factors on contraceptive use. However, the strength of the coefficient is relatively higher for living sons than for daughters.

Nepal stands out as the country which has a preference for several sons and a daughter over the past decades. Karki (1988) suggested that most Nepalese prefers to have two sons and a daughter. Among families without any sons, contraceptive methods was almost not practiced and thus, the number of living sons was greater than the average number of living daughter among couples practicing contraception (Karki 1988).

According to a study of Morgan and Niraula (1995), it was found that there is a significant relation between sex preference and contraceptive use. In another study of Stash (1996) in Chitwan district of Nepal, over 70 % of respondents stated that ideal number of daughter is one while the ideal number of sons is two. Stash (1996) suggested that husbands had more propensity than wives to pursue having a son at the cost of having larger family however; neither husbands nor wives were willing to pursue bearing a daughter.

Leone, Matthews, Zuanna (2003) revealed that sex preference was not easily observed through examination of sex ratio at birth and sex differentials in immunization rates. It was suggested that son

preference decreased contraceptive use by 24 % and caused increase in total fertility rates.

Though Indonesia is among Asian countries, the sex preference case is quite different where more egalitarian perspective dominates specific preferences.

In a study, using 1976 World Fertility Survey (WFS) data covering the islands of Java and Bali demonstrated the balanced nature of the sex preference for children there (Central Bureau of Statistics, Indonesia 1978). A balanced gender preference also represented the majority of responses by Indonesian women in a study by Sinquefield and Kartoyo (1979) covering a larger spatial scope of investigation. It was found that a low percentage preference for daughters and that the proportion of couples desiring additional children was partly higher among those with children of only one sex than those couples having both boys and girls.

However, Soeradji and Hatmadji (1994:18) studied with 1991 Indonesian Demographic and Health Survey (DHS) data and they have concluded that that there is no sex preference in Indonesia.

After the mid-1990s, unprecedented sex ratio at birth has been observed in the three Caucasus countries namely, Azerbaijan (1.15), Georgia(1.18), and Armenia(1.2). This high sex ratio has attracted more attention from scholars and the reasons of son preference were examined.

In a recent study of Duthe, Mesle, Vallin, Badurashvili, Kuyumjyan (2011), among three countries, Georgia where the likelihood of having a second child is little bit lower when women have already a boy and there is no difference in the progression

parity ratio for the second child in Armenia and Azerbaijan. The differences are large when looking at the probability of having a third child with respect to already attained parity. Of these three countries, the lowest likelihood is seen when women have one boy and one girl which shows a satisfaction to have a mixed parity. However, if a couple have two girls the tendency to bear more children in on rise until having a son. The proportion of women who still want a child when they have two girls is 52% and this percentage diminishes to 23% when they have two boys. In regards to sex selective abortion issue, only in AzDHS-2006, there was a category ``child's sex selection` among possible answers related to reasons of recent abortions. The responses indicates that 3 % of women having aborted for child's sex preference.

2.2. European Countries

Though most of the sex preference studies concentrated in Asian countries there also studies elaboration in Europe.

In the study of Hank and Kohler (2000), data of Family and Fertility Surveys of 17 European countries were analyzed. There was no direct question in the survey asking for parents' gender preferences. Thus, it was tried to investigate manifested gender preference. In the first model, dependent variable was chosen as binary sex composition. It equals to one, if the first two children are of same sex, zero otherwise. Results indicated that mixed preference is present. In the second model, dependent variable was chosen as sex combination of children which are boy-boy, girl-boy, girl-girl. The findings of second model pointed out that couples expecting for their next child to be of the opposite sex as compared to the children they currently have.

Results of both models suggested that there is an indication for a girl preference in Czech Republic, Lithuania, and Portugal which cannot be explained with used data while the rest of other countries seem to have mixed composition of preference (Hans, Kohler 2000).

In a study of Andersson, Hank, Ramsen and Vikat (2004), by using the population register data from Denmark, Finland, Norway, and Sweden, it was detected that there is a preference for at least one child of each sex among families with two children. Among families with three children, Danish, Norwegian and Swedish couples exhibit a preference in favor of daughter while couples Finns show a significant son preference.

In most recent study, Zeman (2012) examined the parental preference for girls by applying Hazard estimation technique in Czech Republic. The major findings suggest that the risk of having a second child depends on the sex of the first child. Especially, women having a secondary and university degree have by 3 % higher risk of having a child if their first child is a boy which implies the preference for girls. For the transition from second to third children, it seems that there is a strong balance preference. The risk of having third children is 19 % higher of parents of two boys or two girls compared to families of one boy and one girl. In regards to mother's education, university educated mothers are more likely to proceed to higher parity when their preferences to have daughter are not satisfied. On the contrary, primary educated women show some preference over sons.

2.3. African Countries

In Africa continent, study of sex preference has not attracted the attention of many scholars in spite of some existing evidences.

These evidences are not easily obtainable however cultural and traditional attitudes which imply that men are the primary decision makers and income earners point out that man have an influential role on reproduction behavior of couples.

Among less studies, according to study of (Mwageni, Ankomah, Powell 2000), which examines the contraceptive behavior and sex preference in Mbeya region of Tanzania revealed that son preference is significant in region. The univariate analysis applied to data which was derived from a cross sectional survey and focus group discussions conducted in six areas of Myeba region. The Coombs' scale which splits sex composition of children into three different groups namely "girl preference", "son preference" and "balance preference" based on the responses of individuals regarding their preferred family sex composition. Findings of univariate analysis suggested that sex preference is more likely to be associated with a man's number of existing daughters, marital status, residence as well as occupation. Regarding the relation between sex preference and contraceptive use, it was found that there exists a statistically significant relation.

Within North African countries, Egypt shows a son preference over daughters. According to 2000 Egyptian Demographic and Health Survey, Vignoli (2006) observed that moderate sex preference where couples with two son or one son and a daughter are less likely to go on to have a third birth than couples with two daughters. Especially in rural areas, the effect of sex composition of living children on contraceptive use became stronger in 1990 (Fuse 2008). In particular, preference for having at least one son is more significant where families without any sons are more likely to have another birth and less likely to use contraceptive methods (Vignoli 2006).

In a study of Gilany and Shady (2007), son preference index was measured. This index was 1.4 and in comparison with world fertility survey results, it can be inferred that there exists a moderate son preference in Egypt. However, although the common preference is for sons, there is also evidence that couples may prefer to complete their family with a daughter.

2.4. Latin American Countries

Despite lack of studies on sex preference in Latin America, descriptive statistics implies a presence of daughter preference.

Sex ratios in infant, child, and under-5 mortality rates mid 1970s to mid 1980s were within the normal range in Latin America (United Nations Secretariat 1998). Analyzing the Demographic and Health Surveys in the late 1980s, among non-pregnant women with two children, those women wanted another child was higher among women with two sons in Colombia, Dominican Republic, Guatemala and Trinidad & Tobago. However, in Ecuador, the percentage of women desiring another child was higher among women with two daughters (Arnold 1992). As a result, it can be inferred from the studies that there is a slight preference for daughters than sons in Latin America.

2.5. Turkey

Though, Turkey was one of the first countries in the world to entitle women to vote in 1931, a prominent inequality between men and women are still in place especially in rural parts.

Given the fact that sex preference and high fertility has not been experienced seriously, there are less studies concerning sex preference in Turkey as compared to Asian countries.

Among few studies in Turkey on sex preference, Ulusoy (1986) investigated the effect of sex preference on fertility by using the 1983 Turkish Fertility Survey data. In his conclusions, sex preference is not interacting with fertility in urban parts while rural residents exhibit a desire to have a living son for families who had at least one child.

According to study of Aksit (1989) which attempted to identify the determinants of nutritional status of infants and toddlers in Ankara province. In this study, nutritional status of children was measured by comparing the actual weight-for-age with the expected weight-for-age based on standard growth charts applicable to Turkey (Koksal 1977). As a result of multivariate analysis, Aksit (1989) revealed that there is a weak but statistically significant relationship between sex and nutritional status of infants and children in favor of males. However, the relation disappears when it is controlled for regular and adequate follow-up of infants and toddlers by secular and non-discriminating health personnel (Aksit 1983).

Unalan (1993) examined the sex preferences of Turkish women by analyzing mainly sex ratios of living children with respect to parity, sex preference, next child preference, ideal number of sons and daughters as well as applied Arnold’s method to compare the difference of contraceptive use rate in case of sex preference and in the absence of sex preference. The descriptive findings suggested that there exists a moderate son preference together with a strong desire for having children of both sexes. In relation to contraceptive use and sex preference, it was found that in the absence of son

preference in Turkey, 1,8% more women would practice contraceptive methods.

In a family structure survey conducted by Social Planning Division of State Planning Organization (DPT) in 1992, some questions regarding attitudes towards children were asked. Among surveyed household leaders, 56%, 32%, and 10% of them considers that two children, three children, and more than three children are enough, respectively. With respect to desired sex of children, a question “If you wanted to have only one child, what would the desired sex of the child be?“ was asked. According to responses, it was reported that 62% of household leaders do not care sex of the children while 33% of them stated that they would like to have a son rather than a daughter. In regards to education level of household leaders, as the educational level increases, the preference over son decreases. However, the responses of women who are household leaders exhibited different results. The finding suggested that women were less disinterested in sex of the children but by place of residence, 29% of women have son preference in rural while only 15% of them prefers son over daughter in urban. Among participants, the most popular reason (78%) against having a son is the thought that sons continue the family lines.

Another study, which mainly concentrates on the reasons of high infant mortality rate, Behar et.al (1999) compared the infant mortality rates of Turkey and its neighbors Bulgaria, Greece, Cyprus, Syria, Iraq, Armenia, and Georgia. They found that Turkey has the higher rate of infant mortality in 1960-1964 and 1990-1994. As a result, they claimed that son preference has significant impact on high female mortality rates and it was claimed that discrimination against females has been on rise.

In a study of Kagitcibasi and Ataca (2005) and Kagitcibasi (1975), a question was asked to eligible respondents to identify the reasons of bearing a child. The qualitative answers categorized in the following way, pleasure watching children grow, fun to have young children around, to have someone to love and care for, to carry on the family name, bring spouses closer together, children can help when you are old, to have a girl/another girl, more reason to succeed in work, companion for child/children, to have a bot/another boy, child helps around the house and to help your family economically. As a result of analysis, it was concluded that son preference has been dominated by daughter preference as the participants in 2003 expressed that having a son has become less important in comparison with 1975. In the same study, questions about the sex preference for next child were asked. The results indicate that boy preference was 84 and daughter preference was 16 percent in 1975. However, these figures changed dramatically in 2003 as 42.1 percent for son preference and 58.9 percent for daughter preference.

Even in the 20th century studies, moderate or strong son preference has been discussed and the studies after 2000 pointed out different trends in regards to sex preference.

In further analysis report of TDHS-2003 (Unalan and Yavuz 2005), attitudes towards fertility was deeply investigated by taking the advantage of TDHS-2003 dataset. Within the context of this report, ideal number of children, and total fertility rates were evaluated together. One of the significant results of the analysis is that during period between 1993 and 1998, the total fertility rate and the ideal number of children were very close to each other, and from 2000 onwards, the ideal number of children has been emerged as a figure higher than the rate of total fertility. Additionally, in regards to sex of

desired children, the tendency towards son preference is little bit higher compared to daughter preference at country level. The ideal number of children per woman with preference for boys has been on rise as women get older.

In 2005, Kagitcibasi and Ataca (2005) suggested that mothers had a tendency to have more daughters than sons however; it is clearly observed that son preference is present in Turkey. This result was also supported by Yavuz (2011) as families who have only son or daughter continue to progress which might indicate a tendency of balance sex preference.

In a study of Family and Social Research Directorate (2006) on family structure, 47% of individuals aged 18+ prefers to have two children and this figure is 27% for three children. The desired number of children is highest in Eastern and smallest in Western. Unlike from similar studies, some questions about attitudes for children were asked. Among these questions, respondents were asked “Do you agree that being a mother of a son enhances the reputation of women?” The responses indicated that 34% of individuals agree while 76% of them do not agree. The proportion of individuals declaring those sons’ increases the reputation of mothers is varies with respect to place of residence, income, and education level of individuals.

In another study of Family and Social Research Directorate (2007) which was conducted with final year university students to reveal the attitudes for family and marriage with special emphasize on family structure in future. Based on responses, approximately 60% of them prefer to have two children in their life. In regards to sex of desired children, almost half of girls and boys do not care of sex of the children. The percentage of girls having desire in favor of

daughter is 30% while for son this figure is 21%. However, among boys 38% of them prefer to have a son while only 10% of them states that they want daughter instead of a son. The place of residence was also examined in the study. The results suggested that the percentage of participants preferring a son increases in rural areas. Moreover, the department of university that they are enrolled, and language of university did not differentiate the results significantly.

In most recent study, Yavuz (2011) studied labor markets in developing countries and as a part of it, son preference in Turkey was assessed. Two separate methods parity progression ratio (PPR) and Cox Proportional Hazards models was established to identify the existence and degree of son preference by using 1998 and 1993 TDHS datasets. According to PPR analysis results, families with two, three and five children, there is remarkable difference between the progression ratios of families who have at least one son and those who have no sons at all for both years 1998 and 1993. Families with two children, the progression ratio is 8.8% higher than for the ones who have no sons in 1998 and it was 10.8% in 1993. Families with no sons are more likely to continue to have additional child compared to the ones who already have a son. In the same study, based on Cox proportional hazards model, the progressing risk is lower for household s who have a son or sons which leads to say that there is son preference. However, results also suggest that there is mixed gender preference because hazards are higher for the families who have no daughters at all in the case of two, three and five children.

In most recent study of “The Ministry of Family and Social Policies” about family structure which was carried out in 2011, examined the desired number of children as well as sex of desired children. The results showed that 3,5%, 35,4%, 32,5% of participants wanted one, two, and three children, respectively. At country level,

15,7% of respondents stated that they have son preference while it was 13 % for daughters. In general, most people (71,2%) indicated that sex of the child is negligible. However, with respect to type of place of residence, there is significant variation. The percent of people having son preference is 7% more than people who have daughter preference in rural areas. Among regions, South-East Anatolia displays the highest son preference tendency which is 27%. In regards to education level of people aged 18+, the son preference prevalence decreases as the education level increases. Moreover, together with increase in education level, the overall tendency in favor of having a daughter increases. At the same time, the common attitude towards any specific gender becomes more prominent. Similarly, higher socio economic status of individuals leads to have less son preference. Likewise to 2006 survey, some questions about attitudes for children were asked. Among these questions, respondents were asked “Do you agree that being a mother of a son enhances the reputation of women?” The responses indicated that 57,8% of individuals agree while only 29,1% of them do not agree.

