

Spatial Distribution and Trends of Fertility Differentials in Toba Tek Singh District, Punjab-Pakistan

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Abstract: This study examines socio-economic and demographic factors as fertility differentials and draws conclusions upon data collected from some selected rural and urban localities of Toba Tek Sing-Punjab. The analysis carried to examine change in fertility trends and preferences in relation to children ever born to currently married women. The ideal family size from the both localities is 3.98 which, is still reckoned high as compared to the (NGRP) National Growth Rate in Pakistan which is 3.80. The dependent variable is reproductive preference measured by a single indicator- ideal no. of children and gender in both urban and rural localities as same study was conducted by National Institute of Population Studies (NIPS) in 1990-91 and 2006-07. In Pakistan number of demographic surveys has revealed that woman of reproductive age generally prefer more children than their own preferred family size. The aim of this study is to contribute into the existing literature on the geographical patterns of fertility differentials in a district of the Punjab. This will help planners to formulate more effective fertility related policies and programmes in the country. This is also a continuum of DHS conducted in mid 1980s to elaborate fertility patterns among married couples. The goal is to dig deeper into the relationship between education and fertility has been a central focus within demography and related social sciences. Higher education is associated with higher age at first birth and lower number of children discussed the implication of findings in the context of policy framework to enhance the public awareness about the small family in context with high quality life. Higher fertility in a country like Pakistan is rooted in cultural believes about children and number, pre-natal control measures should be targeted more at women attitude to large family. This is to provide policy makers with an understanding of the potential demand for fertility control and help in formulating policies to reduce fertility and improve socio-economic climate of the district.

Keywords: Spatial, Fertility, Differentials, Fecundity, Urban, Rural, Punjab.

1. INTRODUCTION

Fertility is considered as the number of live births, and must not be confused with fecundity by which we normally mean reproductive capacity or the ability to have children [1]. Total fertility rate (TFR) indicates the total births per women [2]. Fertility varies with space and time. The fertility of a community is affected by a number of direct and indirect factors and their effects which may be age structure, age at marriage, religion, frequency of marriage, education, the number of rooms per house, influence of the in-laws and extended family [3] and average or desired size of the family based on economic conditions as well as social structure of having children. Today world's estimated total population is more than 7 billion with different growth rate in different countries [4]. Asia is the most populous continent of the world. It is also the world's largest continent according to the area while the TFR in Asia is about 2.4 [5], which are still very high as compared to the rest of the developing and developed countries. Pakistan is situated in the southern part of Asia. South Asia comprises the 1/4th of the total population of the

world. TFR was reported 2.88 in South Asia in year 2008. Pakistan has four provinces which are Punjab, Sindh, Baluchistan and KPK. Pakistan's estimated population in 2010-2011 was 177.10million [6] with a growth rate of 2.7 per year [7]. In 1960 TFR in Pakistan was 7.95% however continuous decline in TFR has also been reported for the last 50 years [8]. In the year 2010, it was 3.6 [6] TFR was reported. Punjab is more populous as compare to other provinces. 36 districts and 127 Tehsils are made for the purpose of administrative affairs. About sixty years ago, a most distinguished Chinese sociologist and anthropologist, Fei, Xsiaotung wrote a series of influential books on rural China, the Chinese traditional society and their behaviour towards fertility. While observing the transformation of China in the early twentieth century, in particular the initial industrialization, urbanization and the introduction/invasion of foreign goods, Fei lamented the erosions in rural communities both economically and culturally and called for complementary relations between urban and rural areas in their development [9].

1.1. Objectives of the Studies

1. To investigate the impact of the socio-demographic characteristics on fertility

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Preferences and changing trends in the study area.

