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Spatial patterns of sex ratio in Rajasthan, 2011: A Geographical analysis

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Abstract

Among the various qualitative attributes of population, sex ratio holds an important place as it is a reliable index of the socio-economic conditions prevailing in an area and it is a useful tool for regional analysis. The present paper is an attempt to analyse the trends in sex ratio, spatial patterns, and rural- urban differences in sex ratio in Rajasthan. Sex ratio of Rajasthan is mainly the outcome of interplay of sex differentials in mortality, sex selective migration, sex ratio at birth and at times the sex differences in population enumeration. Sex ratio of Rajasthan is fluctuating in narrow band in last five decades. If keenly observe that the decadal difference in sex ratio is very little, 7 to 11 points only. In other words, there were wide regional differences in rural – urban sex ratio in the state at district level. The area having excess of females over males were characteristic of areas from where male population are out migrated. Whereas area having low sex ratio was associated with, high female mortality rates during infancy and high male selective in migration in response to growing development. It also tries to investigate the possible cause such high-level gap of between rural- urban sex ratio and to suggest some measure to minimize the gap.

Key words: *1.Sex Ratio, 2.Trends, 3.Spatial pattern, 4.Rural-Urban, 5.Rajasthan.*

Introduction

Sex composition of human population is one of the basic demographic characteristics, which is extremely important for meaningful demographic analysis. Population of any society is divided into two segments, the males and the females on the basis of their gender. the Both the sexes are complimentary to each other and play their distinctive roles in the social and economic activities in a community. The ratio between the two sexes has its bearing on the other demographic characteristics of the region (Shryock, 1976, p.105). The balance between the two sexes affects the social and the economic relationship within a community.

Sex ratio is a noteworthy demographic and culture index. The ratio can reflect biological, social, economic, migrational characteristics of population. A vast imbalance in sex ratio would tend to result in lower fertility and slower growth. Important deviation from a balanced sex ratio originates from various social and demographic factors. An analysis of sex ratio is important for a proper understanding of various demographic characteristics of any region, while sex ratio is an index to the economy prevailing in an area and useful tool for regional analysis of other demographic element like, population growth, marriage rates, occupational structure, fertility rate, etc. (Franklin,1956, p. 168).

Changes in sex composition largely reflect the underlying socio-economic and cultural pattern of a society in different ways. It is an important social indicator to measure the extent of prevailing equity between males and females at a given point of time. In the Indian census, the term 'Sex Ratio' is used to denote the number of females per 1000 males. It is common practice to express sex composition of population in terms of ratio. It is also an index of socio-economic conditions prevailing in an area and it is a useful tool for regional analysis (Chandna & Sidhu, 1980, p.78). Therefore, the pattern of sex ratio reflects the social and cultural background of an area. Sex ratio is function of three basic factors namely, sex ratio at birth, differential in mortality of two sexes at different, and stages of life and sex selectivity among migrants.

According to census of India in 2011, out of total population of 1,210 millions, 623 millions are males and 587 millions are females. It was revealed that the population ratio of India in 2011 is 943 females per 1000

of males. The Sex Ratio 2011 shows an upward trend from the census 2001 data (Fig.1). Since the last, two of the decades there has been in slight increase in the sex ratio. Since the last five decades, the sex ratio has been moving around 930 of females to that of 1000 of males. Thus, the overall sex ratio for Indian population comes to be 943. In the list of sex ratio, the rank of Rajasthan is at the *23th* place among the states and union territories (Table 1). Sex ratio of Rajasthan is mainly the outcome of interplay of sex differentials in mortality, sex selective migration, sex ratio at birth and at times the sex differences in population enumeration.