CHAPTER 3

DATA SOURCE AND METHODOLOGY

The data source of this study is women (individual who are in reproductive age) data of Turkey Demographic and Health Survey (TDHS) 2008, which is the latest and most comprehensive national demographic survey in Turkey. The TDHS –2008 is a nationally representative sample survey as well as it is a part of the worldwide Demographic and Health Surveys (DHS) program. This survey is conducted by the Institute of Population Studies at the Hacettepe University (HUIPS) in collaboration with the Turkish General Directorate of Mother and Child Health/Family Planning and the Ministry of Health.

The main objectives of the TDHS-2008 are to collect data at the national level which allows the calculation of demographic rates such as fertility and childhood mortality rates. In the framework of the survey on contraceptive knowledge and use, mother and children health including immunization, breastfeeding, nutritional status as well as marriages, women's status and husband background characteristics are gathered.

Two types of questionnaires were used in the TDHS-2008. They are household questionnaire and individual questionnaire for ever-married women of reproductive ages. The main aim of the household questionnaire is to collect information regarding socioeconomic situation of the selected households. The questions about age, sex, educational attainment, marital status, and the relationship to the head of household of each person were asked in the first part of the household questionnaires. Later, the second part of the household questionnaire includes questions about the welfare

of the aged people; while the third part asks questions about dwelling unit properties.

The individual questionnaires for ever married women gather information about the following topics: background characteristics, reproduction, marriage, knowledge and use of family planning, maternal care and breastfeeding, other issues relating to contraception, immunization and health, fertility preferences, husband's background, women's work and status, sexually transmitted diseases, and AIDS. In the ever married women's questionnaires, a monthly calendar exists so that fertility, contraception, marriage and migration data are stored for the periods including the January of the last conducted survey to the beginning month of the new survey.

The sample of TDHS-2008 provides fertility and mortality rates to perform analyses for Turkey as a whole, for urban and rural areas, and for five demographic regions of the country (West, South, Central, North and East). The TDHS-2008 complex sample is of sufficiently size to allow for analysis on some of the survey topics at the level of 12 geographical regions (NUTS1). In the selection of sample, a weighted, multi-stage, stratified cluster sampling approach was employed. Totally 13521 households and 7405 ever-married women who are in 15-49 ages were interviewed. The TDHS-2008 information is intended to contribute data to assist policy makers and administrators to evaluate existing programs and to design new strategies for improving demographic, social and health policies in Turkey.

It should be noted that the TDHS-2008 data do not include information about attitudes of preferences for children; however, such large data set provides a unique opportunity to examine whether

women's fertility behavior is influenced by the sex composition of their surviving children in the family. By using responses to the question of ideal number children, the respondents were divided into four mutually exclusive groups, based on their sex preferences of children which are "son preference", "daughter preference", "no preference" ,and "balance preference".

Ideal number of children states if women had opportunity to go back their starting period of reproductivity, how many children would they like to have. In the thesis, ideal number of children is an important instrument while analyzing the relation between sex preference and contraceptive use.

3.1. Variables

In this study, the variables are grouped according to the structure of framework. As much as possible to obtain available variables form the data, some necessary modifications have been done to construct new variables within the context of the framework.

3.1.1. Dependent Variables

Contraceptive use is going to be adopted as a dependent variable in the analysis. In TDHS-2008, a series of questions were asked to get adequate information about the family planning methods because it is crucial in the decision on whether to use a contraceptive method and which method to use. Information about the knowledge of contraceptive methods was collected by asking the respondent "Are you currently doing something or using any method to delay or avoid getting pregnant?"Using responses to this question, answers are categorized as "yes (1)" and "no (0)" which is a binary response.

3.1.2. Independent Variables

The variables are grouped into individual, husband related, children related, family formation, and household and community, factors.

3.1.2.1. Individual Factors

The individual factors include education level, childhood place of residence, mother tongue, working status, age, social and religious factor of currently married and fecund women. These variables are defined as below.

Table 1.List of Individual Factors

Individual Factors	Variable Type	Number of Category
Educational level of women	Ordinal-Discrete	4
Childhood place of residence	Nominal-Discrete	2
Mother tongue of women	Nominal-Discrete	3
Working status of women	Nominal-Discrete	3
Age of women	Scale-Continous	-
Social factor	Scale-Continous	-
Religious factor	Scale-Continous	-

Educational level of women: The standardized education variable that is included in all DHS datasets which has four categories (no education, primary, secondary, and higher).

Childhood place of residence of women: In standard DHS questionnaire, “For most of the time until you were 12 years old, where did you live?” question asked to learn the childhood place of residence. Based on responses, in the analysis, “province”, “district, village and sub district”, and “abroad” is used.

Mother tongue of women: In relation to languages that women can speak, a question is directed in DHS studies. In order to

obtain mother tongue of respondent “What is your mother tongue” is asked. The answers have four categories which are Turkish, Kurdish, Arabic, and others. The last two options were combined as “Arabic and others” because Arabic and other language speakers are quite few.

Working status of women: It is a categorical variables based on the woman’s self reported occupation. The answers to the questions of “Did you work in any job in last week whether paid or unpaid? and “Do/did you pay social security when doing this job?” is combined. Then, women are assigned to one of the following three categories; not working and/or have not worked, working without social security, and working with social security.

Age of women: Women’s age is included in the analysis. Women’s age is a continuous variable measured in years. It is also categorized for 7 age groups by 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, and 45-49.

Social Factor: This variable is constructed by using factor analysis. In TDHS, some questions were asked to understand the how often women are allocating time for their hobbies and outdoor activities. The questions such as “do you sport regularly?, do you go on holiday ?, do you go outside for a meal ?, and do you use internet ?” are asked and regular, irregular, no and non-applicable answer were collected. Then to group those variables, factor analysis is applied (See Annex). With the application of factor analysis sport *regularly, goes on holiday, goes outside for a meal, use internet* were considered as a factor based on the results of factor analysis.

Religious Factor: This variable is constructed by using factor analysis. In TDHS, some questions were asked to understand the life

styles of women. The questions such as “do you fast?, do you wear headscarf when going out ? do you organize home meetings? are asked and regular, irregular, no and non-applicable answer were collected. In the religious factors, first new variables constructed and regular and irregular cases are coded as “yes”, while “no” and “na” cases as “no”, Then, applying factor analysis and a continuous variable is constructed. The four variables related to *performing namaz, fast, wears a headscarf when going out, and organize home meetings* are grouped as a factor by applying factor analysis method.

3.1.2.2. Husband Related Factors

In the decision of contraceptive use and sex preference the background characteristics of husband are significant. Education level of husband working status of husband, mother tongue, age and are grouped as husband variables. The variables such as age, educational attainment, mother tongue and working status of the husband are used as the main background characteristics.

Table 2.List of Husband Related Factors

Husband Related Factors	Variable Type	Number of Category
Educational level of husband	Ordinal-Discrete	4
Mother tongue of husband	Nominal-Discrete	3
Working status of husband	Nominal-Discrete	3
Age of husband	Scale-Continous	-

Educational level of husband: The standardized education variable that is included in all DHS datasets which has four categories (no education, primary, secondary, and higher).

Mother tongue of husband: In order to obtain mother tongue of respondent’s partner “What is your husband’s mother tongue” is

asked. The answers have four categories which are Turkish, Kurdish, Arabic, and others. The last two options were combined as “Arabic and others”.

Working status of husband: It is a categorical variables based on the husband’s reported occupation. Partners are assigned to one of the following three categories; not working and/or have not worked, working without social security, and working with social security.

Age of Husband: To capture the impact of age, husband’s age is included in the analysis. Husband’s age is a continuous variable measured in years.

3.1.2.3. Children Related Factors

Sex preference, desire for more children, sex composition of living children and dead children constitutes the children related factors.

Table 3.List of Children Related Factors

Children Related Factors	Variable Type	Number of Category
Sex preference	Nominal-Discrete	4
Desire for more children	Nominal-Discrete	2
Sex composition of living children	Nominal-Discrete	3
Dead children	Nominal-Discrete	4

Sex preference: Women with living children were asked, “If you could go back to the time you did not have any children and could choose exactly the number of children to have in your whole life, how many would that be?” Women without living children were asked, “If you could choose exactly the number of children to have in your whole life, how many would that be?” Women were then followed up by the question, “How many of these children would you

like to be boys, how many would you like to be girls and for how many would the sex not matter?"

Using responses to these questions, a four-category variable was created to measure type of gender preference: no gender preference (NP), balance preference (BP), son preference (SP), and daughter preference (DP). NP is assigned to women who provided a non-numeric answer (i.e. up to god) as their ideal number of boys, girls, and child of either sex. NP is also assigned to women whose ideal number of children of either sex is 1 or more and their ideal number of both boys and girls is none. BP is assigned to women whose ideal number of boys is equal to the ideal number of girls. Women whose ideal number of boys is greater than the ideal number of girls are assigned to SP, and those reporting a preference for more girls than boys are assigned to DP.

Desire for more children: In order to understand future fertility preferences, currently marries women were asked: "Would you like to have another child or would you prefer not to have any more children?". The response for the question is coded as "yes" and "no".

Sex composition of living children: Since women with children may report an ideal in accordance with the sex composition of children they already have, a set of dummy variables controlling for sex composition of living children is created and it is explained in detailed in data and source chapter.

Dead children: In TDHS, a question is asked to determine the number and sex of dead children. Based on the responses, four categories, son dead, daughter dead, both sexes dead and no dead.

3.1.2.4. Family Formation Factors

Referring to family formation variables the marriage arrangement, age at marriage, bride's price, consanguinity, type of marriage ceremony, age at marriage, and relationship factor are grouped.

Table 4. List of Family Formation Factors

Family Formation Factors	Variable Type	Number of Category
Early marriage	Nominal-Discrete	2
Marriage arrangement	Nominal-Discrete	2
Bride's price	Nominal-Discrete	2
Consanguinity	Nominal-Discrete	2
Type of marriage ceremony	Nominal-Discrete	3
Relationship factor	Scale-Continous	-

Early marriage: The continuous scale variables measuring the age at marriage is also divided into two subgroups such as married when older than 18 years or married when younger than 18 years.

Marriage arrangement: The arrangement of marriage variable is categorical and the categories are; arranged by the couple and arranged by others.

Bride's price: Bride price, also known as bride wealth, bride token, is an amount of money or property or wealth paid by the groom or his family to the parents of a bride upon the marriage of their daughter to the groom. Bride's price is also a categorical variable with yes and no.

Consanguinity: It is related to first marriage and puts the relationship with the husband having the categories of no relation, first-degree relation and second degree relation. The category of "no

relation" serves as a reference. Any relation with mothers or fathers relatives is coded as first degree, paternal blood, maternal blood and other type of relation was coded as second degree relation.

Type of marriage ceremony: Type of marriage ceremony is also a categorical variable with only civil ceremony, only religious ceremony and both civil and religious ceremony categories which is based on current marriage.

Relationship factor: This variable is constructed by using factor analysis. In TDHS, some questions were asked to understand the consanguinity of husband and wife. The questions such as "Do you prevent your wife from seeing female friends?, Do you limit your wife to contact with her family? Do you distrust your wife on monetary issues? are asked and "regular", "irregular", "no" and "non-applicable" answer were collected. Then, applying factor analysis and a continuous variable is constructed. The variables of husband-prevent from seeing female friends, husband-limit to contact with her family, husband-insist on knowing, husband-distrust with money are clustered in the same group as a result of factor analysis method.

3.1.2.5. Household and Community Factors

The household and community variables involve place of residence, region and wealth status of women.

Table 5.List of Household and Community Factors

Household and Community Factors	Variable Type	Number of Category
Type of place of residence	Nominal-Discrete	2
Region	Nominal-Discrete	5
Wealth	Ordinal-Discrete	3

In line with reviewed literature as well as based on research hypothesis, several variables which are thought to be an effective on

contraceptive use is going to be employed in both descriptive and multivariate analysis. The following variables are employed through the multivariate analysis.

Type of place of residence: It is a binary variable that distinguishes those who live in urban areas from those who live in rural areas.

Region: The diverse geographical, climatic, cultural, social, and economic characteristics of different parts of the country are the basis for the conventional regional breakdown within Turkey. Five regions (West, South, Central, North and East) are distinguished, reflecting, to some extent, differences in socioeconomic development levels and demographic conditions within the country.

Wealth: The index places each household on a continuous scale of relative wealth based on each household's ownership of selected assets, dwelling characteristics, and types of water access and sanitation facilities which assesses the relative wealth of an individual's household. Standardizing these scores, each household is assigned to one of the following quintiles: 1=poor, 2=middle, 3=rich (HUIPS 2008).

3.2. Methodology

In the DHS, women with living children were asked, "If you could go back to the time you did not have any children and could choose exactly the number of children to have in your whole life, how many would that be?" Women without living children were asked, "If you could choose exactly the number of children to have in your whole life, how many would that be?" Women were then followed up by the question, "How many of these children would you like to be

boys, how many would you like to be girls and for how many would the sex not matter?”

During the review of literature, it has been noticed that there are various ways of measuring sex preference within limits of used data. For example, one way is to ask parents directly if they have a certain preference over sons or daughters. However, there is a problem with this method because despite a presence of son preference, this may not lead them to have more children to meet the demands. In other words, their motivation towards a particular sex preference might not be strong enough to motivate them to bear chilldren after desired number of sons or daughters is reached. Therefore, the data collected this way will not be useful and appropriate to study on.

Within the mostly employed techniques to measure sex preference, hazard model analysis and parity progression ratio (PPR) stands out as the most common statistical tools effectively producing results (Haughton 1998 and McClelland 1979). PPR is described as the transnational probability of a household with n children to progress to having (n+1) children. This method was practiced by De Tray (1984) and Ben-Porath and Welch (1976). Many studies (Mannan 1998, Haughton 1998, Aly and Shields 1991) employ a logistic model for calculating PPR. By using this method, the dependent variable is set equal to one if the household progresses to having another child(ren) and zero otherwise.

Another approach to assess the sex preference is the hazards model analysis. The dependent variable in this case is the time elapsed since the previous birth, and it is regressed on dummy variables for the number of existing sons and a variety of social and geographical control variables. Te assumption is that parents with

sex preference will have a larger hazard of bearing another child if they do not have enough sons and/or daughters yet. Rahman and Da Vanzo (1993), Haughton and Haughton (1998) and Pong (1994) employed this hazards to model son preference behavior.

3.2.1. Arnold's Method

A modified Arnold method is used here to estimate the effects of sex preference on contraceptive use and fertility. This method provides an estimate of the relative change in a variable caused by an absence of sex preference. It is defined as the ratio of the absolute difference between observed and expected fertility measures (contraceptive use, and fertility) to the observed value, multiplied by 100. The index is not affected by errors in reporting contraceptive use or fertility, unless the amount of error differs by the number of sons and daughters within a given parity. Couples were assumed to be most satisfied with their number of sons and daughters at the parity at which contraceptive use and desire for more children were highest.

The critical assumption of this measure is that couples whose contraceptives are satisfied with the sex composition of their children it means all couples at each parity, will act in the same manner as those couples at the same parity who are currently most satisfied with the sex composition of their children.

