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GENDER RATIO ANALYSIS IN RAWALPINDI AND ISLAMABAD: CAUSES AND CONSEQUENCES

Anjum Razzaq[1+]
Muhammad Afzal[2]
Abdur Rauf[3]
Sahibzada Yaseen Ahmad[4]

[1]*MPhil Scholar, Preston University Islamabad Campus, Pakistan*
[1]*Email: khananjum080@gmail.com*
[2]*Professor, Preston University Islamabad Campus, Pakistan*
[3]*Assistant Professor, Abbottabad University of Science and Technology, Havelian, Abbottabad, Pakistan*
[3]*Email: ab.rauf.khattak@gmail.com*
[4]*Lecturer, Department of management Sciences, Abbottabad University of Science and Technology, Havelian, Abbottabad, Pakistan*

(+ Corresponding author)

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ABSTRACT

Population growth and its relevant dynamics have always remained an important subject for policy makers. It is a common observation that the within this population the gender gap is wider in developing countries than developed world. The case of gender ratio in Pakistan is severe and distressing. Current study attempted to analyze the causes and consequences of gender ratio in Pakistan. The analysis suggest that the phenomenon of gender ratio is wide and can be observed in every walk of life. This study suggested that gender gap can be reduced by taking concrete steps at micro and macro level.

Contribution/ Originality: This study contribute to the existing literature by i)- discussing the causes and consequences of gender ratio disparities in Pakistani society especially Rawalpindi and Islamabad, the twin cities of Pakistan where most of the population is educated and ii)- Based on Primary data, this study helps the policy makers in finding the true determinants that causes gender disparities in Pakistan.

1. INTRODUCTION

Men and women are the integral part of any human society. The number of males and females in human societies has varied all over the world for the last several centuries. Population has grown more rapidly in developing countries than in developed countries. Uneven gender ratio is the problem not only for many developing countries for the last several years but also for the developed nations. Now, it has become a serious subject to explore its causes and consequences.

The problem of alarming gender ratio is observed in all the countries of world but its nature and magnitude has varied from society to society. This issue is mostly found in traditional societies and it conveys a great deal about the state of gender relations especially with reference to women's position and health in any society. One of the most critical and important demographic characteristics of any society are its gender ratio. Gender ratio depends directly upon the births, deaths and marriages. It is commonly said that gender ratio is the number of males to female per one 100 in the population of any society. If it exceeds hundred, then female number is greater than male number. This subject is generally wide and can be observed in almost all societies of the world.

According to Afzal (2009) sex ratio has been disturbed in Pakistan over the years. In 1981 it was 107 which mean that female' number exceeds the male number. The increase in the female number creates social, psychological and economic problems for parents as well as females. This worrying problem appears to have no practicable and agreeable solution in the short-run. Polygamy will make the confusion worse confounded. Western social system and values are difficult to be adopted. He has argued that increase in the female literacy rate and enhancement of women status in the society is an agreeable solution in the long-run.

According to Patel (2004) and Barakade (2012) gender ratio is a powerful and sensitive indicator of women's status in any society. It is regarded an important social indicator. It affects marriage rates and women's labor market participation rate.

In 2015 the gender ratio of Pakistan was 105 males for 100 females according to Pakistan population gender ratio (1950-2015). The gender ratio of Pakistan in the total population is 1.033 which means that there are 1033 males per 1000 females. Gender ratio of Pakistan is higher than the global gender ratio. As the global gender ratio was approximately 1016 males to 1000 females in 2016, Economic Survey of Pakistan (2017).

Table 1.1, 1.2 and 1.3 highlight the gender ratio in developed, non-Muslim and Muslim countries in 2016. Table 1.1 indicates that gender ratio in the developed countries is not agreeable and overview of this table illustrates that females' number exceeds males. This disturbed gender ratio has created several social problems in the developed countries societies.

Table-1.1. Gender Ratio: Developed Countries (2016)

S.No	Country	Current population	Male population	Female population	Gender ratio
1	Australia	24,536,393	12,228,998	12,303,396	99.2
2	Canada	36,499,657	18,108,585	18,391,072	98.4
3	Denmark	5,705,340	2,829,505	2,875,835	98.4
4	France	64,833,096	31,555,832	33,277,265	94.9
5	Germany	81,299,222	39,869,700	41,429,522	96.0
6	Hong-Kong	73,763,02	34,921,98	3,884,104	89.7
7	Japan	126,386,864	61,555,134	64,831,730	51.3
8	Norway	5,309,817	2,658,872	2,650,945	100.4
9	Singapore	5,772,156	2909736	2,862,420	101.6
10	USA	325,410,229	160,646,391	164,763,839	97.6

Source: World Population (2016)

Table 1.1 also shows that Singapore has highest gender ratio while Japan has the lowest gender ratio.

Table-1.2. Gender Ratio: Non-Muslims Countries (2016)

S.No	Country	Current population	Male population	Female population	Gender ratio
1	Belgium	11,411,653	5,594,901	5,816,752	96.0
2	Brazil	210,706,810	103,658,292	107,048,519	96.8
3	China	1,382,366,431	7,083,701,23	6,739,963,15	104.9
4	India	1,335,787,350	689,702,280	646,085,079	106.6
5	Italy	59,877,572	29,318,279	30,559,292	96.0
6	Israel	8,266,139	4,080,477	4,185,662	97.6
7	Sri Lanka	20, 940, 031	10, 331, 468	10, 608 ,564	97.3
8	New Zealand	4,576,318	2,248,233	2,328,086	96.4
9	Russia	146,389,257	67,803,656	78,585,600	86.2
10	Zimbabwe	16,100,137	79,41,518	8,158,619	97.2

Source: World Population (2016)

Table 1.2 illustrates the gender ratio of the 10 Non-Muslim countries of the world. When the gender ratio trend is compared with the developed and non-Muslim countries, this ratio is not disturbing and varies across the Muslim countries. It is admitted fact that the developed countries have not as much population as less developed and developing countries. Table 1.3 illustrates the gender ratio of 10 Muslim countries of the world. Table 1.3 also

depicts that almost all the Muslim countries have disturbed gender ratio. This disturbed gender ratio is the cause of many socio-economic problems of these countries.

