

Gender Imbalance: Trends, Pattern and its Impact on West Bengal

Kalyan Sundar Som¹, Prof. R.P. Mishra²

¹ Research Scholar, General and Applied Geography, Dr. H.S. Gour University, Sagar (M.P.)

² Professor and Head, General and Applied Geography, Dr. H.S. Gour University, Sagar (M.P.)

Abstract- Sex is an easily identifiable characteristic of an individual. Sex composition of a population refers to the balance between male and female in any population. It can be expressed either in the form of proportion of a particular sex in the population or as a ratio between the population of two sexes. As is obvious, the first one gives the number of males per hundred females or number of males per thousand females in the population and is the most widely used measure of sex ratio the world over. On the country the second provides the number of females per hundred males or number of females per thousand males in the population. The sex composition by age group especially the 0-6 years is vital for studying the demographic trends of child population. Though, the overall sex ratio has improved to 947 as compared to 934 in 2001, the child (0-6 years) sex ratio, i.e. the number of girl children per 1,000 male children has shown an unabated decline since 1971. It has declined from 1010 in 2001 to 950 in 2011. The decreasing child sex ratio will have a cascading effect on population over a period of time leading to diminishing sex ratio in the state. Sex ratio is an important determinant for assessing composition of population, quality of life, levels of development and level of human resources, level of participation in different economic activities of males or females of a particular region. The preview of the present study is to assess the trends, spatial pattern of overall and child sex ratio and find out the association of sex ratio and also there impact in the society of West Bengal (India).

Amartya Sen estimated that there were nearly 100 million women missing in the world around 2000 and nearly a third of them were missing in India (Sen, 2003).

The disadvantage surroundings Indian woman's capacity to survive that leads to this imbalance, are rooted in a complex web of socio-cultural factors, while gender based differentials in mortality are seen by some as the main causes of this differentials to an ethos of discrimination against women, which is manifested in their unequal access to life supporting resources such as food, nutrition and health care, especially during childhood. Widespread gender biased practices thus serve to distort the female male ratio among child populations of various ages, finally culminating in the male dominant female male ratio of our population (Marty and Jean Dreze: 1995).

In West Bengal sex ratio is define as the number of females per thousand males in a human population. The sex ratio of West Bengal has continuously increasing after the independence, 865 from 1951 census from 947 in 2011(P) census. On the other hand, the child sex ratio between the age group of 0-6 years has come down to 914 in the 2011 census from 927 in the 2001 Census. The declining child sex ratio trend is being recorded since 1991. This declining trend can now be observed in regions where, historically, the ratios had been sound. Developed states have recorded even steeper falls. Literacy and economic development have resulted in sharper change. In India, the Child Sex Ratio (CSR) is defined as the number of females per thousand males in the age group 0-6 years in a human population.

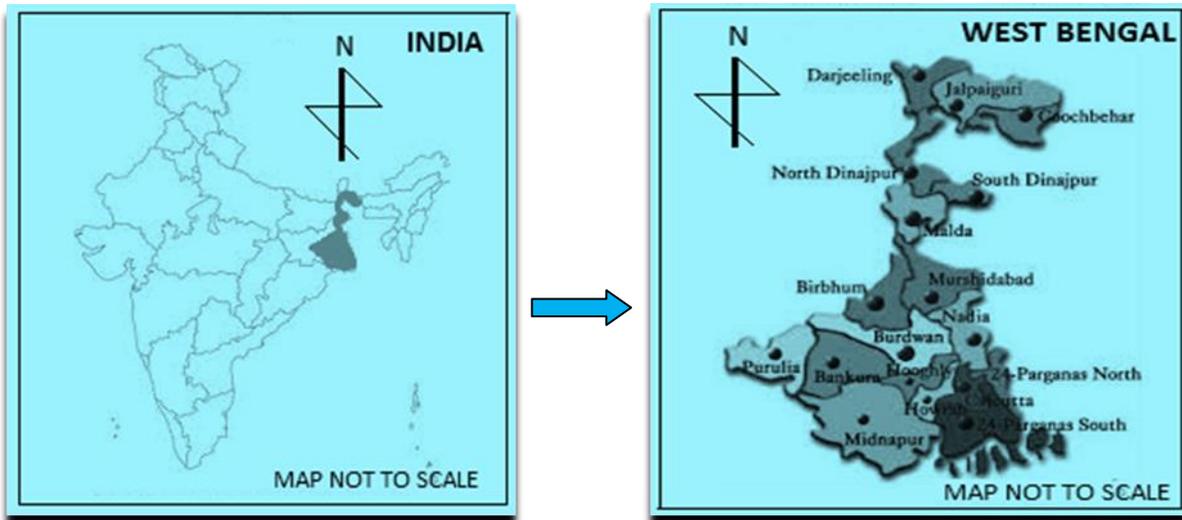
I. INTRODUCTION

Sex are the basic characteristic or biological attributes, and affect not only its demographic but also its social, economic and political structure, for the influence birth and death rates, internal and international migration, marital status, manpower, the gross national product, planning regarding educational and medical services and housing etc. as well as socio cultural and biological factors together influence the overall demographic composition of population and its sex ratio. It is an important tool for regional analysis.