The overall impact of sex preference on contraceptive using a parity specified contraceptive use approach' as proposed by Arnold is defined as

$$\frac{\sum Ci * Pi}{\sum Pi}$$

where, Ci= maximum contraceptive use rate at each parity 'i'

Pi= number of women at each parity ‘i’

The extent of son preference on contraceptive use= contraceptive use in absence of sex preference (in %) – actual contraceptive use (in %) (Sinha et al. 2005).

The current study differs from others and within the scope of the thesis; it is firstly preferred to examine the existence of particular sex preference by assessing the sex ratio statistics and Arnold’s method instead of the evaluation of infant/child mortality, sex selective abortion, and gender disparity in the health of children. Then, a logistic regression model is established to identify the factors of contraceptive use.

The techniques followed in the study are assessment of descriptive and multivariate statistics. Descriptive statistics can be defined as any single numerical measure computed from a set of data that is organized to describe a particular aspect or characteristics of the data set. In the first part of analysis section, the pattern of sex ratio at birth statistics which is compiled from birth registration system is examined. Then, a series of tables are created to examine the level of sex ratio for living children by place of residence, region, fertility preferences, contraceptive use, parity of children, as well as preferred sex of children.

The second part of analysis section includes the results of logistic regression models built to assess the impact of sex preference and other variables supposed to be instrumental on contraceptive use by exploiting the dataset of selecting currently married and fecund women with at least one child (5300) within ever married women (7405). The fecund women refer to someone who is capable of getting pregnant and giving birth. Moreover, in target sample pregnant women are excluded even they are fecund. The

dependent variable is the current use of contraceptive methods and independent variables are the individual and community characteristics of selected women.

3.2.2. Factor Analysis

Factor analysis is a data reduction method, and is used to reduce a large number of overlapping measured variables to a much smaller set of factors. This allows one to construct an index using a large number of variables. Factor analysis has two stages, factor extracting and factor rotating. Factor extraction enables an initial decision about the number of factors underlying a set of variables. In factor analysis, the principal component analysis is used to make the first decisions about the factors. By applying this procedure, two main criteria are important. The first criterion is to take the absolute magnitude of eigen values (eigen values greater than 1). The second criterion is to take the relative magnitude of the eigen values. The second stage of the factor analysis is the factor rotating in order to make the interpretation easier. The final decision for the number of factors is taken among the most interpretable rotated factor (Green and et al 2000).

3.2.3. Logistic Regression

Logistic regression has the same goal of the linear regression, which is to find the best fitting and most parsimonious, reasonable model to describe the relationship between a dependent variable and a set of independent variables. The difference between linear and logistic regression is that, the dependent variable in logistic regression is binary or dichotomous. The dependent variable coded with a value of “0” to indicate meaning infant death is absent, or “1” to indicate that present in the individual (Hosmer and Lemeshow 1989). Logistic regression is preferred if the characteristic variables are

present or absent. It can be summarized that, in a regression analysis, when the dependent variable is dichotomous:

The conditional mean of the regression equation must be formulated to be bounded between 0 and 1. The binomial, not the normal distribution describes the distribution of the errors and will be statistical distribution upon which be analysis is based.

The principles that guide an analysis using linear regression guide the logistic regression analysis.

Considering a collection of p independent variables, which will be denoted by the vector x'= (x1, x2, x3 …… xp).

The conditional probability is that, the dependent variable is denoted by P(Y=1)|x)=Π(x). Then the logit of the multiple logistic regression model is given by the equation

g(x)= β0 + β1 x1 + β2 x2+…….+ βp xp where Π(x)= eg(x) / 1+ eg(x).

The assumption of logistic regression is not based on the distributional assumptions like in linear regression. Logistic regression results include coefficients that can be used to estimate odd ratios for each of the independent variables in the model.

CHAPTER 4

FINDINGS AND ANALYSES

This chapter is divided into two parts; descriptive analysis and multivariate analysis. In the descriptive analysis, the relation between sex preference and women's background information as well as husband related factors are analyzed. Sex preference is also analyzed by using sex ratios and parity. In the last section of the first part the relationship between contraceptive use and sex preference using sex ratios is analyzed. In the second part of this chapter, multivariate analysis using complex logistic regression techniques by individual factors, husband related factors, children related factors, family formation factors, and household and community factors are discussed.

4.1. Descriptive Analysis

4.1.1. Sex Preference and Background Characteristics of Women

Before examining the relationship between sex preference and contraceptive use, the background characteristics of currently married and fecund women are given by different factors such as individual factors for women, husband related factors, children related factors, family formation factors, and household and community factors. In TDHS, it is allowed to obtain preferred family size as well as desired sex composition of children.

Using the sex preference of children with the categories of son preference, daughter preference, balance and no preference, the characteristics of the sample are given by individual factors, husband related factors, children related factors, family formation, and household and community factors.

4.1.1.1. Individual Factors

Table 6 shows the individual factors by women's educational level, childhood place of residence, mother tongue, women's working status, and age groups. Based on the results, the percent of women who have particular sex preference is about 20%. Within this figure, 11,1% of women have son preference while the daughter preference is slightly lower which is 9,3%. The highest percentage, 78,0%, is observed in favor of balance preference which means that women have a desire to have both sexes of children.

In terms of educational level of women, the highest son preference, 12,4%, is seen among women who have no education or not completed primary education. As the education level of women increases, the amount of son preference decreases. The son preference percentage is 7,9% for women have at least high school degree. Regarding the age group of surveyed women, it seems that the sex preference does not change prominently. The general desire is to have equal number of sons and daughters for each age group.

Mother tongue of women which is one of the key variables that have usually generates different socio-economic results in Turkey. In this respect, Kurdish speaking women have the highest son preference, 14,5%, while it is 8,6% for Turkish speaking women. This discrepancy in terms son preference prevalence can be attributable to the fact that Kurdish women attach more value to the sons owing to their benefits to their families.

Table 6.Sex Preference by Individual Factors

	Son preference	Daughter preference	Balance preference	No preference	n
Educational Level of Women					
No education/Primary incomplete	12,4	10,1	74,8	2,7	1.199
First level primary	9,2	10,9	78,3	1,5	2.901
Second level primary	8,4	12,8	78,0	0,8	463
High school and higher	7,9	12,0	79,3	0,7	1.107
Childhood Place of Residence of Women					
District, subdistrict, village	9,8	10,3	78,1	1,8	3.883
Abroad	-	18,3	81,7	-	58
Province	9,0	12,5	77,6	0,9	1.721
Mother Tongue of Women					
Turkish	8,6	11,3	78,9	1,2	4.478
Kurdish	14,5	10,9	71,0	3,7	1.034
Arabic and others	8,6	8,6	82,4	0,4	158
Working Status of Women					
Not working	9,5	11,6	77,6	1,3	4.038
Working without social security	10,9	9,5	77,0	2,6	1.181
Working with social security	5,9	11,3	82,2	0,7	448
Age Group					
15-19	8,5	10,1	78,6	2,8	135
20-24	9,6	13,0	76,3	1,0	658
25-29	11,9	11,4	75,3	1,4	1.048
30-34	8,6	11,8	77,7	1,9	1.111
35-39	8,5	11,4	78,4	1,7	1.122
40-44	8,5	10,4	79,8	1,3	918
45-49	9,5	9,1	80,3	1,1	678
Total	**9,3**	**11,1**	**78,0**	**1,6**	**5.670**

Source: TDHS-2008

By socialization of women which is used with childhood place of residence, 81,7% of women grown up in abroad have balance preference. The highest son preference is found among women grown up in districts or villages of Turkey.

It is found that women who have been working without any social security have much more tendency in preference of sons. The lowest son preference prevalence is observed for those women who are currently working with social security. In parallel to son preference levels, the highest balance preference is found among women working with social security.

The results indicate importance of women's educational level as well as working in secure conditions in terms of less son preference. On the other hand, the socialization in rural areas and belonging to ethnic groups other than Turks in Turkey varies in terms of son preference.

4.1.1.2. Husband Related Factors

Table 7 presents the sex preference by husband's background characteristics of currently married and fecund women.

Table 7. Sex Preference and Husband Related Factors

	Son preference	Daughter preference	Balance preference	No preference	n
Educational Level of Husband					
No education/primary incomplete	15,6	10,5	69,0	4,8	171
First level primary	9,7	10,8	77,6	2,0	2.542
Second level primary	8,5	12,1	78,3	1,1	1.088
High school and higher	9,1	11,3	78,8	0,8	1.847
Mother Tongue of Husband					
Kurdish	10,9	10,2	76,1	2,7	1.099
Arabic and others	13,0	8,8	76,6	1,6	192
Turkish	9,0	11,4	78,4	1,2	4.374
Working Status of Husband					
Not working	11,3	13,3	73,4	2,0	618
Working without social security	7,8	11,9	79,0	1,2	3.087
Working with social security	11,2	8,4	78,5	1,9	1.692
Total	**9,3**	**11,1**	**78,0**	**1,6**	**5.397**

Source: TDHS-2008

As different from women's working status, husband's working status generates different results based on sex preference.

Husbands who are working without social security have the highest balance preference with 79 %. On the other hand, son preference is similar for husbands whether he is not working or working with social security (around 11 %).

In line with expectation, educational level of husband is an influential factor on sex preference. As the husband's educational level increases, the son preference prevalence decreases significantly. Regarding husband's background characteristics, highest son preference is observed among women whose husband's mother tongue is Arabic or other languages. Turkish speaking husbands have the less son preference when compare the other languages.

The relation between husband's characteristics and sex preference imply the existence of the effects of other factors such as cultural values which value males.

4.1.1.3. Children Related Factors

As the main aim of the study is to explore the relation between sex preference and contraceptive use, the children related factors such as, sex composition of surviving children and future fertility desire is discussed in details.

Table 8. Sex Preference and Children Related Factors

	Son preference	Daughter preference	Balance preference	No preference	n
Sex composition of living children					
No children	6,3	12,5	79,9	1,3	370
Daughters more than sons	9,9	9,8	78,5	1,8	1.882
Equal number of sons and daughters	9,3	13,2	75,9	1,6	1.309
Sons more than daughters	9,5	10,8	78,5	1,1	2.109
Desire for more children					
No desire for more children	8,8	11,2	78,5	1,5	4.197
Desire for more children	11,2	11,3	76,2	1,3	1.469
Dead Children					
Dead son	9,4	12,3	76,6	1,8	326
Dead daughter	8,5	12,6	75,5	3,3	279
Dead both sexes	7,6	10,6	79,2	2,6	89
No dead	9,5	11,0	78,1	1,4	4.976
Total	**9,3**	**11,1**	**78,0**	**1,6**	**5.666**

Source: TDHS-2008

Based on the sex of living children, 79,9 % of women who have already no children prefers to have equal number of sons and daughters and they have more preference for daughters with 12,5 % while 6,3% of them have son preference. It is noteworthy that women without children have less tendency regards to son preference than those who had children at the time survey. Among women, son preference prevalence is 8,8% for those who do not wish to have additional child while it is 11,2 % for women who wish to bear more children. By taking dead children into account, the findings show that sex preference of woman does not change with respect to sex of dead children.

4.1.1.4. Family Formation Factors

Table 9 shows the relation between family formation factors and sex preference. In terms of marriage decision, women whose marriages arranged by others instead of themselves have more son

preference. The prevalence of son preference is 11,2% for those marriages initiated by families and 7,8% those whose marriage was arranged by their own consent. In regards to marriage age, it seems that women who were married before the age of 18 demonstrate more desire in favor of having more sons than daughters.

Table 9. Sex Preference and Family Formation Factors

	Son preference	Daughter preference	Balance preference	No preference	n
Early Marriage					
>18 years old	8,6	11,5	78,6	1,3	3.551
<18 years old	10,8	10,6	76,8	1,8	2.313
Marriage Arrangement					
Arranged by others	11,2	10,3	76,6	2,0	3.108
Arranged by couples	7,8	12,0	79,2	1,0	2.556
Bride's Price					
Yes	14,8	9,3	72,9	3,0	955
No	8,5	11,5	78,7	1,2	4.707
Consanguinity					
First degree relative	14,4	8,6	73,8	3,2	736
Others	10,1	8,5	79,9	1,5	699
Not relative	8,6	11,9	78,2	1,2	4.226
Type of Marriage Ceremony					
Only religious	14,2	11,9	73,3	0,7	247
None of them	-	20,4	79,6	-	15
Civil ceremony	9,1	11,1	78,2	1,5	5.405
Total	**9,3**	**11,1**	**78,0**	**1,6**	**5.661**

Source: TDHS-2008

Among women whose families have requested bride price have more son preference (14,8%). However, the same figure is 8,5 % for those women who were not experienced bride price practice. In terms consanguinity with husband, it seems that son preference is prevalent among women who got married with one of the first degree relative. The 14,4% of women who married with first degree relative

have son preference while it is 8,6% for those not married with any relative.

In Turkey based on TDHS-2008 results, nearly 5% of currently married and fecund women married with only religious ceremony. In regards to marriage ceremony and sex preference, it is observed that women who are not married within the frame of marriage laws have more tendencies towards son preference than those married officially.

All those variables indicate that a traditional practices such as marriage arranged by families, bride price practices, consanguinity marriages and only religious marriages are significant in the preference of sons.

4.1.1.5. Household and Community Factors

Sex preference is further investigated based on region, type of place of residence as well as wealth of currently married and fecund women. Son preference is more common especially in rural areas and Eastern parts of Turkey can be considered as an influential factor on desired sex preference. In rural parts of Turkey, almost 75% of women prefer to have equal number of daughters and sons while it is 78% in urban areas. Son preference varies slightly in rural and urban areas. In rural and urban parts, 10,9% and 8,9% of women prefer to have more son, respectively.

Table 10. Sex Preference and Household and Community Factors

	Son preference	Daughter preference	Balance preference	No preference	n
Type of Place of Residence					
Rural	10,9	11,4	75,8	1,9	1.426
Urban	8,9	11,1	78,6	1,4	4.244
Region					
West	6,8	12,2	80,2	0,8	1.482
South	9,6	12,0	77,3	1,1	780
Central	9,7	9,1	79,8	1,3	1.133
North	11,6	13,1	73,4	1,9	709
East	15,8	9,5	70,7	4,0	1.566
Wealth					
Poor	11,6	9,0	76,7	2,6	2.267
Middle	9,5	11,8	78,1	0,5	1.262
Rich	7,5	12,6	78,9	1,1	2.138
Total	**9,3**	**11,1**	**78,0**	**1,6**	**5.670**

Source: TDHS-2008

Regional variation in favor of son preference is expected to become more prominent especially in East region of Turkey. Eastern of Turkey demonstrates strong son preference which is quite more than country average as well as suggests that women have a tendency to have more sons than daughters. In Southern, Central and Northern parts, they have similar levels of son preference which is around 10%.

The second common sex preference is daughter preference and son preference which varies between 9% to 12%. With regards to daughter preference, women residing in North, West and South exhibit the same degree of daughter preference which is around 12%. Moreover, in East and Central parts, the daughter preference degree is approximately 9 %.