Table: 1

India: Sex Ratio, 2011

Sr.No.	State/Union Territory	Sex Ratio
1	Kerala	1084
2	Tamil Nadu	996
3	Andhra Pradesh	993
4	Chhattisgarh	991
5	Meghalaya	989
6	Manipur	985
7	Odisha	979
8	Mizoram	976
9	Goa	973
10	Karnataka	973
11	Himachal Pradesh	972
12	Uttarakhand	963
13	Tripura	960
14	Assam	958
15	West Bengal	950
16	Jharkhand	948
17	Arunachal Pradesh	938
18	Madhya Pradesh	931
19	Nagaland	931
20	Maharashtra	929
21	**Rajasthan**	**928**
22	Gujarat	919
23	Bihar	918
24	Uttar Pradesh	912
25	Punjab	895
26	Sikkim	890
27	Jammu & Kashmir	889
28	Haryana	879
	Union Territories	
1	Puducherry	1037
2	Lakshadweep	946
3	Andaman & Nicobar Islands	876
4	Nct of Delhi	868
5	Chandigarh	818
6	Dadra & Nagar Haveli	774
7	Daman & Diu	618
	India	**943**

Source: Primary Census Abstract Total Table For India 2011, Computed by the Author

Objectives, Data Source and Methodology

The main objectives of the study are:

- To describe, analyze and interpret the spatial patterns of sex ratio of Rajasthan.
- To examine the rural- urban differences in sex ratio of Rajasthan.

To achieve the above stated objectives the Tehsil has been considered to the most appropriate unit of study, for which data are available. This study primarily based on secondary source of data, which obtained in the form of Primary Census Abstract Total for Rajasthan, 2011 from census of India. The quantitative techniques have been used in the present study to understand the patterns of sex ratio. For this purpose, the census data has been tabulated, calculated to derive representative figures, averages and percentages. Sex composition is expressed with the help of a ratio known as sex ratio. Sex ratio in India is defined as "number of females per 1000 males in the population". It is expressed in the following formula:

Sex ratio = (number of Females / Number of Males) 1000*

Tehsil-wise, spatial patterns of sex ratio have been depicted on maps by using the choropleth technique with the help of Arc GIS 9.3 software.

Trends in Sex Ratio

Fig. 1 reveals that the Sex ratio in the Rajasthan from 1901 to 2011 can be divided into two phases, i.e. pre- Independence phase and post Independence. In the first phase, the Sex ratio was showing low and fluctuating trend as compare to India, while in the post Independence it started to decrease 13 point until 1961. After that there was gradual growth in sex ratio has been noticed (except the 1981-91 decade). The population composition of the state by the sex reveals preponderance of males. Rajasthan has registered a significant increase in the sex ratio from 910 in 1991 census to 921