The increasing deficit of women in India's population has been documented ever since the first decennial enumeration of people was conducted in the British-occupied parts of India in the late 19th century. Over the span of more than 100 years, the deficit of women has progressively increased as evident from the sex ratio of the population (Visaria, 1972; Visaria, 2002).

II. STUDY AREA

The state of West Bengal has been selected as a study area which is located between 21°25' to 26°50' north latitudes and 86°30' to 89°58' east longitudes with three international boundaries i.e., Bangladesh, Nepal and Bhutan. It occupies a geographical area of about 88,752 sq. km. (2.70 per cent of the India's total geographical area) and extending from the Himalayas in the north to the Bay of Bengal in the south. It is surrounded by Sikkim and Bhutan in the north, Assam and Bangladesh in the east, the Bay of Bengal in the south and Orissa, Jharkhand, Bihar and Nepal in the west. According to 2011 Census, its total population is 91,347,736 (7.55 per cent of India's total population), density is 1029 persons per sq. km. (in terms of population density West Bengal is on the second among the Indian states).



OBJECTIVES: The objectives of the present study are –

1. To analyze the pattern of existing general sex ratio and child sex ratio.
2. To explore the factors determining sex ratio.
3. To analyze the level of association between various socio-economic and cultural determinants and sex ratio.
4. To suggest some remedial to improve the sex ratio.

HYPOTHESIS: In line with the research objectives and from the literatures reviewed that will be used in the analysis of this work, the main hypotheses to be tested in this study are:

1. Urbanization stimulates the male selective migration that helps to reduce sex ratio of this area. That means urbanization increase sex ratio decrease.
2. Literacy reduced the faith of the son preference that means literacy and sex ratio has positive relationship.
3. Increase female IMR reduced child sex ratio, which means the inverse relationship between female IMR and CSR that means increase female IMR and decrease child sex ratio.

DATA BASE AND METHODOLOGY:

- The paper is based on secondary data sources. To fulfill the objectives data regarding literacy, urbanization and sex ratio of West Bengal is obtained from census of India (2011), statistical abstract of West Bengal and IMR of females is collect by the publication of population foundation of India, may 2008 “Infant and Child Mortality in India: Districts Level Estimates”.
- The collected data are processed to analyze the pattern of literacy rate and sex ratio in West Bengal. The districts of West Bengal are grouped into three categories i.e. high, medium and low literacy on the basis of simple statistical method. To analyze spatial pattern of sex ratio, the same technique is applied for calculation.
- Spearman’s Rank Difference method is used for analyzes the correlation between literacy and sex ratio, IMR of females and child sex ratio and also urbanization and sex ratio.

- Suitable maps and diagrams are used to illustrate the facts. Choropleath map is used to show the pattern of sex ratio, literacy urbanization and female IMR.
- SPSS software is used for, to test the signification level between the associations of variables.

III. TRENDS OF OVER ALL SEX RATIO AND CHILD SEX RATIO OF INDIA AND WEST BENGAL

Child sex ratios are recognized to be a better indicator of women’s position, because it is very unlikely that they would be vitiated by sex-selective migration trends. In a population unaffected bias against girl children (as evident for example in female infanticide and feticide), the CSR would favour girls since girls are endowed by nature. This indeed was true of west Bengal till 1971. It is a cause for grave concern that in west Bengal the sex ratio for children aged up to six years has declined from 1010 to 950 in 2011: “the imbalance that has set in at this early age group is difficult to be removed and remain to haunt the population for long time to come”(choudhuri, sukanta:1990). Ashis Bose would like to coin the acronym DIMARU, “where D stand for daughters and Maru stand for killing” and on the basis of statistical cut of level of fifty points decline in CSR between 2001 to 2011, this marker would apply to Punjab, Haryana, Himachal Pradesh, Madhya Pradesh and Gujarat (COI). The child sex ratio is a sensitive indicator that displays the status of girl children. Trends in child sex ratio will reveal the intensity of changes in it, over a period of time. Table-1 shows the trends of child sex ratio in India.