4.1.2. Sex Preference Measurement

4.1.2.1. Sex Ratio

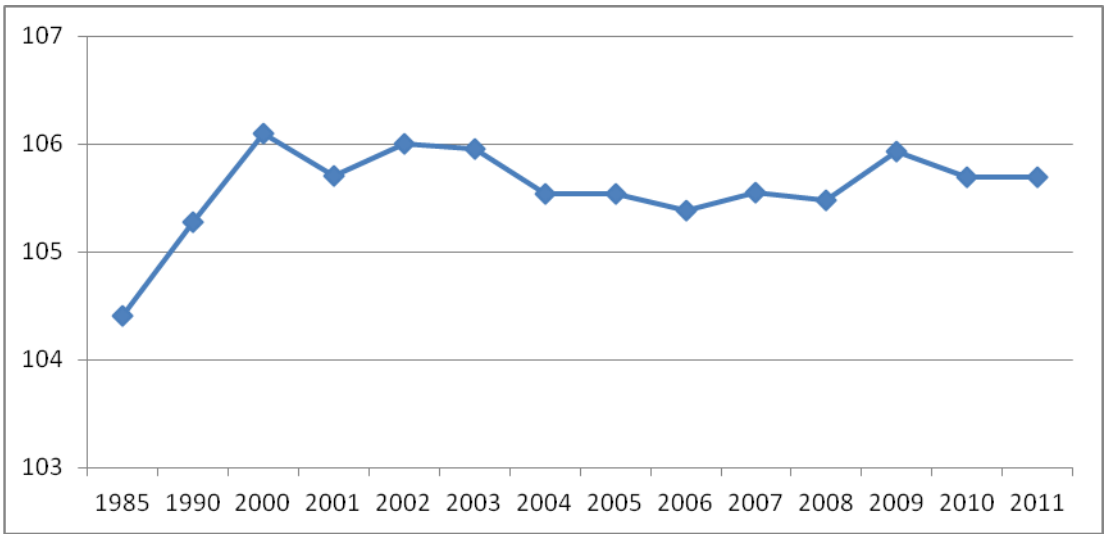
Various measurements are used to explore sex preference for children. In this section, sex ratio at birth statistics, sex ratio of living children by place of residence and region, sex ratio of children by fertility preferences based on type of place of residence and region, contraceptive use by children parity will be considered, respectively by using General Population and Housing Census as well as Address Based Population Registration System (ABPRS), and using TDHS-2008 data.

Sex preferences appear in line with the traditions and expectations, and place of residence of individuals. Couples behave differently to reach their sex preference. In this respect, it is difficult to decide if it is called as sex preference or not by only checking the behaviors; however it is possible to make comments by taking into account some indicators. At this point, among basic indicators, sex ratio at birth will be considered in descriptive part of the study.

Among countries having strong son preference, the most common tool to reach desired sex of a child is sex selective abortions. Sex selective abortions may be considered as a drawback for statistical techniques that are used to measure sex preference in world because if female/male children are being aborted, sex composition will also be distorted. In other words, if households have already chosen the sex of child they will be satisfied so it will be hard to observe behavior related to sex preference and the absence of sex selective abortions therefore strengthens the statistical results found in study. In Turkey, due to the fact that sex selective abortions are not commonly practiced as well as pursuant to the abortion law, which entered into force as of 1983, abortion is set free until 10th

week of the pregnancy and women can end their pregnancy by their own will. Women's or couple's being free to end the pregnancy at their own will not affect the sex ratio birth in our country. Thus, the sex ratio statistics would be more appropriate than others since it can not be distorted and as a result of that absence of sex selective abortions therefore empowers the statistical results in descriptive analysis.

Figure 1. Sex Ratio at Birth Statistics by Year



Source: TURKSTAT, 2012

Sex ratio at birth (SRB) in Turkey from 1985 to 2011 is shown in Figure 1. Prior to 2007, General Census results are used. However, since 2007, with the establishment of Address Based Population Registration System which aimed to compile population statistics, the data of this system is used.

When the sex ratio at birth graph prepared according to Address Based Population Registration System and General Census is looked at, the ratio is seen as 105-106. As to the worldwide SRB statistics, the ratio is under biologic conditions and between 104 and 106. According to the statistics obtained from registration system and

general census, it might be stated that there is no significant trend with respect to sex ratio at birth.

Table 11.Sex Ratios of Living Children

		Number of living children				
		All children	One Child	Two Children	3+ children	n
Place of Residence						
	Rural	111	133	131	103	1.423
	Urban	104	129	117	94	4.244
Region						
	West	107	125	118	96	1.482
	South	105	138	110	100	780
	Central	105	152	128	89	1.133
	North	112	127	133	101	709
	East	102	110	117	100	1.563
Total		**105**	**130**	**120**	**96**	**5.670**

Source: TDHS-2008

Sex ratios of living children can be used as a proxy for monitoring the sex preference existence. However, it should be taken into consideration that sex ratio of living children is not a direct measure for son preference. In this study, it is used to see whether a significant difference observed or not in terms of parity while analyzing the sex ratio of living children.

The sex ratio statistics is calculated based on the number of living children belong to currently married and fecund women aged 15-49 but it is also computed for all women (See Annex). Since the sex ratio statistics does not vary much among all women and currently married and fecund women, it is preferred to carry on with currently married and fecund women data. Even though, it is limited to give an idea about sex preference, initial results of TDHS-2008 indicates that overall sex ratio of living children is 105.

Table 11 presents sex ratios of living children by place of residence, region, and parity. The sex ratio for all children shows a slight difference in terms of place of residence. Sex ratio in rural parts of country is 111 while it is 104 in urban parts. Among regions, the highest sex ratio is observed in North region and the lowest is in East region. However, it is difficult to claim that there is a significant difference between East and North regions in terms of sex ratio.

As seen in table 11, the sex ratio of living children is analyzed by parity of children of the families has. Among currently married and fecund women who have one child, the sex ratio is 130 at country level, while sex ratio is 96 for women who have 3 or more children. It implicitly shows that women who have sons in their first births are more likely to limit their fertility than women do not have sons. Moreover, the sex ratio of living children among women with one child demonstrate that the chance of having a son is slightly higher than having a daughter at the first birth. McMahan (1951) revealed that the “tendency for the sex ratio among live births to decrease as the age of the mother increases” and “a slightly greater tendency for the first-born child to be a male than for later born children”.

The sex ratio of living children varies significantly by regions in terms of parity. In Central region, the sex ratio for living children is higher than the country average and it is much lower in Eastern parts.

Given the fact that people in Turkey have a tendency to have at least two children, sex ratios of children for parity two needs to be interpreted carefully (Table 11). For parity two, the sex ratio of children in urban parts is 117 and 131 in rural areas. In Central and North parts, the sex ratio holds almost same and more than the country average.

At parity three and more, it seems that number of living boys diminishes and sex ratio falls under 100 which imply that there are more living daughters than boys. The underlying reason can be attributed to mortality rates. The mortality rates of boys are quite more than daughters and it results in skewed sex ratios as age increases.

4.1.2.2. Arnold's Method

Arnold's index is computed to measure the influence of sex preference on contraceptive use. To have a better understanding the Arnold's measure a short illustration is presented.

Table 12. Desire for More Children and Parity

	Number of Sons	Percentage preferrring no more	In the absence of sex preference	n
Parity				
No child	0	55,2	55,2	354
One child	0	49,1	49,1	433
	1	48,9	49,1	540
Two children	0	50,4	52,9	347
	1	52,9	52,9	982
	2	47,6	52,9	534
3+ children	0	54,5	67,0	148
	1	60,5	67,0	660
	2	59,9	67,0	784
	3+	67,0	67,0	643
All Children		**54,7**	**57,5**	**5.425**

Source: TDHS-2008

Among women with two children, the highest proportion of women desiring to stop childbearing belongs to those women with one son and one daughter (52.9). It is assumed that the same proportion of women who want to end childbearing was observed for each combination. Hence, it was assumed that 52.9% of women with

two living daughters or two living sons does not want to have any more child(ren). The findings suggest that the proportion of women who do not plan to have any more child(ren) would increase by 2.8% in the absence of sex preference. The corresponding figures for 1978 and 1988 survey were 5.5 and 3.5 percent (Arnold 1987, Unalan 1993).

Table 13. Contraceptive Use and Parity

	Number of Sons	Contraceptive Use Percent	In the absence of sex preference	n
Parity				
No child	0	45,1	45,1	391
One child	0	83,9	84,5	478
	1	84,5	84,5	622
Two children	0	91,2	92,7	405
	1	92,4	92,7	1.126
	2	92,7	92,7	599
3+ children	0	87,9	90,3	159
	1	90,3	90,3	643
	2	88,8	90,3	735
	3+	89,6	90,3	551
All		**86,1**	**86,9**	**5.670**

Source: TDHS-2008

In regards to contraceptive use, the above mentioned method is applied and the results show that in the absence of sex preference the contraceptive use remain at the same level which is 86% among currently married and fecund women. However, according to 1978 and 1988 TDHS survey results in a study of Arnold (1987) and Unalan (1993) the contraceptive use was found to be on rise by 2.2 and 1.8 percent, respectively. This finding confirms the previous studies results' concentrating the relation of contraceptive use and

sex preference which suggested that the impact of sex preference on contraceptive use would be moderate.

4.1.3. Contraceptive Use and Background Characteristics of Women

The awareness and practice of contraceptive use in Turkey has been on rise while showing discrepancies among regions as well as place of residence.

Table 14. Current Contraceptive Use

Year	Not Using	Using Any Methods	Modern Methods	Traditional Methods
1988	36,6	63,4	31,0	36,6
1993	37,4	62,6	34,5	37,4
1998	36,1	63,9	37,7	36,1
2003	29,0	71,0	42,5	29,0
2008	27,0	73,0	46,0	27,0

Source: TDHS-2008

The table 14 summarizes the contraceptive use over 20 years. The contraceptive use in Turkey was stable at around 63 percent in the 10-year period from 1988 to 1998 and then increased substantially in the following decade and reached 71 percent in 2003 and 73 percent in 2008 (TDHS-Report 2008). Moreover, in line with the increase in the use of modern methods, it has been observed that there is a decline in use of traditional methods. In the light of information that contraceptive use and fertility preferences are strongly connected to each other, relation between contraceptive use and fertility preferences is discussed in next paragraphs.

In this part of the study, relation between contraceptive use and desire for more children will be discussed. The sex ratio of living children by fertility preferences with respect to place of residence and region, contraceptive use by parity, declared sex preference by region and place of residence are analyzed and interpreted.

Table 15.Current Contaceptive Use and Individual Factors

	Not Using	Using	n
Educational Level of Women			
No education/Primary incomplete	21,1	78,9	1.199
First level primary	11,1	88,9	2.901
Second level primary	19,7	80,3	463
High school and higher	12,9	87,1	1.107
Childhood Place of Residence of Women			
District, subdistrict, village	14,3	85,7	3.883
Abroad	11,5	88,5	58
Province	13,1	86,9	1.721
Mother Tongue of Women			
Turkish	12,1	87,9	4.478
Kurdish	22,8	77,2	1.034
Arabic and others	24,4	75,6	158
Working Status of Women			
Not working	13,8	86,2	4.038
Working without social security	15,2	84,8	1.181
Working with social security	12,1	87,9	448
Age of Women			
15-19	45,8	54,2	135
20-24	23,2	76,8	658
25-29	12,8	87,2	1.048
30-34	11,4	88,6	1.111
35-39	7,8	92,2	1.122
40-44	9,3	90,7	918
45-49	21,5	78,5	678
Total	**13,8**	**86,2**	**5.567**

Source: TDHS-2008

Table 15 displays the prevalence of contraceptive use by individual factors. Among fecund and currently married women, the contraceptive prevalence is 86,2%. In regards to education, contraceptive use is lower for women who are not educated (78,9) or have secondary school degree (80,3%). In accordance with expectations, contraceptive use is lower among 15-19 aged fecund and currently married women. The reason is probably due to couples

desire to bear child. Contraceptive use increases until to age 45 and then use of contraception decreases with the decreasing risk of pregnancy. The contraceptive prevalence among women whose mother tongue is Turkish have the ones who use more contraceptives than the women in other language groups. It is found that women's working status does not differentiate contraceptive use remarkably. The contraceptive prevalence rates is around 13% among those women currently married, fecund and not working or working with social security. The lowest contraceptive practice is among those women who are working without social security.

In order to see how husband related factors are affecting contraceptive use, some selected characteristics of husband is shown in Table 16.

Table 16. Current Contraceptive Use and Husband Related Factors

	Not Using	Using	n
Educational Level of Husband			
No education/primary incomplete	21,0	79,0	171
First level primary	14,9	85,1	2.542
Second level primary	13,3	86,7	1.088
High school and higher	12,2	87,8	1.847
Mother Tongue of Husband			
Kurdish	17,2	82,8	1.099
Arabic and others	12,7	87,3	192
Turkish	13,2	86,8	4.374
Working Status of Husband			
Not working	13,2	86,8	618
Working without social security	13,3	86,7	3.087
Working with social security	15,3	84,7	1.692
Total	**13,8**	**86,2**	**5.397**

Source: TDHS-2008

Similar to women's education, the contraceptive use increases as the husbands have higher educational level. The contraceptive prevalence is %79 among those currently married with non-educated husband and women. However, among those women married with husband who have at least high school degree, the contraceptive use is 87,8%. In regards to working status of husbands, the highest contraceptive prevalence rate is 86,7% among husbands working without social security. In terms of mother tongue of husbands, it seems that there is much more variation in contraceptive use among ethnicity. The women married with Turkish husbands are more likely to use contraceptive than those women married with Kurdish and/or Arabic or other husband.

Table 17. Current Contraceptive Use and Children Related Factors

	Not Using	Using	n
Sex Composition of Living Children			
No Children	54,9	45,1	370
Daughters more than sons	11,8	88,2	1.882
Equal number of sons and daughters	8,4	91,6	1.309
Sons more than daughters	11,5	88,5	2.109
Fertility Desire			
No desire for more children	9,0	91,0	4.197
Desire for more children	28,2	71,8	1.469
Dead Children			
Dead son	13,6	86,4	326
Dead daughter	15,6	84,4	279
Dead both sexes	16,1	83,9	89
No dead	13,7	86,3	4.976
Total	**13,8**	**86,2**	**5.666**

Source: TDHS-2008

Since contraceptive methods are widely used to avoid unwanted pregnancies, it is expected that women without children are less likely to practice contraception. In line with assumption, the contraceptive prevalence is 45,1% among women who have not

living children. In a closer look to the relation and sex composition of living children, it can be easily inferred that currently married, fecund women with equal number of son and daughter are more likely to stop having children compared to those with more sons than daughters or more daughters than sons. With regards to fertility desire, the women want to have one more child are less likely to use contraceptive methods. The sex of dead children does not make difference on contraception behavior of women. The highest contraceptive use is seen among women who had lost children of both sexes. This is also considered as normal because those women would not be satisfied with number of surviving children. So, they may be persistent in having additional child(ren).