2. To observe the spatial variation of fertility in Urban and Rural localities.
3. To discover the socio-cultural impact on gender preference

2. MATERIAL AND METHODS

2.1. Study Area

Toba Tek Singh has been chosen as study area for the present research. Toba Tek Singh is given name after a Sikh who resided near a pond of water to serve the passengers passing through Toba Tek Singh. He rendered this social service to all communities. With the passage of time this pond called as Toba Tek Singh, meaning a pond of Tek Singh. A small grain market was located near the pond which later flourished here after this became a small town named Toba Tek Singh. T. T. Singh was also a Canal colony district during British regime. In 20th century the British constructed an extensive irrigation network to initiate agriculture on this land, which was barren before the advent of irrigation system due to the lack of water for crops. They encouraged new small towns, colony districts and settlements. This later called as Tehsil Municipal Administration Toba Tek Singh. It became one of the sub divisions of the Vehari District. According to District Municipal Administration (TMA) the estimated population of Toba Tek Singh is 183,000 persons. The available literature pertaining to fertility differentials reveals that no such study has ever been conducted for Toba Tek Singh district. In this research paper the main objective is to draw a concise sketch of socio-economic differentials of fertility preferences to perpetuate the awareness among the people of study area.

Toba Tek Singh is located between 30°33’ to 31°2’ Degree north latitudes and 72°08’ to 72°48’ Degree longitudes. It occupies the central position in Punjab and surrounded by district Jhang on the north side and Faisalabad on the west by district Jhang and on the east by Faisalabad. On the south River Ravi makes a natural boundary and draws a line between Toba Tek Singh and Sahiwal district. It consists of an area of 3,259 square kilometres, divided into three sub divisions. District comprised of three municipal committees and a town committee namely Pir Mahal along with 539 villages while tehsils are Toba Tek Singh with 1,293 sq. Kms. Kamalia with 1,115 Sq.kms. and Gojra with 851 Sq.kms. of area respectively.

2.2. Data Source and Analysis

Primary data collection is used to find fertility differential among various social and economic groups within study area. Primary data collection is conducted by the researcher personally to minimize the chance of errors in the data. It is collected during June and July 2014 through a close ended questionnaire, by general observations and in depth interviews from the currently married women. To collect data on respondent’s age, economic status, reproductive history and education are decided perimeter to analyses study results. Focus group discussions are carried out in sample localities. The data is taken from married women aged 15-49 of some selected rural-urban localities of Toba Tek Singh. From Rural and Urban localities 500 in each was the sample size carefully selected by keeping in view the prevalence of different economic classes. Proportionate stratified sampling Singleton; Straits and Straits, 1993[20] is adopted for the purpose with a combination of various techniques. All the households in the two localities were categorized into three strata with the ratio of 50-50% from each Urban and Rural side, based on their economic outcomes (poor,

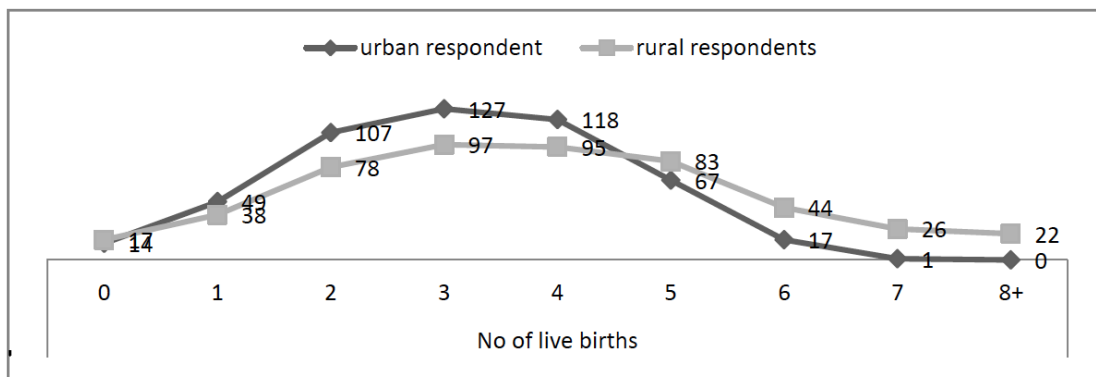


Figure 1: A graph showing no. of respondent from both Rural and Urban localities.

mediocre and stable) and education status (illiterate, educated and professional). Approx. 167 respondents were taken from each stratum both in urban and rural localities respectively. Actual numbers of live births were taken as the dependent variable because fertility refers to actual reproductive performance of women so number of live births ever born was taken as the dependent variable to assess the fertility. Many other independent variables like 1. Socio demographic variables: age at marriage, Ideal family size, respondent's education, girls at present and access to safe contraceptive methods of controlling births as well as awareness to them. 2. Cultural factors like desire for more sons. 3. socio-economic set up for instance income per month, economic status of a women and access to health workers were taken as the independent variable to incorporate the study.