Table – 1: Child Sex Ratio (CSR) and Over-all Sex Ratio (OSR) in India

YEAR	1951	1961	1971	1981	1991	2001	2011
OSR	946	941	930	934	927	933	940
CSR	983	976	964	962	945	927	914

Source: Census of India, 1951- 2011(Provisional).

The child sex ratio has been declining faster than overall sex ratio. The decline in the child sex ratio in 2001 Census is a major cause of worry among the planners, demographers and researchers. Lower sex ratio among children is indicative of more females than males among child population which may lead to demographic imbalance over time if the trend continues in future.

YEAR	1951	1961	1971	1981	1991	2001	2011
OSR	865	878	891	911	917	934	947
CSR	----	1008	1010	981	967	960	950

Source: Census of India, 1951- 2011 (Provisional).

Table – 2: Child Sex Ratio (CSR) and Overall Sex Ratio (OSR) in West Bengal

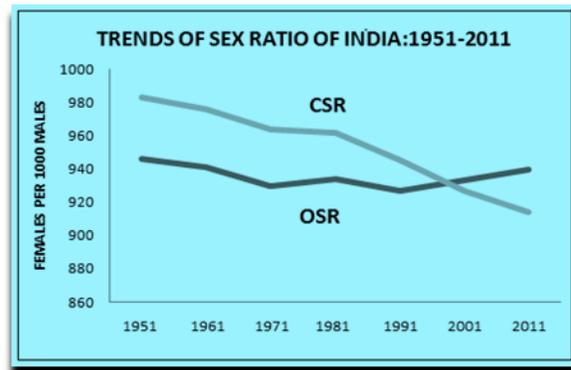
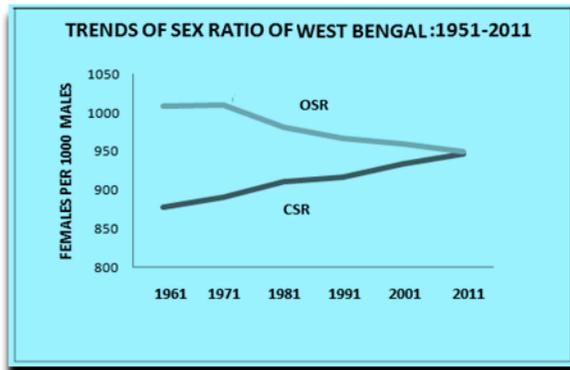


Fig: Trends of overall sex ratio and child sex ratio of India and West Bengal, 1961-2011.

Table-2 shows the trends of child sex ratio in West Bengal. In West Bengal CSR always decrease 1971 onwards and OSR always increase after Independence. The child sex ratio in West Bengal has been historically negative or in other words,

unfavorable to females since 1981. In the post independence period, the trend of child sex ratio slipped down for four consecutive decades after 1971. During 1971-2011 a steep fall of 60 points was seen in the child sex ratio in West Bengal.

Trends of Over All Sex Ratio in West Bengal(1951-2011)								Trends Of Child Sex Ratio Of West Bengal	
DISTRICT	YEAR							2001	2011(p)
	1951	1961	1971	1981	1991	2001	2011(P)		
Darjeeling	863	864	882	888	914	937	971	962	943
Jalpaiguri	825	854	887	910	927	942	954	969	949
Coachbehar	855	890	916	935	935	949	942	964	948
Uttar Dinajpur	884	888	908	931	921	938	936	965	946
Dahksin Dinajpur	884	932	941	946	944	951	954	966	948
Malda	966	965	948	949	938	948	939	964	945
Mursidabad	973	974	956	959	943	952	957	972	963
Birbhum	974	973	968	962	946	950	956	964	952
Burdwan	888	858	886	897	899	922	943	956	947
Nadia	937	948	948	946	936	946	947	972	955
North 24 Parganas	846	834	862	891	907	926	949	958	947
Hugli	883	892	896	909	917	947	958	951	946
Bankura	981	981	958	964	951	952	954	953	943
Puruliya	983	973	963	957	947	954	955	964	947
East Mednipur	955	952	945	951	944	947	936	942	938
West Mednipur	955	952	945	951	944	961	960	959	952
Howrah	810	808	838	873	881	906	935	956	964
Kolkata	593	630	662	741	799	829	899	927	930
South 24 Parganas	861	921	917	927	929	937	949	964	953

Source: Census of India, 1951-2011(P).