Table 18. Current Contraceptive Use and Family Formation Factors

	Not Using	Using	n
Early Marriage			
18 > years old	12,8	87,2	3.551
< 18 years old	15,8	84,2	2.313
Marriage Arrangement			
Arranged by others	15,3	84,7	3.108
Arranged by couples	12,5	87,5	2.556
Bride's Price			
Yes	16,3	83,7	955
No	13,4	86,6	4.707
Consanguinity			
First degree relative	16,0	84,0	736
Others	15,4	84,6	699
No relative	13,3	86,7	4.226
Type of Marriage Ceremony			
Only religious	14,8	85,2	247
None of them[2]	*23,8*	*76,2*	*15*
Civil ceremony	13,8	86,2	5.405
Total	**13,8**	**86,2**	**5.662**

Source: TDHS-2008

Table 18 presents that contraceptive use varies according to family formation factors. To illustrate, the contraceptive use among

[2] The sample size is too small to comment

marriage decided by families women is 15,3% while it is 12,5% for those married by agreement with their current husband. Moreover, currently married and fecund women who had married earlier than 18 years old has lower tendency to use contraceptive methods. In terms of bride price, it seems that currently married and fecund women who were experience the bride price practice are less likely practice contraception. In relation to consanguinity with husband, it is found that if currently married and fecund women got married with anyone else out of their family, they are more likely to practice contraceptive methods. The type of marriage ceremony shows that there is almost no difference in terms of contraceptive use.

Table 19. Current Contraceptive Use and Household and Community Factors

	Not Using	Using	n
Type of Place of Residence			
Rural	16,0	84,0	1.426
Urban	13,2	86,8	4.244
Region			
West	11,5	88,5	1.482
South	16,3	83,7	780
Central	12,7	87,3	1.133
North	12,7	87,3	709
East	21,3	78,7	1.566
Wealth			
Poor	16,1	83,9	2.267
Middle	12,5	87,5	1.262
Rich	12,7	87,3	2.138
Total	**13,8**	**86,2**	**5.567**

Source: TDHS-2008

Contraceptive use changes significantly among regions. The lowest contraceptive prevalence, 88,5%, is seen in West region and highest contraceptive prevalence, 78,7% is observed in East region of Turkey. Based on type of place of residence, 86,8% of currently married and fecund women living in urban parts are currently contraceptive user while for rural parts it is 84%. Wealth status also

displays unlike results. The currently married and fecund women who are included in poor status are less likely to use contraceptive than those in middle or rich class.

The results of contraceptive use indicate that contraceptive use vary by the background characteristics of women. Women whose education is low, married by the arrangements of others, paid by husbands to get married are less likely to use contraceptives. In other words, traditional women have fewer tendencies to practice contraceptive methods.

4.1.3.1. Sex Preference and Contraceptive Use

In this part of the study, relation between contraceptive use and desire for more children will be discussed. The sex ratio of living children by fertility preferences with respect to place of residence and region, contraceptive use by parity, declared sex preference by region and place of residence is analyzed and interpreted.

Table 20. Sex Ratio of Living Children by Fertility Preferences

Number of Living Children	Total	Desire for more children	No desire for more children
1	130	124	141
2	120	104	122
3+	96	72	98
All children	**105**	**104**	**106**

Source: TDHS-2008

In order to understand future fertility preferences, currently married women were asked: “Would you like to have another child or would you prefer not to have any more children ?“ In fact, the desire for another child(ren) in the future decreases depending on the increase in the number of living children. However, if couples have a desired sex composition of living children, their demand to have other

children may remain. In such cases, it is expected that fertility preferences would be in favor of bearing additional child(ren).

By considering the table 20, it is obvious that the sex ratio of living children with respect to desire to for an additional child allows claiming that there exists a sex preference especially if favor of son in Turkey despite the sex ratio of living children is almost same in terms of fertility preferences. Furthermore, this difference can be easily observed at different parities. At parity one, the sex ratio of living children is 124 for women desiring more child(ren) while this figure is 141 for women who have no tendency to bear additional child(ren). Due to the fact that, two children norm is much more common in Turkey, it would be better to discuss the figures of parity two. At parity two, the sex ratio of living children of women who have no more desire for children is 122 while this is 104 for women having desire for more children. This difference may lead to say that women who are not satisfied with current living number of son have tendency to bear additional children even they are satisfied with the current number of living children. Moreover, at parity three and more, similar results with parity two are obtained. Depending on the dissimilarity of the ideal number of children, the sex ratio of living children is further discussed by type of place of residence and region as well.

The sex ratio of living children generates difference in terms of regions and place of residence. In regards to type of place of residence sex ratio of all living children among women not desiring for more children is 114 and 84 for women having desire for more children in rural areas.

Table 21. Sex Ratio of Living Children by Fertility Preferences, Type of Place of Residence, and Region

	Desire for more children				No desire for more children			
	All children	One Child	Two Children	3+ children	All children	One Child	Two Children	3+ children
Type of Place of Residence								
Rural	84	113	99	47	114	208	137	107
Urban	111	126	105	91	103	133	119	94
Region								
East	83	98	97	66*	105	187	131	103
South	98	156	92	63*	106	80	114	104
Central	127	166	124	39*	102	127	128	90
North	86	106	85	35*	115	164	141	103
West	112	110	101	175	107	146	120	95
Total	**104**	**124**	**104**	**72**	**106**	**141**	**122**	**98**

Source: TDHS-2008

In a closer investigation according to parities, the same difference holds same at each parity. At parity one, the sex ratio is 113 for women have desire for more children and 208 for women not desiring more children. The big amount of difference suggests that once women bear son as a first child, they exhibit less intention to give next births. Also, at parity two, the same story can be told due to difference in sex ratios in terms of fertility preference which are 99 and 137 among women desiring additional children and not, respectively. The ideal number of children of currently married and fecund women is 2,64 in rural areas of Turkey. Thus, special attention should be paid to parity three. The sex ratio of living children at parity three and more is 47 for women with a desire for more children and 107 for women without any intention for future births. Therefore, at parity three and more, it can be easily understood that even if women residing in rural areas reach three children in their reproductive period, they have still strong preference in bearing additional children to have at least one son.

In urban areas, sex ratio of living children displays that there is not clear sex preference because the sex ratio is 111 for women desiring more children and 103 for women having no desire for more children, respectively. There exists small amount of difference between sex ratios of women having desire for more children and women have no desire for more children. However, at parity two this difference is slightly higher which leads to say that women living in urban areas have more tendencies to have more sons than daughters.

The sex ratio in East, South, and North regions vary significantly when it is discussed by considering all living children according to fertility preferences. The sex ratio of living children of women having desire for more children is 83, 98, and 86 in East, South, and North regions, respectively. However, the same ratio for women having no desire for additional child(ren) is 105, 106, and 115 in East, South, and North regions. Besides, at parity one the highest amount of difference is detected in East, North and West regions. However, in North, East, South as well as West regions it can be said that having less sons than daughters leads women to continue bearing children until they are satisfied with the sex composition of living children. For instance, the sex ratio of living children is 97 among women desiring more children and 131 for women have no desire for more children in East region. Similarly, this figure is 114 for women not desiring more children and 92 for women having desire for additional child(ren) in South region. Moreover, the sex ratio at parity two for women having desire for more children is 85 and 141 for women not wanting additional child(ren) in North regions. Also, in West there is clear difference in terms of sex ratio of living children. Among women have no desire for more children sex ratio of living children is 120 and 101 for women having desire for children

In Central and West regions the sex ratio of living children demonstrates that there is not enough evidence to say that sex preference exists. However, it would be more appropriate to check these figures based on parities. At parity two, the sex ratio of living children is almost same among women having desire for more children and not in Central region which is 124 and 128. Nevertheless, the sex ratio of living children among women have two children and not desiring anymore children is 120 while it is 101 for women who have a desire for more children in West region.

The sex ratio of living children for women having at least three children reveals that women have strong desire to have at least one son in their family composition almost in all regions except West region. The sex ratio is 66 for women residing in East region and has desire for more children while for women not desiring for more children is 131 in same regions. Similarly, the same difference is bigger in South, Central and North regions.

The data on the current use of contraceptives is among the most important information collected in the TDHS since it provides insight into one of the main determinants of sex preference and serves as a key measure for assessing the sex preference among women. In this respect, Table 22 is constructed to show the contraceptive use by sex composition of living children. As expected, contraceptive use increases as the number of children goes up because it is supposed that as the couples reach desired number of children they try to stop child bearing by practicing contraception. Table 22 indicates that current contraceptive use of currently married and fecund women is 86,2 which is higher than all 15-49 aged women (73 %). Among married and fecund women who have already not any children, 45 percent of them are using contraceptive

Table 22. Current Contraceptive Use of Currently Married Women by Living Children Composition

	No Method	Method Use	Traditional Method	Modern Method	n
Parity					
No Children	54,9	45,1	20,4	24,7	392
One children					
One boy	15,4	84,6	30	54,6	568
One girl	16,1	83,9	37,9	46	459
Two children					
2 boys	7,3	92,7	34,3	58,4	550
2 girls	8,8	91,2	35,2	56	365
1 girl, 1 boy	7,6	92,4	31,5	60,9	1.034
Three + children					
boys > girls	11,6	88,4	32,3	56,1	991
girls>boys	10,9	89,1	32,8	56,3	1.058
boys=girls	12,1	87,9	31,8	56,1	275
Total	**13,8**	**86,2**	**31,7**	**54,4**	**5.692**

Source: TDHS-2008

At parity one, the results show that 84,5 % of women with only one boy practice contraception and it is almost same for women with only girl. However, there is significant difference in the preference of contraceptive methods. The women have only one boy have more tendencies to use modern methods than women have only a girl. By considering the fact that modern methods are much more effective in preventing pregnancy than others such as traditional methods, it can be inferred that in case families have preference to have only one child, the direction of the preference would be towards to sons.

For parity two, the contraceptive use is about at the same level which is around 92 %. Moreover, difference between the use of traditional and modern contraceptive method use is not as significant as it was for only one child. The use of modern contraceptive

methods is highest with 61% when families have one boy and one daughter. If there were an explicit sex preference in favor of boys, the contraceptive use should decrease as the number of girls decrease. However, according to results of descriptive analysis, there is not enough evidence to support that the existence of particular sex preference even the modern method use is lowest among women having two boys.

At parity three, the contraceptive use does not change and nearly %89 of married and fecund women are using contraceptive. The uniformity of contraceptive use within different children composition implies that the gender of children is not influential in the decision process. However, a remarkable result is obtained for parity one in terms of modern contraceptive use. Once women firstly bear a son, then they are more willing to use modern methods instead of traditional methods while the overall method use remains almost same with families have daughter as of their first child.

4.1.3.2. Bivariate Analysis of Model Variables

Though current contraceptive use is quite high among fecund, currently married and have at least one child women, there are some significant variations. To examine the relationship between current contraceptive use and other variables, chi-square analysis is conducted (Annex Table 1). The chi-square statistics is assessed and it looks that the practice of contraceptive use is significantly associated with educational level of women, age, and mother tongue of women, residence type, region, welfare, marriage arrangement, marriage time, bride price, and desire for children, sex composition of living children, partner's ethnicity and education of partners. All these variables are found significant at α=0,05 level. Furthermore,

childhood place of residence, working status of women, type of marriage ceremony, consanguinity with husband, and working status of husband are found as statistically insignificant variables which have not statistically significant relationship with current contraceptive use at 95 % confidence level. Therefore, the chi-square statistics of those variables are not included in above table.

As expected, women who have a tendency to have more children are less likely to use contraceptive methods. In regards to education levels, non-educated women have smallest contraceptive use among other education levels. Place of residence do differentiates a significant variations. In relation to mother tongue of women, the figures imply that there is statistically significant relationship between contraceptive use and mother tongue. Being a Turkish woman in Turkey, results in practicing more contraceptive methods than others. Welfare status of women plays an important role in use of contraceptive. Woman who are in middle or rich class are practicing contraceptive more than poor.

Chi-square statistics suggest that the affect of age and marriage age on contraceptive use are statistically significant. The sex preference which is produced on the basis of ideal number of children is insignificant. To examine the effect of current sex composition of children, it seems that couples who have equal number of son and daughter are using contraceptive more than couples have more sons or daughters. Also, this variable has statistically significant relationships with current contraceptive use.

Among husband related variables, working status of husband is not associated with contraceptive practice. On the other hand, partner’s mother tongue and education level of husband are directly associated with contraceptive use.

4.2. Multivariate Analysis

Complex sample logistic regression analysis were applied in order to find the best fitting model for the presence of contraceptive use with other independent variables grouped as individual, household and community, family formation, children and husband factors. The dependent variable is the current contraceptive use of women with the category of “1” if women practice any contraception and “0” if women do not use any kind of contraceptive methods.

4.2.1. Logistic Regression Analysis

In this part of study, the results of the logistic regression analyses are presented. However, before giving and discussing the regression results, it would be better to remind that the dependent variable of this study is contraceptive use which is a bivariate event; whether contraceptive is currently used or not used. Therefore, there is a dichotomy “yes” and “no”. Owing to type of dependent variable and sampling methodology employed in TDHS-2008,logistic regression is selected as the method of analysis for this study.

Prior to running models, it is strongly recommended to check collinearities of independent variables. “Collinearity is a problem that arises when independent variables are correlated with each other. Low levels of collinearity are not generally problematic, but a tolerance of less than 0,10 indicates a serious collinearity problem and absolutely results in coefficients that are not statistically significant (Menard 1995). In this study, the collinearity test was also conducted and apart from it dummies are constructed to test the relation of categorical variables. As a result of these tests, a statistically significant relation between education of women and husband, working status of women and husband, mother tongue of

woman and husband, childhood place of residence and type of place of residence of woman was observed. In order to eliminate the collinearity problem, based on the results of bivariate analysis (chi-square) and collinearity tests, it is preferred to continue with education of women, mother tongue of women, type of place of residence since their r-square values are much more higher than husband characteristics. Moreover, the results of multicollinearity test showed that age at marriage and age variables are correlated. Therefore, age at marriage was dropped from the model.

The cross tabulation analysis shed light on potential determinants of contraceptive use among currently married and fecund women. However, as the aim of the thesis is to identify how the sub-levels of each explanatory variable have impact on contraception, the following logistic regression analysis results were discussed in details. The independent variables were grouped into five categories which are individual, husband, children, and family formation, and household and community factors.

In order to examine the effect of variables with respect to living number of children, model was established on the basis of children number by controlling the sex composition of living children in each model.

4.2.1.1. Individual Factors (Block 1)

The odds ratios only for individual variables from logistic regression models of the likelihood of using contraception are presented in Table 23.