Table-1.3. Gender Ratio: Muslims-Countries (2016)

S.No	Country	Current population	Male population	Female population	Gender ratio
1	Afghanistan	34,002,173	17,590,195	16,411,979	107.0
2	Bangladesh	163,854,312	82,916,620	80,937,694	102.4
3	Iran	80,605,300	40,877,511	39,727,789	102.8
4	Malaysia	31,022,950	15,730,991	15,291,959	102.8
5	Saudi Arabia	32778368	18,099,559	14,678,809	123.3
6	Oman	5,085,157	3,000,547	2,084,611	143.9
7	Pakistan	194,801,962	98,982,953	95,819,010	103.2
8	Turkey	79,814,871	40,43,650	39,71,221	1.01
9	Syria	17,799,347	9,004,160	8,795,187	102.4
10	Yemen	27,862,282	1,402,2140	13,840,142	101.2

Source: World Population (2016)

The proportional distribution of the sexes in the overall population is expressed as the number of males per 100 females. In Pakistan gender ratio is 50.8% males and 49.2% females. In India males are 51.6% while female are 48.4%. According to Global Gender Gap Report (2008) with reference to gender gap indicator the rank of Pakistan was 127th out of 130 countries and it is very alarming.

1.1. Objective of the Study

The main objective of the study is:

- To analyze at length the causes and consequences of lopsided gender ratio in Rawalpindi and Islamabad.

2. REVIEW OF THE LITERATURE

Kapadia (1972) argued that it is the male child in India who has the economic, religious and spiritual merits. This causes the gender inequality in India. A study conducted by the Christian Medical Association (CMA) in the selected government and private hospitals of Dehli (The Times of India, 16 July 2005) indicates that when the first male child is born, then there is no discrimination against the next child it happens to be female baby but after this there is no chance of female baby again. In that case the gender ratio remains as high as 959 females per 1000 males.

Desai (1991) discussed that before 1990, countries of the world had been trying to improve their people abilities without any discrimination. Everyone was struggling hard to do this. But in the absence of standardized scheme, it was difficult for a country to measure the success or failure of their women. On this basis, the assessment of a country on the basis of gender discrimination was difficult. This problem was solved in 1990 when United Nations set forth human development index. It was the index that helps the countries to standardize their welfare activities.

Kaur (2004) investigated that the topic of gender ratio has attracted the interest of many demographers and scholars. He argued that it is a debatable issue not only among demographers but among many scholars working in different fields like sociology, gender studies, economics, history and medicines. Economic, demographic and sociological research has concentrated on reasons for the declining gender ratio and its causes and consequences.

Economists focus on low labour force participation and the consequent need for dowry as compensation while demographers have focused on the number of missing women pointing to fertility decline and son preference as causes. Sociologists have analyzed son preference in terms of low status of women, caused by social practices of hypergamous and exogamous marriage system. Women are considered as low valuable sex, inferior ones and burden on a family while sons are considered as valuable because they support their parents in the old age and inheriting their property, continuing their generation.

Li and Jiang (2005) have examined that if gender ratio at birth remains at 2000 levels, then in 2030 the population size will be 84.2% of what it would be under the normal gender ratio patterns. Yi (2007) demonstrated that if China's gender ratio at births remains constant and will not change, then the proportion of excess men with aged 20-49 compared to the women of the same age will rise 6% in 2010 and will rise to 11% in 2030. This ratio will further increase at over 14% in 2050.

Sharma (2005) suggested that if educational opportunities are provided to every woman then they will be able to get the employment. In this way many problems of women will be solved. He further stated that gender discrimination could be seen in women education also. Educational practices and educational experience both shows unequal educational opportunities for both the girls and boys.

Eccles (2005) argued that the attitude of parents for their children' education plays a key role. There are considerable evidences in this regard as parents education, their occupation, income, locality predict their attitude towards their children's education. Weir (2007) proposed that education of mothers, fathers and their family background also play a key role to make decisions relevant to their children' education. But it is more significant in their daughter's education

Siddiqui (2007) explored that education is one of the most signification and key tool in the development of any country. Education has strongly correlated with overall social and economic advancement of a country. Without the education of women this advancement is not possible.

Mohan (2007) observed that India is one of the countries across the world which has the lowest gender ratio. According to the 2001 census of India, there are 933 females per 1000 males. The gender ratio of India was and still it is unfavorable for the females. The continuity of female discrimination, female infanticide, female feticide and female mortality persists in India and it worsens the gender ratio of India. This all is because of the mind-set of the Indian people, which was made by the patriarchal values. He further examined that in general and in particular, male child have the privileged position in the patriarchal family tradition. Because of this tradition, the fulfillment of dharma, the inheritance of family property and performance of sraddha can only be done by the father who is the head of the family and after him, only the eldest son will be.

Farrer (2008) reported that according to United Nation (UN) the recommended gender ratio at births is 107 males for every 100 females. But the average gender ratio for the industrial countries lays between 104 or 106 females for every 100 males. For many Asian countries, the gender ratio at birth is above the average. He further observed that in China, it is average of 120 boys for every 100 girls. In Taiwan, it is the average of 119 boys for 100 girls. In Singapore, it is the average of 118 boys to 100 girls. In South Korea, it is the average of 112 boys for 100 girls and in India; it is the average of 112 boys to 100 girls. In Asian countries, this alarming gender ratio is because of the cultural aspects where the son is considered as:

a. Social security, support for parents in the old age and has many economic benefits.