IV. SPATIAL PATTERN OF SEX RATIO

West Bengal as a whole has 947 number of females per thousand of males population in 2011. But the district level sex ratio is varies from district to district ranges from 899 to 971. All 19 districts are categorized into three groups as follows:

High Sex Ratio:

The districts which have the sex ratio above 947 are included into high category. High sex ratio was recorded in the districts of Birbhum, Bankura, West Mednipur, Hugly, North 24 Parganas, South 24 Parganas, Murshidabad, Dakshin Dinajpur, Jalpaiguri, Darjeeling and Puruliya.

Moderate Sex Ratio:

The districts which have sex ratio ranges from 900 to 947 are included in the moderate category. Moderate sex ratio was recorded in the districts of Burdwan, East Mednipur, Howrah, Nadia, Uttar Dinajpur, Malda and Cooch Behar.

Low Sex Ratio:

The districts which have the sex ratio below 900 are included in this group. Only Kolkata district has the lowest sex ratio in West Bengal.

Table: Spatial Pattern of Sex Ratio of West Bengal, 2011

Categories	Districts
High sex ratio (Above 947female per 1000 males.)	Birbhum, Bankura, West Mednipur, Hugly, North 24 Parganas, South 24 Parganas, Murshidabad, Dakshin Dinajpur, Jalpaiguri, Darjeeling and Puruliya.
Moderate sex ratio (900 to 947 female per 1000 males)	Burdwan, East Mednipur, Howrah, Nadia, Uttar Dinajpur, Malda and Cooch Behar.
Low sex ratio(below 900)	Kolkata

Source: Census of India, 2011(P).

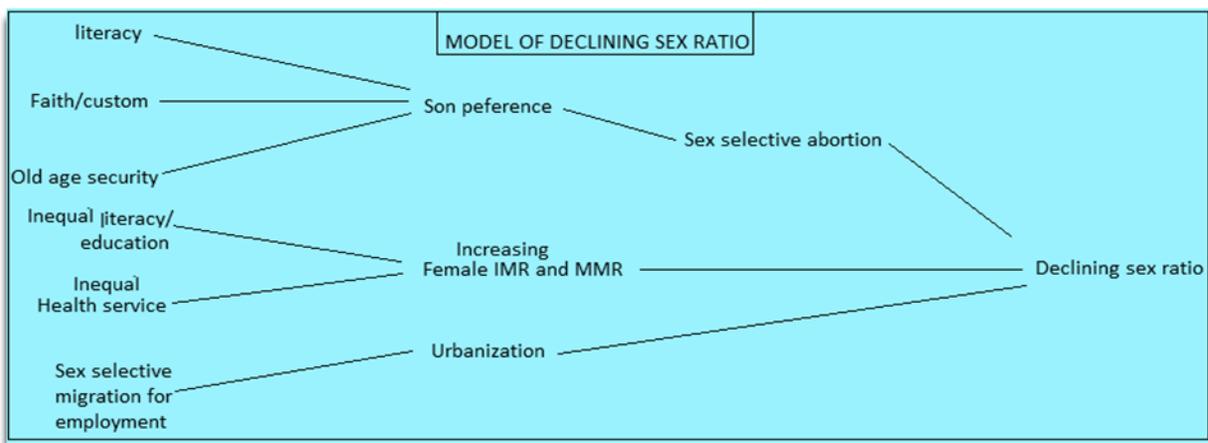
CAUSES OF LOW SEX RATIO OF WEST BENGAL:

A) DECLINING CHILD SEX RATIO OF WEST BENGAL:

The following are the reasons for declining trends of child sex ratio in West Bengal:

Analysis has drawn attention to two possible factors behind the falling CSRs that is-

1. The sex ratio at birth (SRB: Male live birth per 1000 female live births) has become biased against females due to the continuing pressure of son preference and neglected of girl child.
2. The female age specific death rates (ASDR) for the age group 0-4 years and 5-9 years have been found to be higher than corresponding male rates.
3. Indeed, in a rapidly growing country, a concerning recent trend is age sex selective abortion, resulting in an increasing skewed sex ratio at birth (UNFPA, 2009: Vitenam issues. This hints at the ongoing rampant misuse of technology in this state.



B. GENERAL CASUSES OF LOW OVERALL SEX RATIO OF WEST BENGAL:

1. High maternal mortality.

2. This is explained in apart by a sharp decline in maternal mortality between 1950-2010 but also very high rates of violent deaths (including homicides, traffic accidents, suicide) which are four times higher for men than they are for women.(Alves, Cavenaghi and Martine, 2011).