Table 23.Logistic Regression Analysis of Individual Factors

Variables	Bivariate Logistic Regression					Multiple Logistic Regression			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model A - All Children	Model A1- One Child	Model A2- Two Children	Model A3- Three and More Children
Educational Level of Women									
No education/Primary incomplete	**0,386**					**0,630**	**0,258**	**0,404**	**0,604**
First level primary	0,929					1,027	0,710	0,665	1,055
Second level primary	0,940					0,981	0,825	0,609	1,116
High school and higher	1,000					1,000	1,000	1,000	1,000
Mother tongue of women									
Kurdish		**0,407**				**0,539**	0,699	**0,910**	**0,470**
Arabic and others		0,325				0,358	0,624	0,780	0,286
Turkish		1,000				1,000	1,000	1,000	1,000
Age group									
15-19			0,990			1,233	**4,154**	1,493	-
20-24			**1,841**			**1,935**	**4,444**	**4,736**	**3,168**
25-29			**2,730**			**2,57**	**4,779**	**4,411**	**2,934**
30-34			**2,455**			**2,37**	**2,638**	**3,008**	**3,188**
35-39			**3,531**			**3,599**	**4,622**	**4,028**	**3,881**
40-44			**2,646**			**2,609**	1,662	**2,815**	**3,172**
45-49			1,000			1,000	1,000	1,000	1,000
Social Factor				**1,178**		**1,128**	1,100	**1,279**	1,090
Religious Factor					0,980	0,985	0,934	1,031	1,021
Nagelkerke R Square	0,028	0,031	0,036	0,005	0	0,073	0,084	0,081	0,114
Classification Percent	89,2	89,2	89,2	89,0	89,0	89,0	83,7	92,0	88,9

**Bold values are significant at 0,05 alpha level*

First, the likelihood of contraceptive use with respect to individual variables are examined separately, and the results of crude ratios are given in Model 1,2,3, 4 and 5. Then, logistic regression results for parities are shown in Models A, A1, A2 and A3. Model A includes all children, where Model A1 includes only one child, Model A2 includes two children and Model A3 includes three children.

According to the results, educational level of women increases the use of contraceptives. The non-educated or and second level educated women are less likely to use contraception as compared to

women having at least high school degree but only non-educated category is found significant in the model.

The likelihood of contraceptive use among Turkish women in comparison with Arabic or Kurdish women changes significantly (Model 2) and does not vary much with addition of new variables into the models.

The bivariate models with age, social factor and religious factor, social factor significantly increasing the probability of contraception while religious factor is decreasing. Actually, it is not surprising because it is almost known that due to religious belief; those people are not volunteer to practice any contraceptive methods.

All individual variables are entered in full model (Model A). Educational attainment, mother tongue, and age of women as well as social factor are found significant at 0,05 alpha level. In details, the odds of using contraception increase by 0,63 for non educated women. In regards to age of women, as the age increases, the likelihood of contraceptive practice among married and fecund women decreases.

The explained variation with full model is only 7,3% of total variation which seems very small (Nagelkerke R Square=0,073).

In order to examine the differences between children parity, different logistic regression model was constructed for each parity. In one children model, education takes the leading role in identification of contraception use among married and fecund mothers. The power of no education is more effective in management of contraception. The likelihood of using contraceptive among currently married,

fecund, non-educated women with one child is 0,25 times more than those who have at least high school degree.

Women whose mother tongue is Kurdish the likelihood of contraception decreases compared to Turkish women. With the same variables included in the full model, the explained variation of one children model considerably increases to 8,4%.

The next model (Model A2) shows the results for women having two children. As compared to full model, the effect of no education is smaller in two children model. Similar to full model results, no education with negative effect, age with negative effect and social factor with positive effect was found significant. Besides, mother tongue of woman remains as significant predictors of contraceptive. The explained variation is around 8,1%.

Three and more children model displays different picture with previous models. Social factor has emerged as an insignificant factor of contraceptive use. Education of woman, age of woman, and mother tongue of woman appeared as a significant factors on contraceptive acceptance. The total variation In contraceptive use explained by only age of women having three and more children is 11,4%.

4.2.1.2. Husband Related Factors (Block 2)

The result with the inclusion of the husband factor into the model was presented in Table 24.

Table 24. Logistics Regression Analysis of Husband Related Factors

Variables	Bivariate Logistic Regression			Multiple Logistic Regression			
	Model 1	Model 2	Model 3	Model E-All Children	Model E1-One Child	Model E2-Two Children	Model E3:Three and More Children
Educational level of husband							
No education/primary incomplete		**0,433**		**0,491**	**0,222**	0,905	**0,428**
First level primary		**0,971**		**0,688**	**0,654**	**0,541**	**0,574**
Second level primary		0,897		0,886	0,733	1,156	0,693
High school and higher		1,000		1,000	1,000	1,000	1,000
Mother tongue of husband							
Kurdish	**0,629**			**0,629**	**0,693**	**0,589**	**0,592**
Arabic and others	0,997			0,993	**5,26**	0,910	0,600
Turkish	1,000			1,000	1,000	1,000	1,000
Age of husband			**0,982**	**0,985**	**0,970**	**0,973**	**0,96**
Nagelkerke R square	0,01	0,01	0,04	0,02	0,04	0,03	0,04
Classification Percentage	89,2	89,2	89,1	89,2	84,2	92,3	88,7

*Bold values are significant at 0,05 alpha level

The results suggest that whether the husband is employed or not is not affecting current contraceptive use across the all models including the one, two and three children model. A significant association of ethnicity of husband with current contraceptive use was observed in above model. Being a Kurdish decreases the log odds of contraceptive use substantially. The odds ratio 0,629 indicated that Kurdish husbands are 0,629 times more likely to use contraceptive versus Turkish husbands.

Age of husband appears as a significant predictor of contraceptive use. As the husbands get older, the likelihood of method use decreases which in in the same direction with the age of women studied in previous models.

The educational attainment of husband seems to be a statistical significant predictor of contraceptive use. The Model 2

indicates that as the educational level increases the odds of contraceptive use increases as well. The lowest two categories, no education and first level primary education are found to be significant explanatory when educational level of husband is added into model alone. The likelihood of using contraceptive methods is increased by 0.433 times among women married with non-educated males; 0.671 for first level primary educated husbands.

Model E, logistic regression model which includes all variables related to husband, displays that mother tongue and education of husband are significant predictors of contraceptive use. The odd of contraceptive acceptance is 0.625 times more for Kurdish husbands in comparison with Turkish husbands. Moreover, the odd of contraceptive use is 0.515 times more for non-educated husbands compared to high level graduates.

In one child model (Model E1), it looks that only education attainment of with a sub-level of no education has significant and negative impact on contraceptive use (R-square= 0,03). The power of no education on contraceptive use becomes stronger than Model E (all children).

Model E2 with 0,036 R-square suggests that mother tongue, age, and education level of husband are statistically significant predictors of contraceptive use. The odd of contraceptive use is 0,571 times more among Kurdish husbands compared to Turkish husbands if they have two living children. In addition, age of husband appears to be a significant estimator with negative effect on contraceptive use. As the husbands get older, the odds of contraceptive use decreases. Within education levels, first level primary educated husbands have less tendency to practice

contraceptive methods if they have two living children compared to at least high school graduated husbands.

Model E3 (at least three children) has almost same results with Model E2. Only difference is that no education sub-level becomes significant factors with negative impact on contraceptive use. The total explained variation of contraceptive use is only 3,6%.

4.2.1.3. Children Related Factors (Block 3)

Children factors including sex preference, desire for more children, sex composition of living children, and dead children are discussed by using the sample of currently married and fecund women with at least one child.

Table 25. Logistic Regression Analysis by Children Related Factors

Variables	Model 1	Model 2	Model 3	Model 4	Model D	Model D1	Model D2	Model D3
Sex preference								
Sex preference	0,901				0,931	0,845	1,012	0,994
No sex preference	1,000				1,000	1,000	1,000	1,000
Desire for more children								
Desire for more children		**1,388**			**2,372**	**1,688**	2,432	**4,266**
No desire for more children		1,000			1,000	1,000	1,000	1,000
Sex composition of living children								
Daughters more than sons			0,972		0,992	0,968	0,861	1,143
Sons and daughters are equal			**1,425**		**1,23**	*	0,911	0,979
Sons more than daughters			1,000		1,000	1,000	1,000	1,000
Dead Children								
Son dead				**0,756**	**0,645**	0,679	1,336	**0,591**
Daughter dead				**0,623**	**0,524**	0,617	0,656	**0,528**
Both sexes dead				0,608	**0,490**	0,677	0,553	0,513
No dead				1,000	1,000	1,000	1,000	1,000
Nagelkere R square	0	0,005	0,005	0,004	0,036	0,015	0,023	0,043
Classification Percentage	89,2	89,2	89,2	89,2	89,1	84,3	92,3	88,4

*Bold values are significant at 0,05 alpha level

As can be seen from table 25, groups of variables included in children variables are examined. In Model 1, only sex preference variable which was generated by using ideal number of children was introduced. The Model 1 shows that the effect of sex preference is not statistically significant and does not contribute to the variation of contraceptive use. However, it seems that particular sex preference decreases the likelihood of contraceptive use. Desire for more children was then added separately in Model 2. According to result, no desire for more children has positive impact on contraceptive use. The desire for more children decreases the log odds of current contraceptive use.

When sex composition of children was assessed, amazingly result suggests that Turkish couples have more tendencies to have equal number of son and daughter. The likelihood of using contraception of women has equal number of son and daughter is 1,425 times more compared women have more sons than daughters. It also remained the same and statistically significant when sex preference, desire for more children and sex composition was in the model at the same time.

Regarding the dead children, it seems that there is a association between contraceptive use and sex of dead children. The contraceptive practice is 0,756 times more among women who lost a son compared to those who had not lost any children. Besides, the results suggest that if a dead child is a daughter then women are less likely to use contraceptive compared to women had lost a son.

In all children model (Model D), negative impact of desire for more children and sex composition of children with the category of equal number of son and daughter, and dead children are still powerful predictors of current contraceptive use. However, the R-

square for this model is quite small and these three variables can only explain the 3,6 % of the total variation in contraceptive use.

In one child model (Model D1), similar to results of model D, no desire for children is still significant which increases the likelihood of contraceptive acceptance. However, the power is smaller than it was in model D.

In two children model, only no desire for more children appears as a significant predictor of contraceptive use with an increasing effect on contraception. This variable accounts for only 2,3% of total variation of contraceptive use. Though sex composition of children are not contributing to model significantly, it seems that if couple have two daughters they are less likely to practice contraception compared to couples have two sons.

Additionally, the sex preference and sex composition variables were not explanatory in the detection of current contraceptive use among fecund and married women having at least three children. However, desire for more children and dead children are significant predictors of contraceptive use. In details, the odds of using contraception is almost 0,5 times more among women who had lost a son or a daughter compared to those who had not any child(ren).

4.2.1.4. Family Formation Factors (Block 4)

A set of variables belong to family formation group was inserted into model and assessed.

Table 26. Logistic Regression Analysis of Family Formation Factors

Variables	Bivariate Logistic Regression						Multiple Logistic Regression			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model C-All Children	Model C1-One Child	Model C2-Two Children	Model C3-Three and More Children
Early marriage										
>18 years old		1,000					1,000	1,000	1,000	1,000
< 18 years old		**0,743**					**0,803**	0,856	0,786	0,774
Marriage Arrangement										
arranged by others	**0,715**						**0,757**	**0,715**	0,790	0,751
arranged by the couples	1,000						1,000	1,000	1,000	1,000
Brides Price										
No			1,000				1,000	1,000	1,000	1,000
Yes			**0,747**				0,805	0,924	0,641	0,918
Consanguinity										
First degree relative				0,761			0,871	0,760	1,043	0,832
Second degree relative				0,918			1,019	0,794	1,634	1,031
Not relatve				1,000			1,000	1,000	1,000	1,000
Type of Marriage Ceremony										
Only religous ceremony					0,926		0,992	1,443	1,223	0,583
None of them					0,450		0,291	**0,155**	0,230	*
Civil ceremony					1,000		1,000	1,000	1,000	1,000
Relationship factor						0,978	0,975	0,906	0,998	1,034
Nagelkerke R Square	0,005	0,004	0,002	0,002	0,001	0	0,013	0,024	0,017	0,016
Classification Percent	89,2	89,2	89,2	89,2	89,2	89,0	89,0	83,4	92,0	88,8

*Bold values are significant at 0,05 alpha level

In model 1, only marriage arrangement with two categories was tested while other variables were controlled. The initial result indicated that couples married with the arrangement of others are less likely to practice contraception.

In relation to marriage timing, age at marriage makes a significant difference in the use of contraception. An early married (younger than 18 when married) and fecund as well as having at least one child woman have less tendency to use contraceptive methods compared to those married older than 18. According to cultural issues in rural and less developed parts of Turkey, there are still brides' price customs. Model 3 shows that if a woman was allowed to get married with a male in exchange of certain amount of money, they exhibit a lesser tendency to practice any method. However, together with marriage arrangement and marriage age, brides' price became insignificant.

Degree of relationship, type of marriage ceremony and relationship factor with husband was separately not significant predictors of contraceptive use in Turkey. However, with marriage arrangement and age at marriage, type of ceremony turns out to be significant factor. In the absence of any type of ceremony, in one children model the likelihood of using contraceptive methods increase by 0,155 compared to civil ceremony. In one children model, age at marriage disappeared while type of marriage ceremony with none of them category has emerged as a significant factor. In brief, family formation variables were not able to explain the differentiation of contraceptive use for woman has more than one child.

4.2.1.5. Household and Community Factors (Block 5)

In block 5, variables included in household and community factors are discussed separately and then together.

Table 27. Logistic Regression Analysis Household and Community Factors

Variables	Bivariate Logistic Regression					Multiple Logistic Regression		
	Model 1	Model 2	Model 3	Model 4	Model B-All Children	Model B1-One Child	Model B2-Two Children	Model B3-Three and More Children
Type of place of residence of women								
Urban	1,000			1,000	1,000	1,000	1,000	1,000
Rural	**0,737**			**0,796**	**0,796**	**0,574**	0,849	0,827
Region								
West		1,000		1,000	1,000	1,000	1,000	1,000
South		0,732		0,754	0,751	0,725	0,586	0,876
Central		0,973		0,999	1,008	0,901	0,743	1,456
North		0,880		0,938	0,950	0,984	0,708	1,292
East		**0,451**		**0,471**	**0,491**	**0,527**	**0,482**	**0,510**
Wealth								
Poor			**0,770**		0,918	0,829	0,821	1,058
Middle			1,001		1,047	1,141	0,907	1,045
Rich			1,000		1,000	1,000	1,000	1,000
Nagelkerke R Square	0,004	0,018	0,030	0,020	0,020	0,030	0,015	0,030
Classification percent	89,2	89,2	89,2	89,2	89,2	84,2	92,3	88,6

*Bold values are significant at 0,05 alpha level

Model 1 gives the result of logistic regression including only type of place of residence variable. The results show that the odds of using contraceptive methods increase by 0,737 for rural residents in comparison with urban. As for regional variations in contraceptive use, women living in other than West are clearly less likely to use however, only East region is found significant. With the control of other variables, the coefficient of East implies that the tendency in

using contraception is almost half of West which is in expected direction. The net effect of regions remains significant in all models including one children, two children and three or three more children.