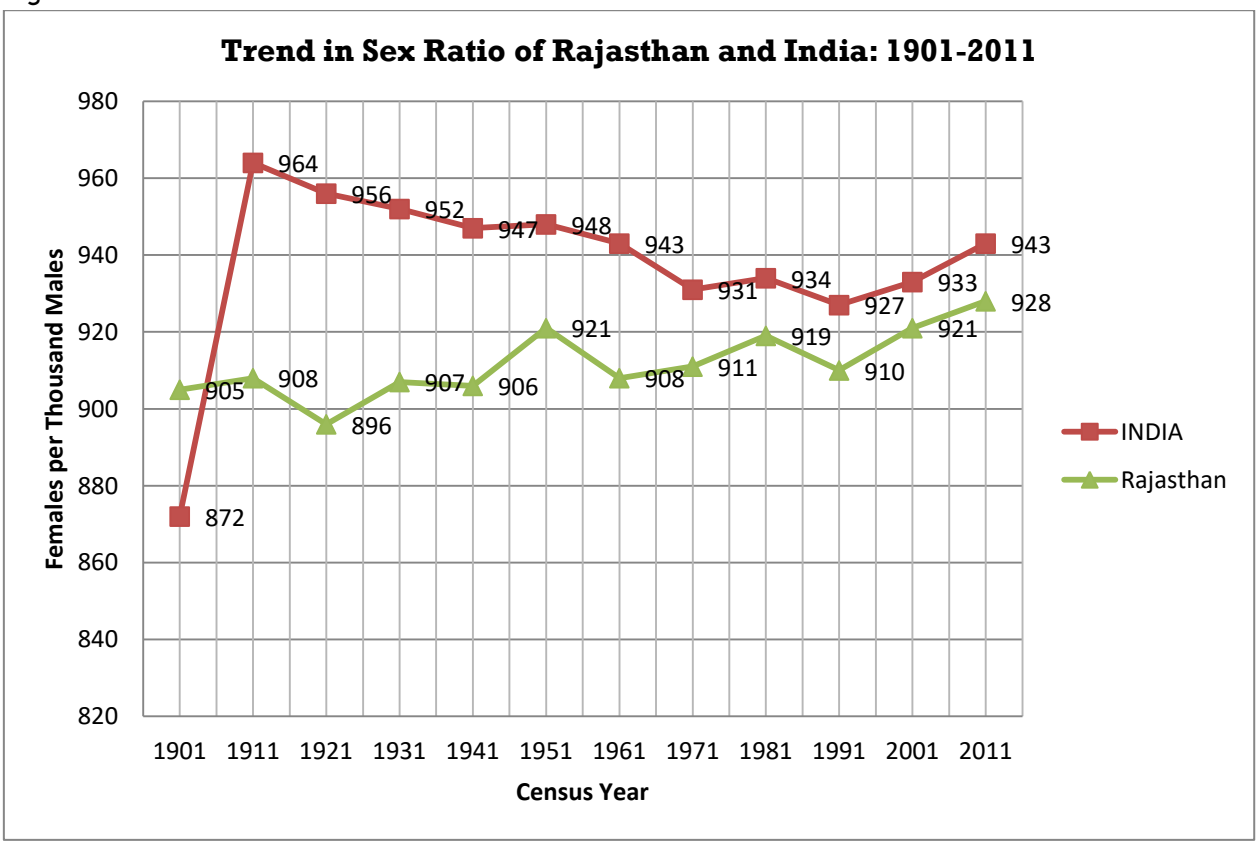

Fig.1

in 2001 and 928 in 2011 census, which the highest ever recorded since 1901 except in 1951when it was also 921.

Sex Ratio in Rajasthan

According to the census of 2011 is the state inhabited by 68548437 persons of comprising of 35550997 males and 32997440 females. The sex ratio of total population of the state is 928 females per thousand males against the national average of 943 in 2011 census. The sex ratio of total population of Rajasthan has increased from 910 in 1991 census to 921 in 2001 and 928 in 2011 census, showing the sex ratio growth of seven points. The height sex ratio of 994 has been recorded in Dungarpur district in 2011 census and is followed by Rajasmand (990) and Pali (987). In remaining districts it varies between 846 in Dhaulpur district to 983 females in Pratapgarh district. The lowest sex ratio of 846 has been recorded of Dhaulpur district preceded by Jaisalmer (852) and Karauli 861 female per 000" males (Table 2).

Table 2
Rajasthan: Sex Ratio by Districts, 2011

Sr. No.	District	Females per thousand males		
		Total	Rural	Urban
1	Dungarpur	994	996	951
2	Rajsamand	990	998	948
3	Pali	987	1003	934
4	Pratapgarh	983	984	963
5	Banswara	980	981	964
6	Bhilwara	973	984	932
7	Chittaurgarh	972	978	944
8	Udaipur	958	966	929
9	Jalor	952	955	921
10	Tonk	952	943	985
11	Ajmer	951	961	936
12	Jhunjhunun	950	956	932
13	Nagaur	950	951	945
14	Sikar	947	951	935
15	Jhalawar	946	949	933
16	Sirohi	940	951	897
17	Churu	940	938	944
18	Baran	929	928	930
19	Bundi	925	924	929
20	Jodhpur	916	922	906
21	Kota	911	930	898
22	Jaipur	910	920	902
23	Hanumangarh	906	907	902
24	Dausa	905	905	906
25	Bikaner	905	903	909
26	Barmer	902	902	899
27	Sawai Madhopur	897	894	911
28	Alwar	895	900	872
29	Ganganagar	887	891	878
30	Bharatpur	880	878	887
31	Karauli	861	856	889
32	Jaisalmer	852	859	807
33	Dhaulpur	846	841	864
	Rajasthan	**928**	**933**	**914**