3. Sex selective migration in city especially for Kolkata and Howrah district.

With small family norms, many young couples do not for a second child happens to be a male. Higher female life expectancy is likely to initiate a new trend and tilt the scale of low sex ratio.

CO-RELATION OF LITERACY RATE AND SEX RATIO:

Literacy and education is universally recognized as a major component of human development. As such, certain minimum level of literacy seems to be essential for a population to break out the vicious of poverty. Literacy affected on various attributes of the population such as fertility, mortality, migration and also sex ratio. The knowledge of sex ratio is essential for the understanding the condition of women in society. A decline or low number of female population in the total population is strongly suggestive of the neglect of girl children, sex selective abortions and traditional attitudes of the society. Thus, the analysis of literacy and sex ratio is immense significant. According to 2011 census, the total population of West Bengal is 91,347,736, sex ratio is 947 and the literacy rate is 77.08.

SPATIAL PATTERN OF LITERACY RATE:

West Bengal as a whole has 77.08 percent literacy in 2011. But the district level literacy differs from district to district ranges from 60.13 per cent to 87.66 per cent. All 19 districts of West Bengal are divided into three categories as following:

High Literacy Rate:

The districts which have above mean plus one standard deviation are included in this category. The districts have the literacy rate above 79.92 per cent are included in high category. High literacy rate was recorded in the district of East Mednipur, Howrah, Hugly, North 24 Parganas and Kolkata due to high number of educational institutions, availability of educational facilities, high urbanization, development of transport and communication and so on.

Moderate Literacy Rate:

The districts which have literacy rate ranges from 70.95 to 79.92 per cent are included in this category. Moderate literacy was recorded in the districts of Burdwan, Bankura, West Mednipur, South 24 Parganas, Nadia, Dakshin Dinajpur, Jalpaiguri, Darjeeling and Cooch Behar district. In these districts, moderate literacy was found due to lack of educational infrastructure.

Low Literacy Rate:

The districts which have literacy rate below 70.95 per cent are included in low category. Low literacy rate was found in the districts of Birbhum, Murshidabad, Malda, Uttar Dinajpur and Puruliya. In these districts low literacy was recorded due to lack of educational institution, poverty and low student teacher ratio.

Table 4: Co-Relation between Spatial Pattern of Literacy Rate and Spatial Pattern of Sex Ratio, 2011

Districts	Literacy rate(2011)	Rank	Sex ratio(2011)	Rank	D	D2
Darjeeling	79.92	6	971	1	5	25
Jalpaiguri	73.79	13	954	8	5	25
Coach behar	74.59	11	942	14	-3	9
Uttar dinajpur	60.13	19	936	16.5	2.5	6.25
Dahksin dinajpur	73.86	12	954	8	4	16
Malda	67.71	16	939	15	1	1
Mursidabad	67.53	17	957	4	13	169
Birbhum	70.9	15	956	5	10	100
Burdwan	77.15	9	943	13	-4	16
Nadia	75.58	10	947	12	-2	4
North 24 parganas	84.95	3	949	10.5	-7.5	56.25
Hugli	82.55	5	958	3	2	4
Bankura	70.95	14	954	8	6	36
Puruliya	65.38	18	955	6	12	144
East mednipur	87.66	1	936	16.5	-15.5	240.25
West mednipur	79.05	7	960	2	5	25
Howrah	83.85	4	935	18	-14	196
Kolkata	87.14	2	899	19	-17	189

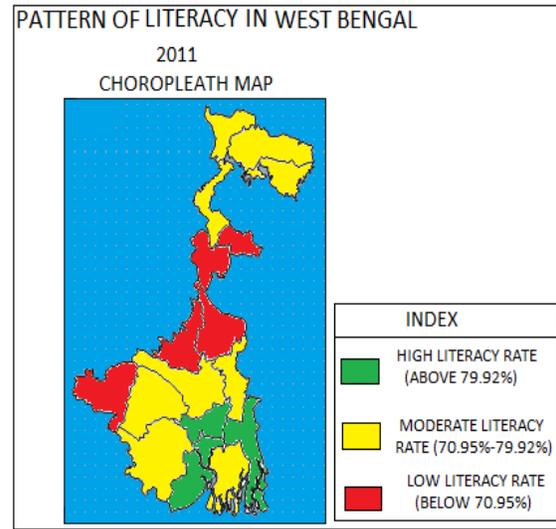
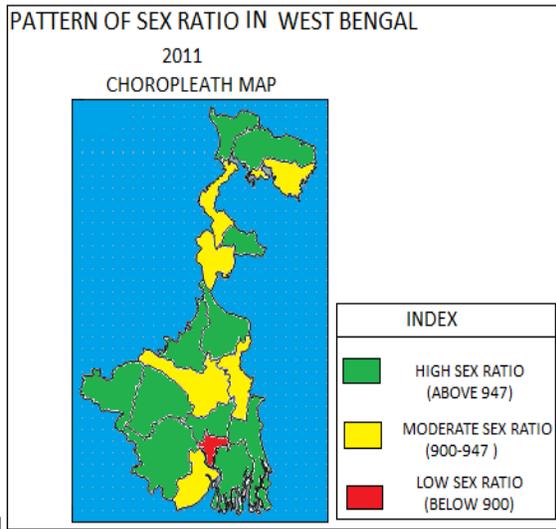
South 24 parganas	78.57	8	949	10.5	-2.5	6.25
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Source: Census of India, 2011(P).