The model 3 revealed that wealth index has significant impact on contraceptive use. The women who belonged to poor class were 0,77 times more likely to practice contraception and it is significant.

Model 4 presents the results of logistic regression analysis of residence and region variables together. The net effect of residence increases significantly as well as remaining significant. When the wealth index was added into the model which is named as Model B, the power of rural declines substantially while there is a small increase in the coefficient of East. In regards to assessment of explained variation of model, the R square is quite small (0,02)

Similar to result of Model B, the place of residence and region were found significant in one children model (Model B1). This result suggests that in rural parts as well as in Eastern of Turkey, there is a tendency to have more than one child.

Two children and three and more children model reveal the different picture. Only region was found significant with negative impact on contraception.

In relation to age, apart from full model results, being Arabic or others plays a significant role in contraceptive use. The odds of being an Arabic or others are smaller for Kurdish and Turkish women which means that Arabic couples are less likely to use contraception though they have more than two children. Only 6,1% of total variation in contraceptive use can be explained by the above mentioned factors.

4.2.1.6. All Factors (Block 6)

In order to understand the impact of surviving children on contraception, four different complex logistic regression models were employed. According to the result of all children model which does not take the number of living children into account, the results show that education of women, mother tongue of women, future fertility preferences as well as age of women have significant effect on contraceptive use. Besides, these significant variables included in the model can explain 12,6% of total variation of contraceptive use.

Table 28. Logistic Regression Analysis by All Factors

Variables	All children model	One child model	Two children model	Three and more children model
Educational level of women				
No education/Primary incomplete	**0,579**	**0,282**	**0,418**	0,672
First level primary	0,927	0,749	0,659	1,108
Second level primary	0,979	0,839	0,609	1,302
High school and higher	1,000	1,000	1,000	1,000
Age of women				
15-19	**3,222**	**9,820**	2,944	-
20-24	**4,344**	**11,317**	**7,287**	**2,952**
25-29	**4,488**	**10,518**	**6,263**	**3,262**
30-34	**3,085**	**4,630**	**3,972**	**2,995**
35-39	**3,736**	**5,408**	**4,532**	**3,500**
40-44	**2,560**	**1,916**	**2,954**	**2,855**
45-49	**1,000**	1,000	1,000	1,000
Mother tongue of women				
Kurdish	**0,554**	0,680	**0,397**	**0,550**
Arabic and others	0,420	1,117	0,306	0,320
Turkish	1,000	1,000	1,000	1,000
Type of place of residence of women				
Urban	1,000	1,000	1,000	1,000
Rural	0,877	**0,628**	1,094	0,887
Region				
West	1,000	1,000	1,000	1,000
South	0,895	0,722	0,635	1,058
Central	0,871	0,663	0,648	1,062

North	0,976	1,072	0,716	1,143
East	0,927	0,953	0,848	0,886
Wealth Index				
Poor	0,987	0,807	1,093	1,005
Middle	1,079	1,134	1,043	1,034
Rich	1,000	1,000	1,000	1,000
Early Marriage				
Married older than 18	1,178	1,098	1,153	1,274
Married when less than 18	1,000	1,000	1,000	1,000
Marriage Arrangement				
arranged by others	0,861	0,858	0,950	0,858
by the couples	1,000	1,000	1,000	1,000
Bride's Money				
No	1,000	1,000	1,000	1,000
Yes	1,019	1,009	0,902	1,092
Desire for more children				
No Desire for more children	**4,499**	**3,654**	**2,488**	**6,494**
Desire for more children	1,000	1,000	1,000	1,000
Sex composition of living children				
Daughters more than sons	0,967	0,903	0,783	1,033
Sons and daughters are equal	1,111		0,884	1,019
Sons more than daughters	1,000	1,000	1,000	1,000
Dead Children				
Son dead	1,232	2,325	1,950	0,963
Daughter dead	0,827	0,998	1,068	0,716
Both sexes dead	1,363	0,836	1,765	1,146
No dead	1,000	1,000	1,000	1,000
Social factor	1,068	1,053	1,204	1,026
Religious factor	0,982	0,943	1,021	0,999
Relationship factor	1,009	0,894	1,085	1,056
Age of husband	0,986	0,987	0,998	0,975
Nagelkerke R square	0,127	0,151	0,111	0,159
Classification Percent	89,2	83,9	92,1	88,7

*Bold values are significant at 0,05 alpha level

Education of women plays an important role in practicing contraception and the model indicates that only women with no education makes statistically significant difference in terms of contraceptive use among categories of educational attainment. In other words, the likelihood of contraceptive use among non-educated

women is 0,579 times more than women having at least high school degree.

It is supposed that future fertility preferences of couples are effective on decision to practice contraception. In this respect, the model suggests that the odds of using contraceptive methods among currently married, fecund women with at least one child and no desire for more children is 4,5 times more than women having desire for more children. So, naturally if women are satisfied with children number they strongly starts contraceptive to avoid bearing additional child(ren).

Current sex composition of living children has significant impact on making decision to use contraceptive methods. In line with descriptive analysis' results, desire to have an equal number of sons and daughters is prominent determinants of contraception. The odds of using contraceptive methods among partners having an equal number of sons and daughters is 1,1 times more in comparisons with partners having more sons than daughters. However, in spite of the insignificant of sex preference on contraceptive use, the results imply that sex preference in favor of sons or daughters decreases the likelihood of contraceptive use. Considering ethnicity, the odds of practicing contraception is 0,55 times more among women speaking Kurdish compared to Turkish women.

In regards to age of women, it seems that age have positive impact on contraceptive use. Furthermore, the odds of practicing contraceptive methods increases as women get older. For example, a currently married fecund woman with at least one child who is between 15-19, the likelihood of contraceptive use of this woman is 3,2 times more than those who is between 45-49.

The dead children variable seems to be statistically insignificant predictors of contraceptive use for all models. However, the odds ratios show that if women had lost a daughter instead of a son, they are less likely to use contraceptive methods compared to women who had not lost any child(ren). One important result is that if women with two living children had lost any children even it is a son, a daughter or both sexes, then they are more likely to use contraceptive methods than those who had not lost any children. Actually, this case is also evidence about the prevalence of two children norm in Turkey.

One child model presents the results of regression model for women having only one child. Similar to all children model, education of women, type of place of residence, desire for more children, and age of women have statistically significant effect on contraception. Also, the explained variations is more than the all children model which is around 15,1% (R-square=0,151).

Similar story can be told about the non-educated women as in all children model which finds that the non-educated women have fewer tendencies to use contraception. However, it looks that no education contributes more in one child model. The likelihood of using contraceptive methods among non-educated women having one child is 0,28 times more than women graduated from at least high schools. The educational attainments become more sharpen in one child model.

With the difference from all children model, place of residence of women appears to be important in contraceptive use. In rural parts of Turkey, the odds of using contraceptive is 0,62 times more than urban areas.

Same result with all children model is obtained regarding the fertility preferences. The odds of using contraceptive among women having no desire to bear anymore children is 3,654 times more than women having desire for an additional child.

Two children model introduces the results of currently married and fecund women with two children. In general education and age of women, and future fertility preference is significant predictors of contraceptive use (R-square=0,111). A special emphasis is given to this category because it is well known that two children norm is quite common trait among parents.

In accordance with the results of previous models, the likelihood of practicing contraception decreases among women with no education compared to women with at least high school degree. The probability of contraceptive use among non educated women is 0,41 times more than women with at least high school degree.

In line with previous models, age of women is again considered as an important determinant of contraceptive use in two children model. As the women get older, the likelihood of contraceptive use decreases.

In relation to mother tongue of woman, it can be easily concluded that Turkish women have much more tendency to practice contraceptive methods than Kurdish and Arabic woman. This result also confirms that the ideal family size of Turkish women is less than others because even Kurdish women have two living children; they are less likely to use contraceptive methods. As a result, it can be inferred that Kurdish people are not satisfied with either number of children or gender of children.

In three or more children model, the regression results of currently married and fecund women with at least three children is provided. Future fertility preferences, mother tongue of woman, and age of women are major determinants of contraceptive use (R-square=0,159).

Future fertility preference remains significant model in final model as well and power of its effect on contraceptive increases. The odds of practicing any contraceptive methods is 6,5 times more than women desiring more children.

As in the previous models, the mother tongue of woman remains significant predictors of contraceptive use. The perspective of Turkish woman to family planning tools is not at the same line with other ethnicities. The probability of using contraception increases 3,1 times among Turkish women than Arabic and others.

Apart from these significant determinants of the contraceptive use, it may be useful to say few things about the other predictors in the logistic regression model which are not statistically significant. In all models, living in rural areas decreases the likelihood of contraceptive use even it is not significant at 0,05 alpha level. However, it is still possible to evaluate the odds of the type of place of residence as well as other predictors. For example, it can be said that the highest contraceptive use is observed in West in comparison with other regions. Moreover, it seems that poor woman have less tendency to practice contraception even this predictor is not significant in the model. Besides, if couples marriage was arranged by others, then theses women show inclination towards to contraceptive methods.

Amazing result is seen at two children model. The currently married and fecund women with one son and daughter have fewer tendencies to use contraceptive than those with two sons. This implies that some women desire to have both sexes of children but at the same time they want to have more sons than daughters in their desired family.

CHAPTER 5

DISCUSSION AND CONCLUSION

Sex preference is one of the important subjects of studies regarding fertility. Son preference rather than daughter or balance preference is commonly believed to be more prevalent in developing countries where women are economically and socially dependent on men (Bairagi and Langsten 1986; Arnold and Kuo 1984; Cleland and others 1983; Vlasoff 1990). Especially, in countries such as South Korea, China, India, Bangladesh and Pakistan where patriarchal system, refers to a rule by the male heads of a social unit such as family or tribe over the members of the unit (Pilcher and Whelehan 2004), is mostly observed social system, the son preference over daughters are more popular. Regarding Turkey, patriarchal system exists across the country and more acceptances of patriarchal values especially in rural parts and eastern region can result in higher preference of sons over daughters.

Along with the decrease in fertility, studies concerning in sex preference has started to draw more attention by scholars. During the last decade apart from Asian countries, the existence of strong son preference was documented in neighbouring countries of Turkey such as Armenia, Georgia and Azerbaijani (Duthe and others 2011).

According TDHS-2008, the total fertility rate for Turkey is 2,16 births per woman. This rate which is just above the fertility replacement level indicates that the fertility transition in Turkey is ongoing gradually but continuously. A decline in fertility rate with a significant increase in contraceptive use and strong value of patriarchal relations presence across Turkey especially in rural areas

and Eastern region has motivated to study sex preference and its relationships with contraceptive use in Turkey.

Thus, the main objective of the study is to examine the presence of sex preference in Turkey as well as to explore the relationship between sex preference and contraceptive use in recent years. Moreover, this study can also be considered as an attempt to identify the determinants of contraceptive use with a special emphasize on the relations with sex preference.

In order to gain a better understanding of contraception and sex preference in Turkey, women who are still likely to give births, namely fecund and currently married, are considered by taking the advantage of Turkey Demographic and Health Survey 2008 (TDHS-2008) women data. Sex preference and contraceptive use of women are analyzed under five headings which are individual factors of women, husband and children related factors, family formation factors as well as household and community factors.

There are four different indicators including behavioural and attitudinal measures which are commonly used to identify the sex preference in countries. These indicators are mostly behavioural measures and they are female children mortality rates, sex selective abortions, sex ratio at birth statistics and sex ratio statistics. On the other hand, among attitudinal indicators the ideal children composition of families reported during the survey can also be discussed to measure the magnitude of sex preference. Depending on the aim of this study and availability of data, in the present study, different ways of sex preference measurement methods mostly behavioral indicators are used. These behavioral measurements are focused on sex ratio at birth statistics and sex ratio statistics but accompanied by Arnold's method, and in terms of attitudinal measures, future fertility preferences and desired sex composition of

living children are discussed at different parities, region, and type of place of residence in the first part of the findings. Arnold's method is widely accepted sex preference measurement method therefore, it is employed. In the second part of the findings, logistic regression models are established to determine the factors of contraceptive use. These models are constructed separately based on the living number of children to see how the correlates of contraceptive use change in different parities.

Within behavioural measures, one of the important and well known indicators of sex preference is sex ratio at birth statistics. In unprejudiced countries where there is no clear sex preference sex ratio at birth statistics, under normal biological conditions, vary from 104 to 106. According to Address Based Population Registers System and General Censuses' results from 1985 to 2011, the sex ratio statistics of Turkey is around 105 which confirm that there is not obvious sex preference in favour of son or a daughter in Turkey. However, in the countries where sex selective abortions are neither allowed nor practiced, it is not expected to experience skewed sex ratio at birth statistics. Since Turkey is one of such countries where sex selective abortions are not prevalent, in order to examine the sex preference in Turkey, apart from sex ratio at birth statistics, different measurements such as sex ratio of living children and Arnold's method are used.

If there were a specific preference namely, son preference, it might be expected that sex ratio of those who desire more children is lower than those who do not want more children. Therefore, to have a better understanding of the impact of current sex composition of living children on fertility preferences, sex ratio statistics of living children by fertility preferences is discussed. At country level, it seems that there is not a clear sex preference because the sex ratio

statistics does not change by fertility desire. However at different parities, which are one child, two children, and at least three children, it can be said that there is moderate son preference because the sex ratio of living children of women having no desire for more children at each parity is higher than women having desire for more children. In the line with again Unalan's study (1997), it can be inferred that women who had sons at their early births are much more likely to stop or postpone having child(ren) than those who had daughters. In comparison with study of Unalan (1997) the amount of difference in overall sex ratio by fertility preferences has gradually decreased over 15 years but there is still moderate son preference in Turkey especially in rural areas. Due to an intensive agricultural occupation as well as the gender roles closely tied up with traditional values, families living in rural areas are more likely to have more sons than daughters. Kagitcibasi (1982) based on Value of Children Survey stated that those who lack of formal education, well-paid employment, social security tend to attribute economic values to children for their old age security and hence they have more tendency to have many children and a stronger preference over boys. Thus, with the knowledge of low education, high unemployment and less prevalence of social security remains overwhelmingly in rural areas of Turkey, the results supports the results of Kagitcibasi(1982).

It is obvious that regional discrepancy regarding socio-economic characteristics still takes place in Turkey. In terms of regions, the sex ratio of all living children changes in East, South, Central, and North regions depending on the decision for future births. In East, where the strong patriarchal values exist in almost every province, the son preference seems to play an essential role in the decision to have more children without depending on the living number of children. Similarly in South and North regions, at all

parities it is clear that once women have sons at their first birth, then they are less likely to have more child(ren). Though the sex ratio of living children by decision to continue having children or not changes for all living children in Central region, at parity two which is most desired children number in Turkey and Central areas, the sex ratio holds same by different fertility preferences. In other words, the results confirm that if women living in Central parts reach desired number of sons, then they are willing to stop haveing children. As it is expected, in West region the sex ratio of living children displays different results according to fertility preferences. The sex ratio of all living children does not change by desire for more children or not. However, especially at parity one and two, sex of living children appears to be an important issue in deciding to stop or continue b-having additional children particularly among Kurdish women.