While the girls are considered as:

b. Financial burden which need to be fed and has no economic advantage.

Govt of Jammu and Kashmir (2008) demonstrated that infanticide in recent times has taken the shape of female foeticide (killing of a baby inside the womb) which is more popularly known as feticide. The decline in the gender ratio has been interpreted as it is the consequences of more sex selective abortions of the female fetuses. It's all because of modern technology and medication. Now it has become easier for parents to get rid of their unwanted girl child because they think that it is the girl child which has to bear the burden of gender bias and deep rooted prejudice as inferior sex. This bitter truth highlights the impacts of vicious social and cultural factors related to marriage practice and dowry, as well as role of women in household level decision makings.

Srivastava (2008) examined the gender ratio of Pakistan in higher education. There are 218 (17.9%) of women in higher education while men are 960 (78.6%) in higher education. According to Punjab Gneder Parity Report (2016) in Pakistan female life expectancy is 67.2 years while global life expectancy of female is 73.5 years. Total

fertility rate in Pakistan is 3.7%. In Pakistan, the average male has a life expectancy of 64.4 years while females have 67.2 years. It is still below the global life expectancy that is 73.5 years.

Guilmoto (2009) discussed the cause of gender imbalance at births is the preference for sons in Asian countries including China, Azerbaijan, Armenia, Albania and Georgia. He has the opinion that preference for sons is not only widespread in Asia but everywhere in the world. He identified three motivational factors for the preference of sons which were:

a. Fertility squeeze which means parents want to limit the number of births.
b. Ability which means traditional methods for dealing with unwanted girls by ultrasound gender identification.
c. Readiness which includes social and legal methods that allows the parents to take advantage from the birth limiting options.

Hashmi *et al.* (2010) examined that in the education of girls parental attitudes matters a lot and play a very significant role. Irrespective of sex, race and region, education is the basic human right of every individual. Ignoring the women as we know that they make the half of the world' population is not sensible. In the development of any country, investment in human capital including women is necessary. Education is one of the most important fields where women have been deprived traditionally from many centuries.

According to Hesketh and Min (2012) one of the problems of sexual reproduction is particularly the monogamous species. In human beings, this ratio is seen almost even but in the past few decades, a substantial shift has been seen towards men in some Asian countries. Its reason is not biological but is the cultural preference for sons in these countries. Another reason is the availability of parental sex-selection technologies. This result is the excess of males in several Asian countries. Both these scholars defined gender ratio as the number of boys born to every 100 girls. They have the opinion that there are a number of demographic and environmental factors responsible for the alarming gender ratio at births. These demographic and environmental factors are family size, parental age and occupation, birth order, race, hormonal treatments and environmental toxins etc.

They argued that the cultural factors such as the strong preference for sons is responsible for the imbalance in the gender ratio. Preference for sons is the most prevalent factor in East Asian, South Asian, and Middle East, North African countries. For centuries, sons have been regarded as the most valuable asset than daughters. The people of these countries have the opinion that the sons earn higher wages and are the recipients of inheritance. Sons are considered the support for their parents in illness and in old age. While the daughters are considered as the burden on the parents and they leave the parents house after marriage. They have no responsibility of their parents. There is the other specific reason of sons preference in India is the expense of dowry for the daughters. While in South Korea and China its reasons are:

a. Cultural and traditional value for the preference for the sons.
b. Their history and prevalence of male dominance in the society.

All the cultural factors for the son's preference are the cause of alarming gender ratio.

According to Golley (2012) China GDP growth faces rising challenges. Its cause is the contraction of its labor force and complications of its rising gender ratio at births. He argued that the proportion of unequaled low skill male of the reproductive age could be as high as one in four by 2030. If policies are made to rebalance the gender ratio, this will take decades to reduce the gender ratio at the reproductive age.

According to Taga (2012) Pakistan is a country where feudalism was in power in past. Strong, stagnant, pseudo culture and social values have been practiced over the years. These values are pro-men and originated from the old patriarchal system of the society. It's a fact that now women status has a bit changed. But because of this strong system, women have been given lesser chances in all walks of life as compared to men. In such a system, women have been supposed to bring under a control of the male family member in any matter of life. It is commonly observed that even in the 21st century, women have no independence and they are still bound in different matters of

life. Still in most of the families' access to education, job, health and other opportunities of life are decided by the male members of the family. This has increased gender gap at a very large scale. But despite of all this, women are trying to stay behind males and in some cases excel upon males.

Examined that India, Pakistan and China are really trapped out in terms of gender imbalance. India has 933 women to 1000 men. She also stated that biologically we should have more women in a society. All the researches that have been conducted in India on this issue of gender imbalance showed that there are some tragic issues behind this reason and this tragic issue is the practices of son's preferences. The only hope for women to achieve any kind of equality in India and Pakistan is to increase the educational and economic opportunities for females.

According to Taib (2014) in Pakistan gender inequality in observed in all walks of life. However as compared to past the situation is somewhat different and better. But still the women are facing lot of problems ranging from religious, cultural and economic. These problems had/ have made the women untrustworthy. In the post modern world social capital was one of the most important and powerful topic to discuss. Social capital was the gender free subject. All those individuals who possessed some skills contribute to the economy of a state. For maintaining the economic growth women were considered the most active players both in the formal as well as informal sectors of the economy. In developing countries women face a lot of problems and still they are facing.