Pearson's Chi-Square Test for Independence between Variables

In this study descriptive and inferential statistic was applied for data analysis by using the statistical package of social sciences (SPSS, 21). The c² (Chi-Square) test is used to determine whether an association (or relationship) between categorical dependent and independent variables in a sample is

likely to reflect a real association between these variables in the sample population. The primary use of chi-square test of independence is to determine whether the two categorical variables are independent or related.

Level of Significance

$$\alpha = 0.05$$

Test Statistical

$$\chi^2 = \sum_i \sum_j \frac{(o_{ij} - e_{ij})^2}{e_{ij}}$$

Critical Region

If value of p<0.05 then significance is found otherwise it is insignificant.

Secondary data collection is collected through Punjab Development Statistics; District censuses Report 1998, Federal Bureau of Statistics and Pakistan Demographic and Health Survey 2012-13 to get the general overview and trend about fertility preferences in Toba Tek Singh. Random sampling is carried out for analysis of data. Arc GIS software is used to develop the thematic maps of Toba Tek Singh. In addition to this Google Earth is used to demark the sample

Table 1: Age Specific Fertility and Ideal Family Size (Year of Survey 2014)

Parameters	Mean	Std. Deviation	N
Age specific fertility	2.97	.359	1000
No. of live births	3.48	1.757	1000
Ideal family size	3.98	1.113	1000

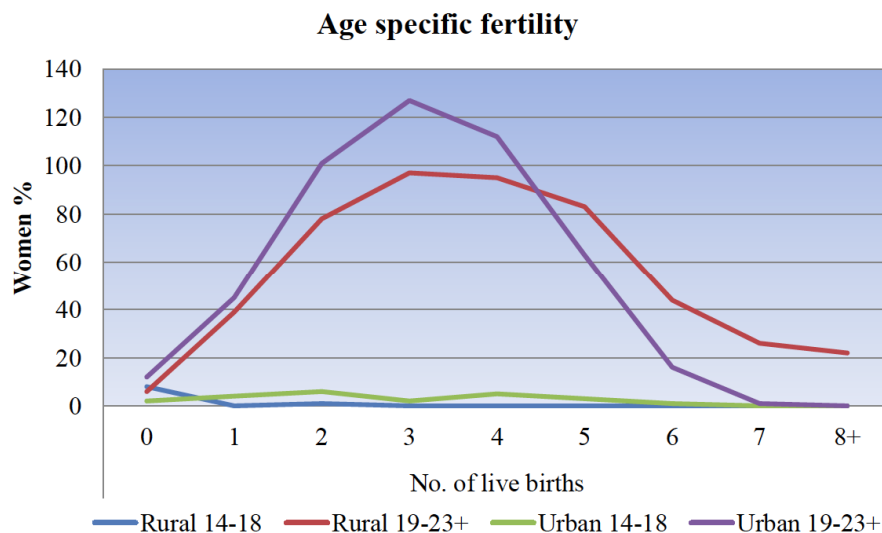


Figure 2: Graph showing age specific fertility in rural –urban localities in Toba Tek Singh.