CORRELATION BETWEEN LITERACY AND SEX RATIO:

The Spearman’s Rank Difference method is used for the calculation of the correlation of literacy and sex ratio in West Bengal. It is observed that there is rather low and negative

correlation i.e. $r = -0.27$ between the literacy and sex ratio in West Bengal.



DISCUSSION:

There are wide disparities in the literacy and sex ratio of West Bengal in 2011. The highest literacy was found in East Mednipur district and lowest in Uttar Dinajpur District. The highest sex ratio was found in Darjeeling district whereas lowest in Kolkata district of West Bengal. But the correlation between literacy and sex ratio found in low degree and negative angle i.e. $r = -0.27$ at 0.38 significance level (single tailed). It means high literacy rate, low sex ratio. It was observed higher the literacy rate lower the sex ratio i.e. Kolkata district and lower the literacy higher the sex ratio i.e. Dakshin Dinajpur district of West Bengal.

CO-RELATION BETWEEN FEMALES IMR AND CHILD SEX RATIO:

The infant mortality rates denotes that as a ratio of infant deaths (deaths of children under one year of age) registered in a calendar year to the total number of live births registered in the same year, where female IMR is one of the determinants of child sex ratio. Generally high female IMR is indicate that lower child sex ratio, because high female IMR mean that the loss of number of female child population that also help in reduce the child sex ratio. That’s why the present study tries to understand the relation between child sex ratio and female IMR of west Bengal.

Table 5:Co-Relation between Females IMR and Child Sex Ratio, 2001.

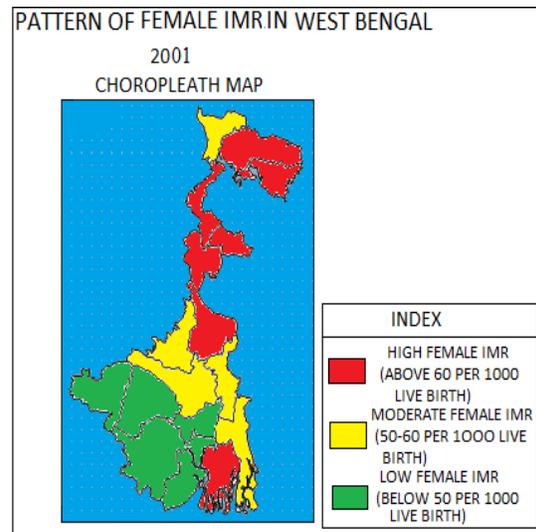
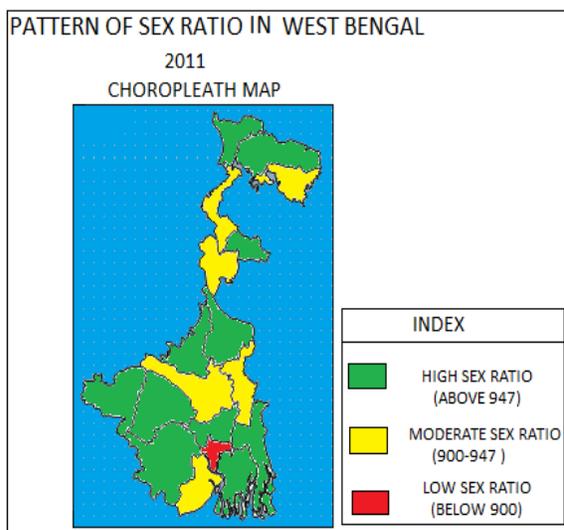
Districts	Females IMR(2001)	Rank	Child sex ratio(2001)	Rank	D	D2
Darjeeling	57	10	962	9	1	1
Jalpaiguri	65	15	969	17	-2	4
Coach behar	72	17	964	12	5	25
Uttar dinajpur	61	13	965	15	-2	4
Dahksin dinajpur	74	18	966	16	2	4
Malda	85	19	964	12	7	49
Mursidabad	64	14	972	18.5	-4.5	20.25
Birbhum	58	11.5	964	12	-0.5	0.25