2.1. Significance of the Study

The analysis of gender ratio has great importance for any society because it is expected to shed light on the causes and consequences of gender ratio disparity and policy prescriptions may be made on the basis of that analysis. Only very few studies (Rouse, 2006) have examined this phenomenon in Pakistan. However, no study has been done in Rawalpindi and Islamabad on the above title. This study is in fact a pioneering study on the gender ratio in Pakistan, though its audience is Rawalpindi and Islamabad.

This study has a great significance and is expected to produce the factual evidence regarding the gender ratio in the twin cities that may be supportive in identifying the causes and incidence of this problem. The findings of the study may provide useful guidance for the policy makers dealing with the population of the country. This study may help to get the actual and factual evidence about the gender ratio problems which need to be addressed seriously.

This study is expected to give useful insight about the severity and consequences of gender ratio in the twin cities society as well as on the national level to some extent. This study may assist the planners and policy makers to take appropriate measures to create awareness about the harmful impacts of alarming gender ratio.

3. METHODOLOGY OF STUDY

This empirical study is based on primary data related with gender ratio. Gender ratio is a crucial social and economic indicator that has several reasons. Therefore examination of gender ratio and its potential determinants assume immense importance. A number of implicit and explicit as well as micro and macro level factors influence gender ratio. So it is difficult to incorporate and examine all those factors due to time, cost and efficiency constraints. However primary data from 110 families from Islamabad and 110 families from Rawalpindi is collected to study the gender ratio causes and consequence on the twin cities of Pakistan.

3.1. Data Collection Source

Questionnaire was the tool of the study and it was prepared after the consultation with the supervisor and other experts in the field of research. It was improved in the light of the suggestions of the supervisor and experts. The validity and reliability of the questionnaire were checked by the pilot testing. Questionnaire was pilot tested on the data collected from 10 families of Rawalpindi and 10 families from Islamabad which was not included in the sample.

Then it is pilot tested through SPSS analysis by applying reliability analysis. Cronbach's Alpha is a test that is used to check the reliability of the questionnaire. After the reliability analysis the Cronbach's Alpha value is found 0.92 while the standard reliable value is 0.80. This shows the reliability of the questionnaire. After the pilot study the final questionnaire was used for the collection of data. Data was collected through the questionnaire that was personally delivered to the respondents.

The respondents were briefed about the nature of the study. The data for the study was collected from Rawalpindi and Islamabad cities with the help of a well designed questionnaire that carried questions about the factors outlined above. To keep in mind the different categories of people two questionnaires were designed (both in English and Urdu). The study uses data of 110 families from Rawalpindi region and 110 families from Islamabad region.

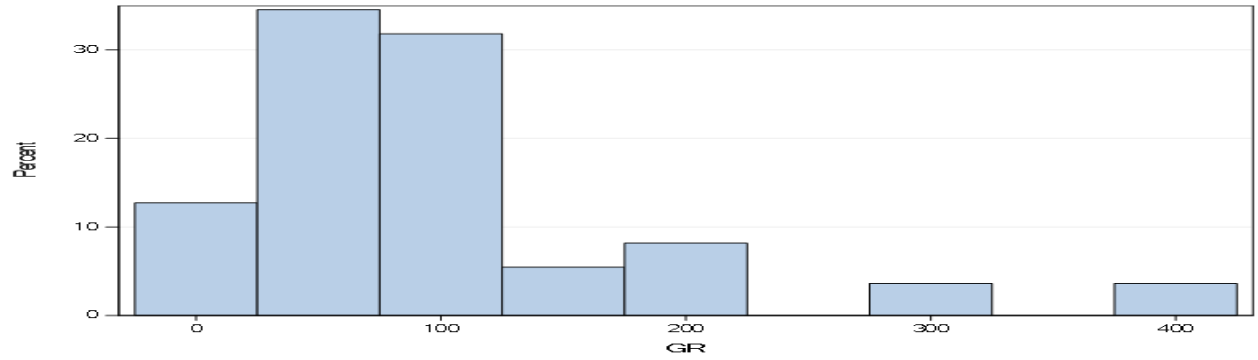
Almost all the data was collected from door to door visits to families, colleges and universities. Respondents were briefed about the questions in the questionnaire. Convenience sampling was used because of the time and cost constraints. It was extremely difficult for an individual to collect data using standard sampling techniques. Sample size decided when the data was collected and translated to simple random sampling by random number generator.

According to CIA (2015) Islamabad and Rawalpindi Population was 1.365 million and 2.506 million respectively which now in 2017 has increased to 1,433,000 and 4,700,000.

4. ANALYSIS OF DATA

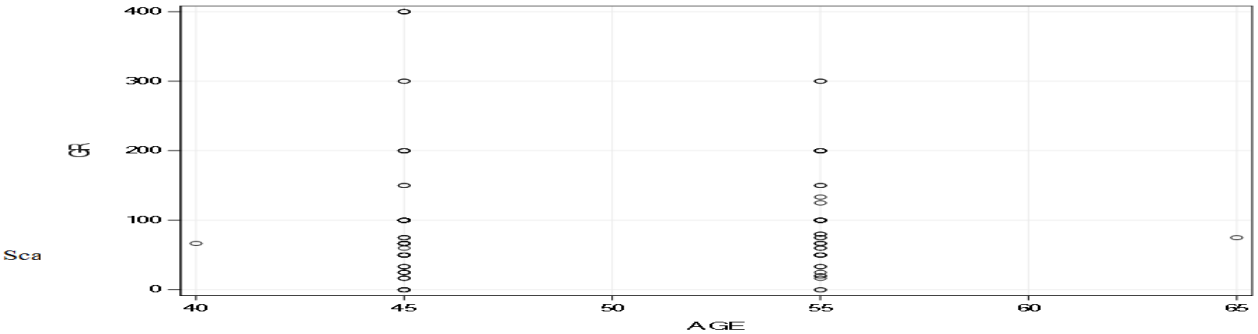
An effort has been made to analyze the primary data collected from the above mentioned source. Following are the graphs and tables containing information regarding gender ratio, causes and consequences in twin cities (Rawalpindi & Islamabad). We have applied the descriptive content analysis on the data sets collected through questionnaire. The results show that total numbers of values in the Islamabad and Rawalpindi datasets are 110 each. The number of raw variables is eight in total including dependent and independent variables.