Table 2: Percentage Distribution of Respondents by Background Characteristics

Variables by Locality		Category	No. of live birth								Total	
Age specific fertility			0	1	2	3	4	5	6	7	8+	
Rural	No child	1.6	-	.2	-	-	-	-	-	-	-	1.8
	14-18	.2	.4		.8	.4	.8	.4	.2	.6		3.8
	19-23	.8	6.6	13.2	16.8	16.6	15.4	7.6	4.8	3.6		85.4
	24-28+	.2	.8	2.4	1.8	2.0	6.0	.8	.2	.2		10.0
Urban	14-18	.4	.8	1.2	.4	1.0	.6	.2	-	-		4.6
	19-23	2.0	8.0	18.6	22.6	21.0	10.6	3.2	.2	-		85.2
	24-28+	.4	1.0	1.6	2.8	1.4	2.0	-	-	-		9.2
Women's education by Level												
Rural	Illiterate	.2		1.6	2.4	3.2	3.2	1.8	1.2	1.8		15.4
	Primary	.2	1.0	1.6	2.4	5.0	4.0	2.2	.8	1.6		18.8
	Secondary	.4	1.8	4.8	6.4	5.6	4.4	2.4	1.6	.6		28.0
	H. secondary	1.0	2.4	4.2	5.0	2.8	3.0	1.6	1.2	.4		21.6
	Graduate	.8	2.0	2.6	2.0	2.0	1.8	.6	.4	-		12.2
	P. graduate	.2	.6	1.0	1.2	.4	.4	.2		-		4.0
Urban	Illiterate	1.0	-	-	.2	.8	-	-	.2	-		1.2
	primary		.4	1.8	2.4	2.2	2.2	.6	-	-		9.6
	secondary	.2	2.2	2.4	5.0	6.4	4.0	.8	-	-		21.0
	H. secondary	.4	3.6	7.4	7.6	5.6	2.6	.8	-	-		28.0
	Graduate	.8	2.8	6.0	4.8	5.4	3.0	.6	-	-		23.4
	P. graduate	1.4	.8	3.8	5.8	3.0	1.4	.6	-	-		16.8
Income per month(000)												
Rural	10-20	.4	1.6	2.2	3.0	1.6	1.4	.8	.2	.2		11.4
	20-30	1.4	4.0	8.8	11.0	11.6	8.6	3.8	2.8	1.2		53.2
	30-40	.6	2.2	4.0	4.4	4.4	6.2	3.8	1.4	2.0		29.0
	40-50+	.4	-	1.0	1.0	1.4	.6	.4	.8	1.0		6.4
Urban	10-20	.2	.8	1.4	1.9	1.1	.7	.4	.1	.1		6.7
	20-30	1.3	3.2	7.5	8.3	10.0	5.9	2.0	1.4	.6		40.2
	30-40	.5	2.8	5.3	7.5	6.2	5.8	2.6	.8	1.0		32.5
	40-50+	.8	3.4	4.0	4.1	3.7	2.6	1.1	.4	.5		20.6
Economic status of women												
Rural	working	.8	1.0	3.2	2.6	3.8	4.4	1.6	1.0	1.4		19.8
	House wife	2.0	6.8	12.6	16.8	15.2	12.4	7.2	4.2	3.0		80.2
Urban	working	.4	.8	.6	1.8	.8	1.0	.4	-	-		5.8
	House wife	2.4	9.0	20.8	24.0	22.6	12.2	3.0	.2	-		94.2
Use of contraception for family planning												
Rural	Yes	.1	1.8	7.6	9.4	9.9	8.7	4.3	2.7	2.2		46.7
Urban	Yes	1.6	5.1	11.5	13.6	12.4	7.2	1.9	.1	.0		53.3
Rural	No	11.8	20.9	10.0	11.8	6.4	6.4	5.5	1.8	1.8		76.4
Urban	No	-	3.6	4.5	7.3	6.4	1.8	-	-	-		23.6
Access to health worker												
Rural	Yes	1.3	3.5	7.7	9.2	9.2	8.0	4.2	2.5	2.0		47.5
Urban	Yes	1.5	5.1	11.2	13.5	12.3	6.9	1.8	.1	-		52.5

localities of Toba Tek Singh. Both urban and rural localities are taken into account. Dependent and independent variables are taken in this regard. Age at marriage, no. of live children, desired size of the family, desire for more sons and desire of girl is taken as the independent variable.

3. RESULTS AND DISCUSSION

3.1. Key Identified Factors

Mean number of live birth is 3.48 as shown in Table 1, whereas standard deviation is 1.757, is also shown in Table 1. Age specific fertility is 2.97 and ideal no. of children/family size is considered 3.98 which is still regarded as high rate of expected fertility count.