Burdwan	53	7	956	5.5	1.5	2.25
Nadia	58	11.5	972	18.5	-7	49
North 24 parganas	55	8	958	7	1	1
Hugli	35	1	951	3	-2	4
Bankura	47	3	953	4	-1	1
Puruliya	49	5	964	12	-7	49
East mednipur #	49	5	942	2	3	9
West mednipur #	49	5	959	8	-3	9
Howrah	43	2	956	5.5	-3.5	12.25
Kolkata	56	9	927	1	8	64
South 24 parganas	69	16	964	12	4	16

Mednipur has a district in the survey time, so study perspective these two districts (East and West Mednipur) give same number of female IMR.

Source: census of India, 2001 and the publication of population foundation of India may 2008 "Infant and Child Mortality in India: Districts Level Estimates".

The Spearman's Rank Difference method is used for the calculation of the correlation of females IMR and child sex ratio in West Bengal. It is observed that there is rather moderate and positive correlation i.e. $r=0.44$ between the females IMR and child sex ratio in West Bengal.



DISCUSSION: There are wide disparities in the females IMR and child sex ratio of West Bengal in 2001. The highest females IMR was found in Malda district and lowest in Hugli District. The highest child sex ratio was found in Murshidabad and Nadia district whereas lowest in Kolkata district of West Bengal. But the correlation between females IMR and child sex ratio found in moderate degree and positive angle i.e. $r=0.44$ at 0.12 significance level (single tailed). It means high female's infant mortality rate, high child sex ratio. It was observed higher the females infants mortality rate higher the child sex ratio i.e. Malda and Dahksin Dinajpur district and lower the females infant mortality rate, lower child the sex ratio i.e. Hugli,

Bankura, Howrah, Kolkata district of West Bengal. This is an inverse position of general condition.

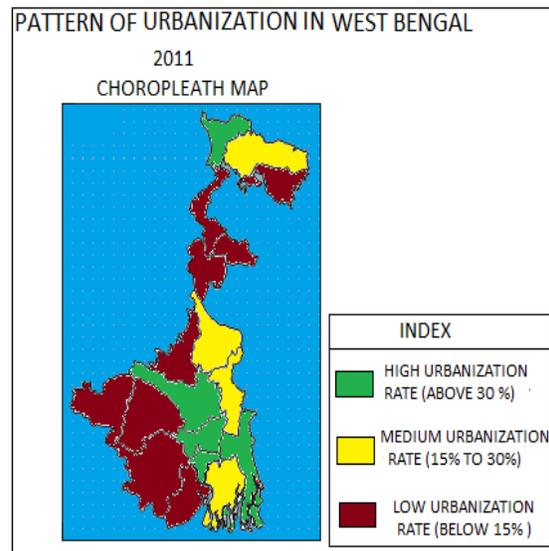
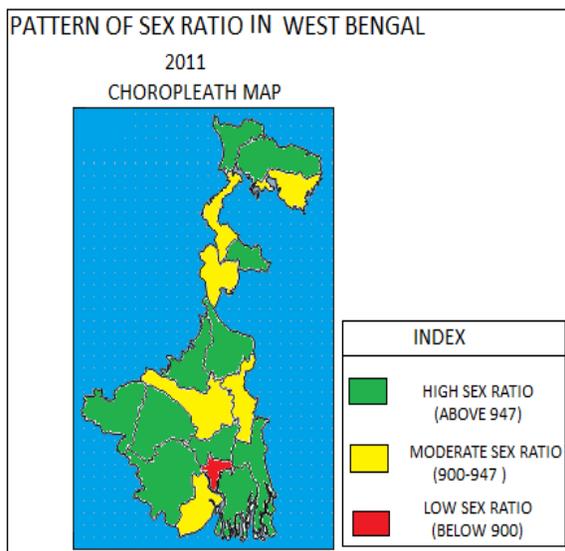
CO-RELATION OF URBANIZATION AND SEX RATIO:

The conventional wisdom is that men migrate to cities leaving their families behind in their villages, and the females follow later. While studying the relationship between urbanization and sex ratios in Indian context, it is observed that highly urbanized states-Maharashtra, Punjab and West Bengal have lower than national average urban sex ratio.