1: Histogram: *Graphical Presentation of Important Variable (An Overview)*



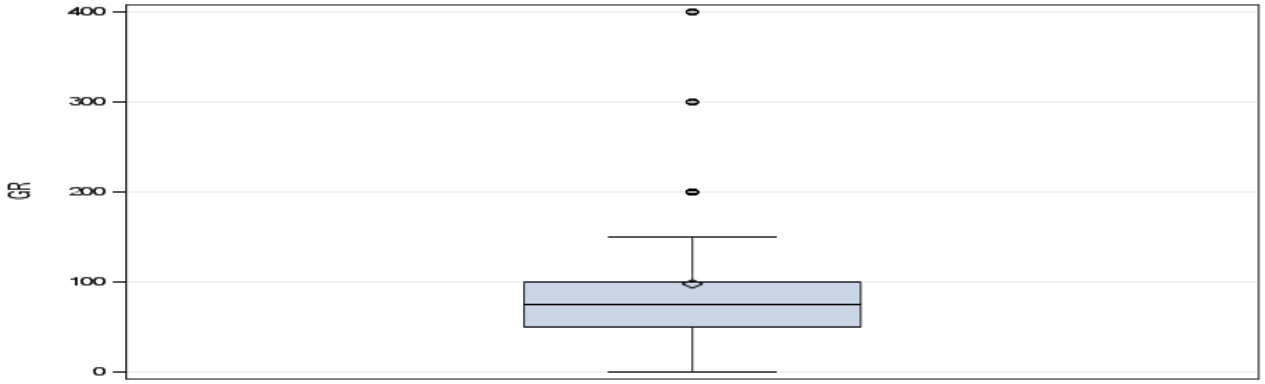
Graphical representation of gender ratio shows that gender ratio is positive skewed in histogram.

2: Scatter Plot



Scatter Plot shows the concentration of most of gender ratio data at the age of 45 and 55 years.

3: Box- Plot



Box Plot shows the existence of extreme values in the data of gender ratio because some values are outside the visceral lines.

Table-1. Descriptive Statistics: Rawalpindi City

Variables	Mean	Median	Mode	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis
Dependent Variable								
y=GR	98.00	75.00	100.00	400.00	0	88.24	1.86	3.66
Independent / Control Variables								
x_1 = FE	1.42	1.00	1.00	2.00	1.00	0.49	0.29	-1.94
x_2 = FL	11.54	12.00	8.00	16.00	6.00	3.06	0.07	-1.40
x_3 = PFS	0.42	0.33	0.33	0.11	0.77	0.33	1.11	0.31
x_4 = MI	1.27	1.30	1.30	0.23	1.60	0.47	-1.29	1.67
x_5 = MY	3.27	3.94	2.00	1.21	5.00	2.00	-0.02	-1.87
Dummy Variables								
D_1= FS	0.22	1.00	1.00	1.00	0	0.44	-1.03	-0.94
D_2= DD	0.10	0	0	0.21	1.00	0	1.88	2.56

Source: Author's construction

The descriptive analysis has been performed on the survey of Rawalpindi and presented in table (1). The mean value of gender ratio is 98.000. The median value is 75.00 and mode is 100.00. The maximum value of gender ratio is 400.000 while the minimum value is 0.000. The mean value of gender ratio (GR) 98.000 shows that there are more females than males in Rawalpindi region. My data ranges from 0 to 1. The mean value of gender ratio (GR) is 98.000. According to variable defined in the variable description, this value approach to 1. Its mean that this value is supporting that there are more females than males in the Rawalpindi region. Mode value also depicts that there are more females than males. Gender ratio is positively skewed which shows that the mean and median value of data tend toward right. Above results are in agreement with the study of Afzal (2009). He argued that uneven gender ratio is the problem of developing countries for the last many years. Mean value of female employment (FE) is 1.42. This shows that in Rawalpindi region more than half of the females are unemployed. Female literacy (FL) shows that most of the females are below middle pass in Rawalpindi region. Minimum qualification of females is below middle while maximum qualification is masters. Mean value of preference for sons is 0.423 that shows that most of the families preferred the sons as compared to daughters. As my data ranges from 1 to 3 and the mean value of 0.423 approaches towards 1 that shows the people in Rawalpindi region prefers the sons more than daughters. This study is in line with Taga (2012). He argued that India and Pakistan are really trapped of gender imbalance and all this is due to the strong, stagnant and social values that have been practiced over the years. He further argued that even in 21st century still women are bounds in different matters of life.

Table-2. OLS *Results: Rawalpindi City*

Variable	Coefficient	t-Statistic	Prob.
x_1 = FE	-39.71	0.84	0.09
x_2 = FL	9.88	-3.96	0.00
x_3 = PFS	70.45	1.73	0.08
x_4 = MI	33.79	2.04	0.04
x_5 = MY	134.55	5.40	0.00
D_1= FS	-32.14	-2.43	0.01
D_2= DD	51.03	2.37	0.01
C	-127.81	-0.92	0.35

R-Squared= 0.57 Adjusted R-Squared= 0.52
F-Statistics= 7.55 *Prob (F-Statistics) = 0.0002*

All our variables are significant at 5% and 10% confidence interval. The probability of F-Statistics value is 0.0002 which completely explains the correctness of selection of variable (Value is not negative) and Singular F-stat is within range of 10 that is 7.55. R-Squared is 0.57, and by removing the degree of freedom adjusted R Square is reduced to 0.52 this shows that model explanation by independent variables is not problematic and sufficiently explained by independent variables. The significance of overall model explained by the R- Square is 0.57 and R-square shows that how much our independent variables are explaining our dependent variable.