Age at first birth or age specific fertility really matters in determining family size of a population. Early child bearing has recognized as a well-known factor

and is an important parameter with respect of education of both parents and their ages at marriage [10]. It indicates the drop in early and teen childbearing which is attributed to different factors including the more use of safe contraception [11]. In Table 2 only 3.8 % children are born to the mothers in the age of 14-18 years, which is considered as an ideal situation in rural areas of Toba Tek Singh while 10 % in village and 9.2 was the highest percentage of child bearing in the age of 28 years and above which indicates a general trend of early marriages among rural folk. According to some demographers and population geographers [12-14], education and fertility are transient phenomena that could only disappear by replacement patterns of fertility. The effect of women education remains statistically a significant and more potent as compared to husband's education and economic status of the family [15]. Table 2 reveals a low fertility rate with highest level of education in both rural and urban areas

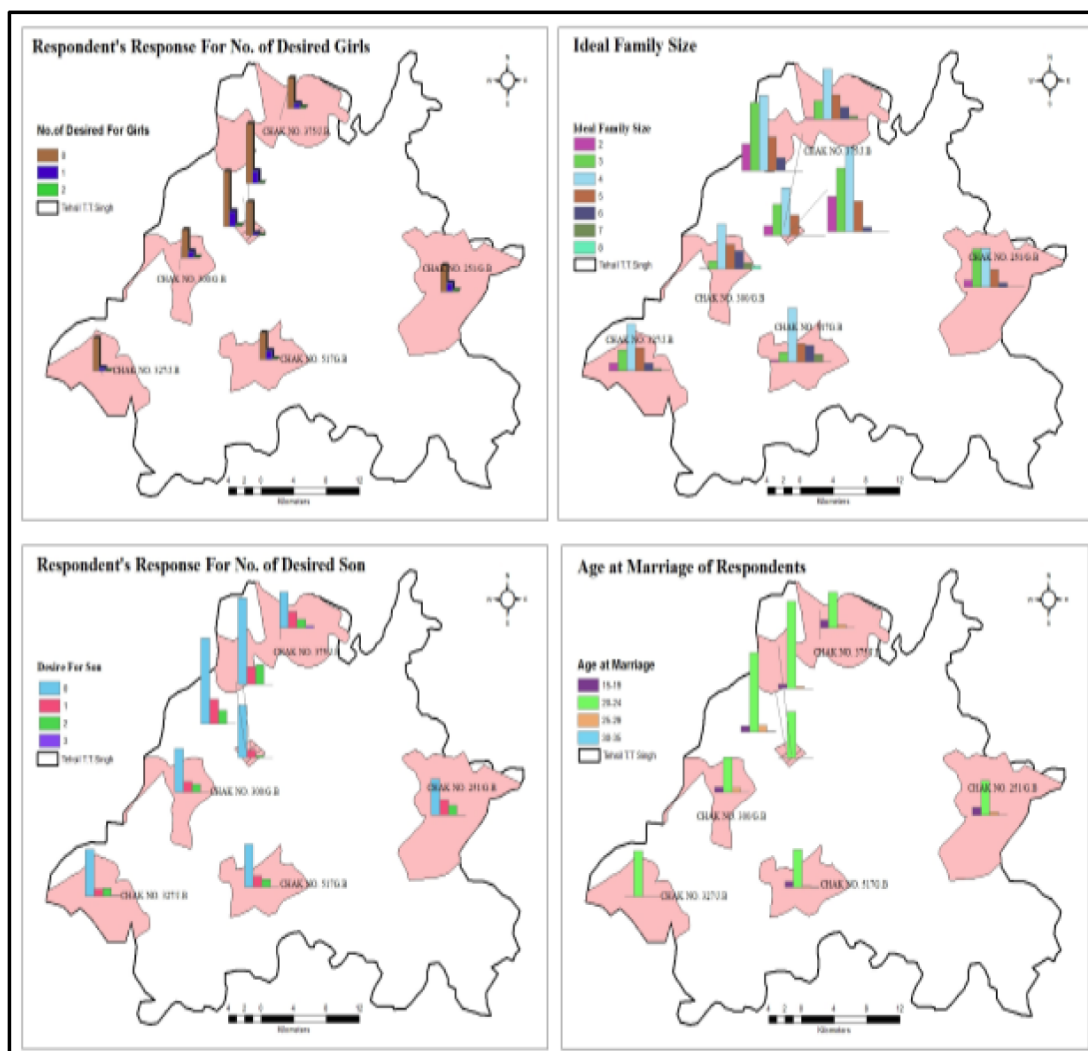


Figure 3: Key socio-demographic characteristics of respondents.