In relation to attitudes on sex preference, it is found that among individual factors of women, educational level, mother tongue, and working status makes difference in the extent of son preference. The son preference is lower among women have higher education than illiterate women, among Turkish women than Kurdish women, among working women than not working women.

In terms of husband related factors, educational level of husband, working status of husband, and mother tongue of husband generates different degree of son preference. The non-educated or primary incomplete husbands have more tendencies towards son preference than others. Moreover, similar to women's characteristics Kurdish husbands declare more tendency to have more sons in their ideal family than Turkish husbands. Among family formation factors, the study reveals that marriage arrangement, brides' price, consanguinity and type of marriage ceremony displays different results about the extent of son preference. All those variables

indicate that as women become more traditional in terms of marriage and lifestyle, the extent of son preference among those women gets larger. The environmental factors such as type of place of residence and region as well as prosperity level of women play an important role in existence of son preference. In particular, son preference is by far highest in Eastern parts of Turkey. Higher son preference poor communities indicate that sons are seen as an income provider and a labor force to families. Therefore, similar to India, China and Bangladesh (Khan and Khanum 2000; Mahmood and Ringheim 1996; Arokiasamy 2002), the extent of son preference is more among poor women in Turkey.

Although it is difficult to quantify the effect of sex preference on fertility and family planning, a measure developed by Arnold (1985) is used to estimate the effect. Arnold's method is examined with aim to detect how sex preference affects future fertility preferences and contraceptive use. Throughout the application of Arnold's method, firstly, women with a specific number of children are grouped according to their children's sex. The influence of sex preference is then estimated by identifying the group of women least likely to have another child. The assumption is that if there were no sex preference, all women would be just as likely to have another child as this group. The difference between this lowest-percentage having another child and the percentage of all women having another child is taken as a measure of extra fertility that is due to sex preference. This extra fertility is related to sex preference, but not necessarily to son preference. The findings state that the proportion of women who do not plan to have any more child(ren) would increase 2,8% in the absence of sex preference. However, the corresponding values were 5,5% and 3,5% for in 1978 and 1988, respectively (Arnold, 1987; Unalan, 1993). Therefore, based on the diminished difference in sex ratio of living children among women

wanting more children and those who do not want, Arnold's method, it can be said that the degree of influence of sex preference on fertility preferences has become weaker in recent years.

As per the effect of sex preference on contraceptive use, the current contraceptive use of currently married and fecund women is 86,1 while it would be 86,9 in the absence of sex preference. Based on these results, the contraceptive use increases by 0,8% in the absence of sex preference. Previous studies measured this figure as an increase of 2,2% in 1978 and 1,8% in 1988 TDHS (Unalan 1993) As a result, it can be strongly suggested that the net effect of sex preference on contraceptive use is on decrease and would be minimal.

The contraceptive prevalence rate depends on the number and composition of living children. In general, highest level of contraceptive use is observed at parity two with two sons. In regards to parity one, the contraceptive use remains almost same with women have only a son or a daughter. Moreover, at parity three and more the highest contraceptive use is observed for families with one son. In a closer look at parity two, the highest level of contraception is explored in families who have a son and a daughter. In fact, this issue presents a hint for the strong existence of balance preference which means that having equal number of sons and daughters during the reproductive period of women is more common.

Before the establishment of models which aim to identify the determinants of contraceptive use by controlling the sex composition of living children in each model, the individual, husband related, children related, family formation, and household and community factors are investigated in details. With respect to individual factors of women, descriptive analysis makes evident that contraceptive use

and degree of son preference decreases with the increase in educational level of women. The model results for all children, one child and two children confirms the descriptive results which implies that as the educational level increases, currently married and fecund women become more likely to plan her family size through deliberate use of birth control methods. There are several explanations for this. One of them is that education is likely to serve to disseminate "modern" values and to undermine traditional ideas (Caldwell 1980) and therefore, the contraceptive use rate increases as educational attainment of women increase. Alpu and Fidan (2006) found the same results by using the TDHS-1998 data which claims that women who did not have schooling and had up to primary school education are less likely to use contraception than those who studied up to the secondary level or more. Based on THDS-1993 data, Koc (2000) found that spouses education, but women's particular is a significant determinant of both the practice of contraception in general and the choice of modern contraceptive methods.

Ethnicity of women is one of the influential factors on demographic indicators. The study finds that Kurdish speaker women have fewer tendencies to practice contraception and this is coupled with higher son preference prevalence in their community. In details, Yavuz (2008) concluded that the less contraceptive use of non-Turkish speaking Kurdish women in comparison to the other women in country can be attributed to their "uneven integration" into "the general socioeconomic and cultural modernization process". Their lack of knowledge of the official language has prevented them from acquiring the "information and values about fertility regulation" (Yavuz 2008). However, the difference of fertility desire and contraceptive use among Kurdish and Turkish women is not resulted from accidental causes. Since socioeconomic level and social system (patriarchal values) of Kurdish women are still different than

Turkish women as well as Kurdish women are less modernized and socialized the contraceptive use is lower. One of the reasons can be that the educational level of Kurdish women is also considerably lower than Turkish women and they have less opportunity travel to other towns and cities therefore, the contraceptive methods have become available mostly through their husbands. So, in case husbands are not willing to practice contraception, the likelihood of contraceptive automatically decreases among Kurdish-Kurdish couples. The model results for all children, two children and at least three children reveal that Kurdish speaker women are less likely to practice contraceptive methods than Turkish women. For women with one child, mother tongue is not important because those women have not reached the desired number of children. As main demographic characteristics of women, age is found to be a statistically significant factor on contraceptive use for all children, one child, two children, and at least three children models. The contraceptive prevalence increases until age 40 and then decreases owing to the fact that women start to lose their reproductivity after age 40. As a result, women aged more than 40 are less willing to use contraceptive methods compared to younger women. Regarding the working status of women, based on the results of multivariate and bivariate analysis it can be said that working status of women is not influential in decision to use contraceptive methods.

Within the husband related factors, educational level, mother tongue and working status of husband are important factors on the level of contraceptive use rates. The descriptive analysis shows that level of contraceptive rate is quite lower among Kurdish, non-educated/primary incomplete and unemployed husbands. The model almost produces the same results with exception that working status of husband is not a significant predictor of contraceptive use when it

is controlled by sex composition of living children in multivariate analysis.

Children related factors are thought to be most influential predictors of contraceptive use. In descriptive analysis, in accordance with expectations, it is observed that currently married and fecund women without a child are more likely to accept contraceptive methods. The highest level on contraceptive use rate is seen among women who have equal number of son and daughter. This result is further confirmed with the model. The model suggests that if couples reach children of each of sexes, then they have much more tendency to use contraceptive methods than other sex composition of living children. Another important determinant of contraceptive use is desire for more children. If currently married and fecund women do not desire to have more children, they are more likely to practice contraception to refrain from an additional child to keep their family size as desired.

Within the family formation factors, it can be inferred that even there is slight difference in contraceptive use among categories of age at marriage, marriage arrangement, brides' price, consanguinity and type of marriage ceremony, the model shows that marriage arrangement and age at marriage are significantly decreasing the contraceptive use rate for all children model. Likewise, if women got married when below 18, they exhibit less intention to use contraceptive methods.

The attributes of women such type of place of residence, region and wealth status seems to be influential factors on level of contraceptive use. The descriptive analysis shows that the lowest contraceptive use takes place in East. This is also confirmed by all children and one child model. In terms of regions, only living in

Eastern parts of Turkey contributes to less practice of contraception in Turkey because of social system and lack of modernization and economic development take place in there.

To sum up, based on attitudes such as desired sex preference of children, there is not significant relationship with contraceptive use, however, among behavioural measures, it can be concluded that there is a significant association between sex composition of living children and contraceptive use in Turkey. Arnold's index depicts that the use of contraceptive almost remain same among currently married and fecund women if there is no preference for sex composition of their children, however, the model findings strongly suggest that balance preference increases contraceptive acceptance more than son preference does.

In general, attitudinal and behavioural attributes both demonstrate that moderate son preference has still taken place in Turkey but balance preference which is the desire to have equal number of son and daughter is by far the most prevalent form of sex preference. A strong and prominent sex preference in countries may be an obstacle to fertility decline as well as contraceptive use if couples continue having children after reaching desired family size because they are not satisfied with the sex composition of their living children. Thus, in case that woman does not have one son and one daughter in their reproductive period, they would absolutely continue to have additional children to have at least one son which may carry the risk of having larger families by those who had no sons and/or daughters.

According studies on family structure (Family and Social Research Directorate 2006 and 2011) it is inferred that the percentage of people agreeing on that bearing a son increases the

reputation of mothers is on rise. Therefore, even the findings of study suggest that there is an decreasing trend towards son preference over 20 years from 1988 to 2008 however, based on the latest research results, the son preference might have started to increase after 2008. In this respect, it would be better if further studies are conducted to analyze trends of sex preference based on results of 2013 TDHS.

In this study, some analysis depends on a series of limitations. Firstly, the sex preference of only currently married, fecund and aged 15-49 women were assessed. In addition, given the notion that in developing countries, men tend to have a stronger preference for sons than women (Mason and Taj, 1987), therefore exploring women's sex preference for children provides only one side of the case. Besides, since this study is based on both attitudes and behaviors, though some women do have particular sex preference for equal number of sons and daughters, this may not necessarily cause them to have more children. In other words, their preference might not be strong enough to motivate them to bear children until the desired number of son and daughter is reached.

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ANNEX

Annex Table 1. Chi-square Analysis of Factors

	Not Using		Using		Sample Size	Percent	Chi-square
	n	Percent	n	Percent			
Educational level of women							
No education/Primary incomplete	236	19,6	925	80,4	1.161	17,1	86,408
First level primary	277	9,2	2.531	90,8	2.808	55,9	
Second level primary	39	9,1	343	90,9	382	7,2	
High school and higher	88	8,6	861	91,4	949	19,8	
Age of women							
15-19	16	21,2	43	78,8	59	1,1	108,704
20-24	76	12,7	447	87,3	523	9,8	
25-29	105	8,9	844	91,1	949	17,9	
30-34	106	9,8	970	90,2	1076	20,3	
35-39	87	7	1025	93	1112	20,9	
40-44	100	9,2	811	90,8	911	17,1	
45-49	150	21,1	520	78,9	670	12,6	
Mother tongue of women							
Turkish	403	9	3769	91	4172	78,7	94,914
Kurdish	199	19,5	778	80,5	977	18,4	
Arabic and others	38	23,3	113	76,7	151	2,9	
Type of place of residence of women							9,672
Urban	428	10,1	3.523	89,9	3.951	76,4	
Rural	212	13,2	1.349	86,8	1.346	23,6	
Region							
West	125	9	1.248	91	1.373	44,5	53,11
South	89	12	641	88	730	12,1	
Central	105	9,3	957	90,7	1.062	22,2	
North	66	10,2	598	89,8	664	6,8	
East	255	18,1	1.216	81,9	1.468	14,4	
Wealth							
Poor	293	12,5	1.821	87,5	2.114	34,3	8,315
Middle	144	9,9	1.040	90,1	1.184	22,8	
Rich	202	9,9	1.797	90,1	1.999	42,8	
Marriage Arrangement							
arranged by others	392	12,5	2.524	87,5	2.916	47,8	14,309
by the couples	246	9,3	2.132	90,7	2.378	52,2	
Early marriage							
> 18 years old	333	9,8	2.790	90,2	3.123	65,2	10,264
<18 years old	306	12,7	1.868	87,3	2.174	34,8	

Brides Price							
No	509	10,4	3.885	89,6	4.394	86,1	6,108
Yes	128	13,4	771	86,6	899	13,9	
Desire for more children							
Desire for more children	234	18,4	886	81,6	1.120	21,1	79,302
No desire for more children	405	8,9	3771	91,1	4.176	78,9	
Sex composition of living children							
Daughters more than sons	258	11,8	1624	88,2	1.882	35,6	11,393
Equal number of son and daughter	126	8,4	1183	91,6	1.309	24,7	
Sons more than daughters	256	11,5	1853	88,5	2.109	39,7	
Mother tongue of husband							
Kurdish	172	15	870	85	1.042	15,8	18,388
Arabic and others	20	10,1	160	89,9	180	3	
Turkish	447	10	3.626	90	4.073	81,2	
Educational level of husband							
No education/Primary incomplete	35	18	127	82	162	2,2	
First level primary	339	12,4	2.107	87,6	2.446	46,6	22,14
Second level primary	110	9,6	907	90,4	1.017	20,1	
High school and higher	152	8,7	1.502	91,3	1.654	31,1	

Annex Table 2. Factor Analysis Result

Component Matrix[a]

	Component		
	1	2	3
Sport regularly	**,511**	-,059	,306
Goes on holiday	**,710**	-,032	,301
Goes outside for a meal	**,697**	-,145	,299
Organize home meetings	,207	-,275	**,423**
Use internet	**,712**	,042	,151
Perform namaz	-,420	-,353	**,573**
Fast	-,420	-,362	**,526**
Wears a head scarf when going out	-,720	-,171	**,271**
Husband - prevent from seeing female friends	-,117	**,684**	,309
Husband - limit to contact with her family	-,130	**,624**	,333
Husband - insist on knowing	-,110	**,489**	,256
Husband - distrust with money	-,057	**,483**	,157

Annex Table 3. Sex Ratios of Living Children-All Women

	Number of living children			
	All children	One Child	Two Children	3+ children
Place of Residence				
Rural	109	134	129	102
Urban	104	131	118	94
Region				
West	107	132	118	94
South	105	126	115	99
Central	106	154	128	90
North	112	125	132	102
East	102	108	114	100
Total	**105**	**131**	**119**	**96**

Annex Table 4. Sex Ratio of Living Children by Fertility Desire-All Women

Number of Living Children	Total	Desire for more children	No desire for more children
1	125	119	144
2	117	102	123
3+	94	71	97
All children	**106**	**102**	**106**

Annex Table 5. Sex Ratio of Living Children by Fertility Preferences, Type of Place of Residence, and Region-All Women

		Desire for more children				No desire for more children			
		All children	One Child	Two Children	3+ children	All children	One Child	Two Children	3+ children
Type of Place of Residence									
	Rural	84	112	97	52	112	202	134	106
	Urban	108	122	102	89	103	136	121	93
Region									
	East	82	94	96	68	104	151	128	103
	South	96	158	91	62	106	96	118	102
	Central	119	149	118	34	104	170	133	91
	North	84	106	79	35	115	169	142	102
	West	111	108	99	174	106	154	119	93
Total		**102**	**122**	**102**	**72**	**106**	**139**	**124**	**97**