It is assumed that if R-square is more than 30% (0.30) than it's a good estimated model. In case of Rawalpindi dataset OLS estimation technique R-square value is 0.57 and it is more than 30%. It means that our dependent variable is numerically well explained by our independent variables. In case of Rawalpindi dataset R-square value is in a correct direction and it is more than 50%. This reveals that there is no irrelevance inclusion of any variable in our model. Individual explanation of variables is as follows.

Family system (FS) and female employment (FE) are negatively related to gender ratio while all other variables have positive impact on the gender ratio with a significant level. Specially, female literacy has the positive relationship with the gender ratio but this relationship is significant at 5% confidence interval so the results are in line with the previous researches.

Table-3. Descriptive Statistics: Islamabad *City*

Variables	Mean	Median	Mode	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis
Dependent Variable								
y=GR	94.782	100.00	100.00	500.00	0.000	85.302	2.019	6.078
Independent / Control Variables								
x_1 = FE	1.336	1.000	1.000	2.000	1.000	0.474	0.702	-1.535
x_2 = FL	13.472	14.000	16.00	18.000	8.000	3.096	0.589	-0.905
x_3 = PFS	0.614	0.555	0.777	0.888	0.333	0.198	0.099	1.385
x_4 = MI	1.083	1.146	0.698	40.000	1.602	0.301	0.750	-0.175
x_5 = MY	3.801	4.602	2.000	5.602	2.000	1.333	0.544	-1.566
Dummy Variables								
D_1= FS	0.727	1.000	1.000	1.000	0	0.447	1.034	-0.946
D_2= DD	0.168	0	0	1.000	0	0.255	-1.115	0.119

Source: Author's construction

The descriptive analysis performed on the survey of Islamabad and presented in table (3). The mean value of gender ratio is 94.782 and the median and mode is 1.00. The maximum value of gender ratio is 500.000 while the minimum value is 0.000.The mean value of gender ratio (GR) is 94.782 which show that there are more females as compared to males. As my data range is from 0 to 1. The mean value is 94.728 which approach towards 1. Its mean that according to variable defined in the variable description this value approaches towards females supporting by median and mode also.

Gender ratio is positively skewed that shows that the mean and median value of data tend toward right. The study is in line with the study of Afzal (2009). He argued that gender ratio has been disturbed in Pakistan over the years. Mean value of female employment (FE) is 1.333. This shows that in Islamabad more females are unemployed.

Female literacy (FL) shows that minimum qualification of females is middle while maximum qualification is M.Phil/ Ph.D.

Mean value of preference for sons is 0.614 that shows that most of the families preferred the sons as compared to daughters as mode value also depicts that people prefer the sons more as compared to daughters. Maximum numbers of married years are 40 years. Mean value of dowry (DD) is 0.168 which shows that dowry is a strong custom and a cultural value in this region.

Mean value of monthly income that females earn in Islamabad region is 3.801. Mode or most repeated value is 2.000 that shows that female suffer from unemployment in the capital city. Except dowry (DD) that is negatively skewed, all the values are positively skewed. Negative sign dowry (DD) shows that the mean and median value of data tends toward left. *Mean value of family system is 0.727 that shows that people prefer the nuclear family system.*

Table-4. *OLS* Results: Islamabad City

Variable	Coefficient	t-Statistic	Prob.
x_1 = FE	-23.81	1.16	0.04
x_2 = FL	-2.42	0.87	0.08
x_3 = PFS	200.18	-3.85	0.00
x_4 = MI	0.00	1.51	0.03
x_5 = MY	-1.16	-1.46	0.04
D_1= FS	52.12	3.67	0.00
D_2= DD	18.45	0.61	0.53
C	95.41	1.59	0.11

R-Squared= 0.51 *Adjusted R-Squared= 0.48*
F-Statistics= 5.25 Prob(F-Statistics)= 0.0003

All our variables except dowry are significant at 5% and 10% confidence interval. The probability of F-Statistics value is 0.0003 which completely explains the correctness of selection of variable (Value is not negative) and Singular F-stat is within range of 10 that is 5.25. R-Squared is 0.51, and by removing the degree of freedom adjusted R Square is reduced to 0.48, this shows that model explanation by independent variables is not problematic and sufficiently explained by independent variables. The significance of overall model explained by the R- Square is 0.51. R-square shows that how much our independent variables are explaining our dependent variable. It is assumed that if R-square is more than 30% (0.30) than it's a good estimated model. In case of Islamabad dataset OLS estimation technique R-square value is 0.51 and it is more than 30%. It means that our dependent variable is numerically well explained by our independent variables. In case of Islamabad dataset R-square value is in a correct direction and it is more than 50%. This reveals that there is no irrelevance inclusion of any variable in our model. Individual explanation of variables is as follows. Female employment (FE), female literacy (FL) and married years (MY) are negatively related to gender ratio while all other variables have positive impact on the gender ratio with a significant level.