Table 6: Co-Relation between Urbanization and Pattern of Sex Ratio, 2011.

Districts	Urbanization	Rank	sex ratio	Rank	D	D2
Darjeeling	38.99	5	971	1	4	16
Jalpaiguri	27	8	954	8	0	0
Coach behar	10.25	18	942	14	4	16
Uttar dinajpur	13.8	12.5	936	16.5	-4	16
Dakshin dinajpur	14.13	11	954	8	3	9
Malda	13.8	12.5	939	15	-2.5	6.25
Mursidabad	19.78	10	957	4	6	36
Birbhum	12.8	14	956	5	9	81
Burdwan	39.87	4	943	13	-9	81
Nadia	27.81	7	947	12	-5	25
North 24 parganas	57.59	3	949	10.5	-7.5	56.25
Hugli	38.62	6	958	3	3	9
Bankura	8.36	19	954	8	11	11
Puruliya	12.75	15	955	6	9	81
East mednipur	11.65	17	936	16.5	0.5	0.25
West mednipur	12.03	16	960	2	14	196
Howrah	63.6	2	935	18	-16	256
Kolkata	100	1	899	19	-18	324
South 24 parganas	25.61	9	949	10.5	-1.5	2.25

Source: census of India, 2011(P).



The Spearman's Rank Difference method is used for the calculation of the correlation of urbanization and sex ratio of West Bengal. It is observed that there is rather moderate and negative correlation i.e. $r = -0.58$ at 0.01 significance level (single tailed) between the urbanization and sex ratio of West Bengal.

IMPACT OF DECLINING SEX RATIO IN WEST BENGAL:

1. The excess of males tends to lower the age of marriage of females (19.9 in 2006). Early marriages lead to considerable disparity in age between husband and

wives. This difference in age tends to increase widowhood.

2. Early marriage of females may also lead to increased fertility and population growth.
3. An adverse sex ratio (i.e., when the proportion of females is small) leads to the social emergence of many social and moral evils like rape, prostitution, impairing the morale of workers in near future. It also witnessed in human development report (2011) on gender inequality index that India record 129th rank which shows the significance of gender discrimination.

V. POLICY RECOMMENDATIONS

Son preference is the main culprit is known to be found in certain type of cultures, that is part lineal cultures. To sort out this son preference is most needed for to improve sex ratio and social stability against the women violence. This is solve out by the-

1. The modern state has powerful tools for in incorporating and managing it citizenry, rendering partlineages a threat rather than asset for the state. The modern state has brought in political, social and legal reforms aimed to challenge traditional social hierarchies, including the age and gender hierarchies of the kinship system.
2. Impact of media; suggest that states can accelerate the resultant decline in son preference, through media efforts to help parents perceive that daughters can now be valuable as sons and also use folk drama for this purpose. Behavior change communication programs –disseminated via mass media, community level events, interpersonal communication/ counseling, and electronic media-increases awareness and to motivate individual to action (Bongaarts, Cleland, Townsend, Bertrand, and Monica Das Gupta:2012).
3. Need incentive in education and health organization for women participation. Government needs special attention on women educational scholarship and health subsidy for women health that change the behavior of the society about women.
4. Allowing full participation of women in personal and family decisions — especially those relating to childbearing;

VI. CONCLUDING OBSERVATION

1. Kolkata and Howrah, industrial developed belt has low sex ratio due to sex selective male migration from neighbor districts due to search employment and other facilities.

2. Malda (939) and Uttar Dinajpur (936) are the frontiers districts between north south region where low moderate sex ratio is due to very high female IMR 85 and 61 respectively.
3. The child sex ratio in West Bengal has fallen 950 in 2011 from 1010 in 1971. The main culprits of declining child sex ratio are female foeticide, son preference and gender inequality which to suppress male dominant social structure. West Bengal has 49.3 abortions per 100 live births (Chharbra and Nunna, IIPS, from NFHS).
4. The missing girl in child is alarming danger symbol of gender inequality in child population and feature total population. The deficit in girl child population leads to serious demographic imbalance and difficult social consequences.

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AUTHORS

First Author – Kalyan Sundar Som, Research Scholar, General and Applied Geography, Dr. H.S. Gour University, Sagar (M.P.), Email: kalyansundarsom@gmail.com

Second Author – Prof. R.P. Mishra, Professor and Head, General and Applied Geography, Dr. H.S. Gour University, Sagar (M.P.), Email: mishrarpgeog@gmail.com