under investigation. In this context only 4 % from village/rural while 16.8 % of urban women could reach the highest level of education. As the educational level increase the number of children born also decreased in both sample localities. The economic status of family and woman's working status plays a significant role in this regard. In addition to this access devices/medicines to control fertility and education both are important for helping women to meet their desired fertility. It also makes an important contribution to women empowerment in Punjab-Pakistan [16] and is an indicator of socio-economic progress of the Country [17]. However sons are considered as more economically significant to the family than daughters as they contribute into family's income by helping business and farm work in rural areas. In Pakistan women are supposed to live with their husband's family and after husband's death, widows are thought to live along with their sons since it is hard for women to return to their parents place. Table 2 indicates 53.2% people in rural areas belong to income group between Rs.20, 000-30,000 and prefer to add their desired no. of children in their family. Although high income group (more than Rs.50, 000) in both urban and rural area was 20.6% and 6.4% respectively but more no. of children are also seen in urban areas as well as in rural because the ideal no. of children (3.98) is still considered as high in the urban localities. Table 2 clearly indicates that more working women in city have low family size than their counterpart house wives. An unusual number of working women (19.8%) from rural areas have been seen if we compared them with women of urban areas (5.8%). The Ideal and desired family size is not completed without more sons in the family. To fulfil the social needs and to build broader family social network sons are needed. Mean Ideal Size (MIS) was 3.98 while desired remained the same, making it more populated and high birth area. A glance at Table 1.2 reveals that in rural areas 46.7 % while in urban 53.3 % people use one of the contraceptive methods to control their family size according to their social and economic circumstances viz-a-viz by the family pressures. In this regard Garenne and Joseph [18] have discussed that the urban environment provides more varied opportunities in terms of labour and education which is associated with more cultural diversity and openness to new ideas contributing to the weakening of traditional norms such as sharing of resources make urban residents more tolerant and in favour of family planning by safe and modern contraceptive methods [19]. Table 2 shows a satisfactory results for the safe contraceptive use for

the family planning methods. A total of 46.7 % in rural areas /villages and 53.3% women urban localities use family planning methods while 47.5% of all the women had the access to the health worker as compared with the women in cities/urban areas (52.5%) which indicates a satisfactory situation in the district.

4. CONCLUSION

The socio-demographic factors like current age of women, ideal family size, desired number of girls and boys, social characteristics like son preference is found highly significant influence on the number of live births which was taken as an indicator of the fertility measurement of the respondents (primary data collected in 2014). The mean number of live births of the respondents was 3.48 children per family which is less than their ideal family size. Mean Ideal family size of the respondents in Toba Tek Singh is 3.98 children to mothers aged 15 to 24 years, showing a significant reproductive capacity. The results and outcomes of this study also revealed that a strong variation exists between the urban and urban localities of the study area. A desire for more male children has greatly influenced on the fertility performance of the population of area while desire for more sons is observed in urban areas than in rural areas.

SUGGESTIONS

- Educational attainment and efforts to improve level of education among the females should be the main area of concern for the Govt and to make effective policies to combat increasing population since it is significantly associated with the fertility transition.
- Educating male population is also another aspect which could help to control fertility in the study area, thus a special focus should be on male's education in the district.
- Gender preference is another important issue; therefore awareness should be given to the parents about the value of a child irrespective of sex. Mass media campaign through both electronic and print media while the work of social NGO's could play a vital role in this regard.
- People should be given awareness about the desire and ideal family size in terms of high quality life given to their family. Special efforts should be done to educate people about the high

standards of life through media and social awareness programs.

- Children health and mortality should be the area of top priority for any city district government to combat increasing population.
- Reasons behind high birth rate among various socio-economic groups of the Punjab-Pakistan should be investigated to overcome the population growth.
- The custom of early marriages in rural areas should be discouraged through legislation and its implementation in letter and spirit so that early child bearing could be controlled.
- Government should provide people with respectable means of livelihood to so that the people could be financially stable and then enjoy a high quality life.
- District level administration should be held responsible to keep an eye on a continuous rise in population size and suggest ways and means to control it.

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Received on 25-07-2016

Accepted on 13-03-2017

Published on 28-04-2017

<https://doi.org/10.6000/1927-5129.2017.13.26>

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