Table-5. Descriptive Statistics: Combined Cities (Rawalpindi and Islamabad)

Variables	Mean	Median	Mode	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis
Dependent Variable								
y=GR	96.39	100.00	100.0	500.00	0	86.602	1.927	4.662
Independent / Control Variables								
x_1 = FE	1.381	1.000	1.000	2.000	1.000	0.486	0.489	-1.776
x_2 = FL	12.50	14.000	16.00	18.000	6.000	3.220	-0.215	-1.318
x_3 = PFS	0.518	0.444	0.333	0.888	0.333	0.188	0.625	-0.933
x_4 = MI	11.10	2.301	20.00	40.000	0.301	11.909	0.771	-0.678
x_5 = MY	8560.9	4.602	0	100000.0	0	19064.85	2.785	7.562
Dummy Variables								
D_1= FS	0.727	1.000	1.000	1.000	0	0.446	-1.027	-0.952
D_2= DD	0.134	0	0	0.236	1.000	0.231	1.437	0.963

Source: Author's construction

Table (5) shows the descriptive analysis of penal/combined data of has of both Islamabad and Rawalpindi. The mean value of gender ratio is 96.391. As my data ranges from 0 to 1 and the mean value approaches toward 1 supporting that there are more females than males.

According to variable defined in the variable description, this value approaches toward 1 which shows that in Islamabad and Rawalpindi both regions, number of females are more than males. The median value is 100.00 and mode is 100.00 also supporting that number of females exceeds than males. The maximum value of gender ratio is 500.000 while the minimum value is 0.00. Gender ratio is positively skewed as the value of skewness 1.927 meaning that data is tending toward right.

Mean value of female employment (FE) is 1.381. This shows that in Islamabad and Rawalpindi region most of the female are unemployed. The mean value of female literacy (FL) 12.509 shows that most of the females are middle level literate in Islamabad and Rawalpindi region. Minimum qualification of females is below middle. Maximum value of female literacy (FL) is 18.000 (M.Phil/ Ph.D) shows that some females have higher education too.

Mean value of preference for sons is 0.5186 shows that most of the families preferred the sons as compared to daughters. Study of Hesketh and Min (2012) supported this study that imbalance gender ratio is not a biological problem but it's due to the cultural and social value that is preference for sons. Maximum numbers of married years are 40 and minimum is 0.03 years. Mean value of dowry (DD) is 0.134 whish shows that dowry is custom and a cultural value in Islamabad and Rawalpindi region.

The study of Ebrey (2003) supports this study as he argued that because of high demand of dowry, parents feel their daughter as an economic burden on them. Mean value of family system (FS) that is 0.727 shows that females prefer the nuclear family system.

Except female employment (FE) and family system (FS) that are negatively skewed; all the values of variables are positively skewed. Negative sign of these variables show that the mean and median value of data tends toward left. *Mean value of family system is 0.727 that shows that people prefer the nuclear family system and not joint family system.*

Table-6. *OLS Results:* Combined *Cities* (Rawalpindi and Islamabad)

Variable	Coefficient	t-Statistic	Prob.
x_1 = FE	-5.87	-2.97	0.00
x_2 = FL	-3.93	2.04	0.04
x_3 = PFS	63.57	-2.68	0.00
x_4 = MI	6.28	1.73	0.08
x_5 = MY	13.95	0.82	0.41
D_1= FS	39.26	4.00	0.00
D_2= DD	49.28	2.84	0.00
C	73.98	2.06	0.03

R-Squared= 0.58 *Adjusted R-Squared= 0.50*
F-Statistics= 6.26 Prob (F-Statistics) = 0.0002

We have applied a regression analysis on our defined variables. There were 220 observations of panel containing Islamabad and Rawalpindi datasets. The overall variables used in our study are total 8 in numbers including dependent and independent variables. OLS regression is applied in first step but the results were not appropriate. So we have applied the panel regression techniques accordingly with the data technique. As we have merged both the files of Islamabad and Rawalpindi datasets.

Both panel regression techniques are applied which include random and fix effect model. Results show that fix effect model is more appropriate. All our variables except married years are significant at 5% and 10% confidence interval. The probability of F-Statistics value is 0.0002 which completely explains the correctness of selection of variable (Value is not negative) and Singular F-stat is within range of 10 that is 6.26. R-Squared is 0.58 and by removing the degree of freedom adjusted R Square is reduced to 0.50. This shows that model explanation by independent variables is not problematic and sufficiently explained by independent variables.

The significance of overall model explained by the R- Square is 0.58 and R-square shows that how much our independent variables are explaining our dependent variable. It is assumed that if R-square is more than 30% (0.30) than it's a good estimated model.

In case of combined (Rawalpindi + Islamabad) datasets, OLS estimation technique R-square value is 0.58 and it is more than 30%. It means that our dependent variable is numerically well explained by our independent variables. In case of combined (Rawalpindi + Islamabad) datasets R-square value is in a correct direction and it is more than 50%. This reveals that there is no irrelevance inclusion of any variable in our model. Individual explanation of model is as follows.

Female employment (FE) and female literacy (FL) are negatively related with the gender ratio. This shows that by increasing female employment (FE) and female literacy (FL) we can get rid of lopsided gender ratio. This study is in line with the studies of Afzal (2009). Both these authors argued that only hope for women to achieve any kind of equality in India and in Pakistan is to increase educational, economic opportunities and enhancement of social status for females. While all other variables are positively related with the gender ratio.

5. CONCLUSIONS

Determinants and dynamics of gender ratio (number of males to females per 100 in a population) play an important role for all socio, economic and political policy makers. Gender ratio is in concern of many socio-economic problems of a country. Gender ratio is one among the demographic characteristics of population of a country and this demographic variable can never remain unaffected by the changes that take place in the socio-economic conditions of a particular region at and over a particular period of time. The gender ratio of Pakistan in 1981 was 107 which mean that female number exceeds than male number. In 2016 this ratio was 103 which mean that still in 2016 females' number exceeds that male.

The study estimated by a model using primary data. Simple descriptive analysis, correlation matrix and OLS regression applied to estimate the study. Study was descriptive in nature and data was collected in 2017 from 110 families from Islamabad and 110 families from Rawalpindi region. The model was estimated separately for Islamabad and Rawalpindi data to see the changes that have occurred in these two regions. Again the model was estimated on panel / combine datasets of Islamabad and Rawalpindi. This model comprised of variables such as female literacy (FL), female employment (FE), and preference for sons (PFS), married years (MY), monthly income (MI), family system (FS) and dowry (DD).

Using primary data, descriptive analysis, correlation matrix and OLS regression were also used. This model included change in female literacy, female employment, and socio-cultural values were found to have significant impact suggesting major influence on gender ratio. All the variables are significant for the Islamabad and Rawalpindi data.

All the variables are correlated in case of Islamabad and Rawalpindi study at 0.05 and 0.09 level of significance. This model also shows that increase in the female literacy (FL) and female employment (FE) may be helpful to balance the gender ratio. Social and cultural values like preference for sons (PFS) will lead to increase the imbalance gender ratio. This is the major cause of imbalance gender ratio in South Asian countries including Pakistan. Dowry (DD) is another important factor which is appeared as the cause of imbalance gender ratio. Dowry (DD) is also one of the key factors that causes economic burden and it's also the cause of preference for sons.

In combined / panel, Islamabad and Rawalpindi datasets, descriptive analysis of data shows that females number exceeds the male number. Most of the females are middle level literate in both and Islamabad region. Very few are highly educated too. Most of the families preferred the sons more as compared to daughters. Results of data also show that dowry is a custom and cultural value in both the twin cities.

Results of combined / panel data shows that female employment (FE) and female literacy (FL) are negatively related with the gender ratio. While preference for sons (PFS), monthly income (MI) and married years (MY) are

positively related with the gender ratio. In OLS regression of Rawalpindi dataset family system (FS) and female employment (FE) are negatively related with the gender ratio while all other variables have positive impact on the gender ratio with a significant level. In the Islamabad dataset OLS regression analysis shows that female employment (FE), female literacy (FL) and married years (MY) are negatively related with the gender ratio while all other variables have positive impacts on the gender ratio.

In the combined (Rawalpindi & Islamabad) dataset panel regression technique is applied and it shows that except married years (MY), all other variables are significant at 5% and 10% level of significance. Female employment (FE) and female literacy (FL) are negatively related with the gender ratio which means that by enhancing female employment (EF) and female literacy (FL) we can get rid of the harmful impacts of causes and consequences of the imbalance gender ratio. On the contrary the results will be vice versa. While all other variables have positive impact on the gender ratio.

5.1. Policy Implications

This study provides guidelines for the policy makers, planners and regulators to set better rules for the avoidance of imbalance gender ratio. In case of Pakistan, the actual and factual position of gender ratio is different from the estimated value. Data of Pakistan shows that in Pakistan there are more males as compared to females. So the policy implications are as follows.

1. Cross countries studies on the gender ratio are not consistent due to unrealistic assumptions. In fact the parameters are not similar across countries.
2. Changes in the female literacy, female employment, family system and social and cultural values like preference of sons having significant impact on imbalance gender ratio suggest that all these factors are given serious attention in the policies of gender discrimination and human rights in order to take care of hazardous impact of imbalance gender ratio.
3. The significant and positive coefficients of change in the female literacy, opportunities of females in the field of employment and changes in the cultural values like dowry, social and cultural norms imply observable impact on the imbalance gender ratio. so gender ratio dynamics could be taken care of by paying adequate attention to these factors.
4. Female literacy is one of the important and key variables that are correlated with the gender ratio in the correlation matrix technique suggesting that there is long-run relationship between the gender ratio and female literacy. So we can get rid of gender ratio imbalance by increasing female literacy.
5. Similarly female employment is also another important and crucial variable that is correlated with the gender ratio in the correlation matrix showing that there is relationship between female employment and imbalance gender ratio suggesting by increasing the female employment opportunities we can reduce the gender ratio imbalance.
6. Change in the cultural and social values like preference of son is another important variable that is the true cause of such dangerous imbalance gender ratio preference for sons is correlated with the gender ratio suggesting that this factor could be give ample attention.
7. Dowry is also another critical variable that is the cause of many social problems like women harassment, burning of bride, domestic violence, late marriages and physical torture is also correlated with the gender ratio suggestion that this factor could be given considerable awareness.
8. All these factors are accountable to lower the status of women in the society and show that females are deprived community in the society and have no strong decision power as compared to male while the males are dominant part of society. All the decisions are concerned towards male. We can avoid this by uprising the status of women in the society.

9. Afzal (2009) suggesting that increase in the female literacy and enhancement of women social status will appear to be an agreeable solution.
10. *Suggesting that* the only hope for women to achieve any kind of equality in India and Pakistan is to increase the educational and economic opportunities for females.
11. Loan should be provided to women as they can be sound economically. Awareness campaign must be held throughout district about rights and respect of women in the society. There should be an organization in the district that supports, help and address women during violence against them.

5.2. Limitations and Direction for Future Research

This study is limited to the Islamabad and Rawalpindi regions. This study also faced the problems of time and cost constraints in the collection of data.

- It is recommended that gender ratio dynamics should be focus of future studies especially in case of Pakistan. Because only few studies are conducted on this issue. So it is important to analyze the different factors which are responsible for the cause of imbalance gender ratio.
- It is also recommended that cross-sectional analysis at national, provisional and districts level would be conducted in Pakistan to know the actual trend of gender ratio.

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