Source: Primary Census Abstract Total Table For Rajasthan 2011, Computed by the Author

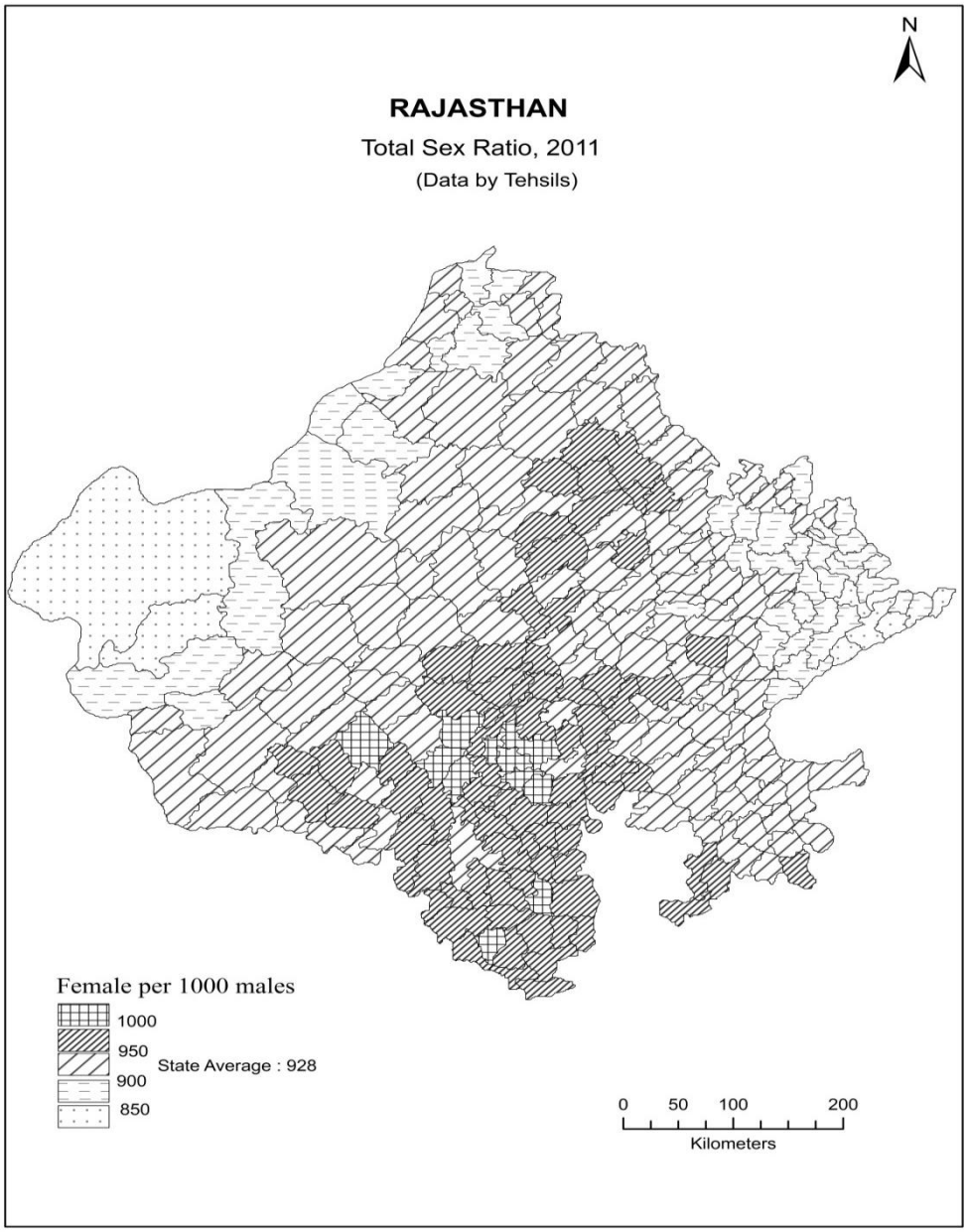

Fig. 2

Spatial Patterns of Sex Ratio

The spatial pattern of sex ratio of the total population in the year 2011 is based on what has emerged on a choropleth map (Figure.2) made from Tehsil wise data for 2011. The distribution pattern of sex ratio of the population at Tehsil level data reveals a diverse pattern. Three types of areas are clearly identifiable on the map:

A. Areas of high sex ratio (with 950 and more females per 1000 males)
B. Areas of moderate sex ratio (with 900 to 950 females per 1000 males)
C. Areas of low sex ratio (with less than 900 females per 1000 males)

A. Areas of High Sex Ratio – Out of total 244 Tehsils, 86 tehsils (approx. 35 per cent) fall under this category. These Tehsils falls in the districts of Jhunjhunun , Sikar, Churu, Nagaur, Ajmer, Pali, Sirohi, Udaipur, Dungarpur, Banswara, Pratapgarh, Chittaurgarh and Bhilwara. It is observed according to data that there are eleven Tehsils having sex ratio more than 1000 females per

thousand males viz. Kumbhalgarh (1050), Deogarh (1005) Tehsil of Rajasmand district; Marwar Junction (1025) and Desuri (1025) Tehsil of Pali district; Sahara (1021), Mandal (1036) and Raipur (1028) tehsisl of Bhilwara district; Sagwara (1023) of Dungarpur district; and Rashmi (1017) Tehsil of Chittaurgarh district; Ahore (1014) Tehsil of Jalor district and Dhariwad (1009) Tehsil of Pratapgarh. In these areas sex ratio increases due to economic development, urbanization, better conditions in literacy and migration from neighbouring states like Haryana and Punjab have dropped its positive impact on sex ratio. There is improvement in the public and private health facilities in their area. Therefore, the death rate has declined. Due to the family and health programs there is an increase in the birth rate and due to literacy and education in rural areas, the age at marriage has also increased which has its positive impact on the sex ratio. These areas are rich in agriculture as well as in industrial sector.

B. Areas of Moderate Sex Ratio – 46 percent tehsils fall under category of moderate sex ratio. In which we can include tehsils of the districts; Sikar, Tonk, Kota, Sirohi, Ajmer, Jhalwara, Churu, Nagaur, Dausa, Jalor, Jhunjhunun, Chittaurgarh, Pali, Jaipur, Baran, Jodhpur, Barmer, Bundi, Hanumangarh, Bikaner, Ganganagar and Alwar etc.

C. Areas of Low Sex Ratio – 45 Tehsils fall under this category. These tehsils represented the worse conditions for women survival. It appears that the decline in sex ratio in the last decade is due to combination of follwing factors:

a. Female Foeticide
b. Neglect of girl child leading to her death, and
c. Improvement of survival of male children due to a greater access to elementary medical facilities.
d. In the state, employment opportunities for females are limited. Majority of Rajput, Jat and other upper caste Hindus still prohibit their wives and daughter from outdoor work in factories and commercial activities.

Rural – Urban Differences in Sex Ratio

The rural- urban differences in sex ratio are of tremendous importance. The rural sex ratio for Rajasthan is 933 as against an urban sex ratio of 914 according to 2011 census and the difference between the two ratios is 19 points. In Rajasthan, the rural – urban gap in sex ratio is slightly high. While Rajasthan is, a less developed state of India because latter it urbanized and industrialized. The selectivity of male our migration from rural to urban areas within the state and similar selective in migration from outside the state to urban areas mainly accounts for the wide gap between the two ratios is not a new phenomena in Rajasthan. It may be noted that in 2001 the sex ratio gap between rural – urban was 41 point but there is positive change in its (state) sex ratio, according to 2011 census this gap reduced up to only 19 points. The sex ratio of rural and urban varies a great deal in accordance with their function and possibilities of female employment. Out of the determinants of sex ratio, it is assumed that rural – urban differences with regard to natural sex ratio, differential mortality rates for males and females are minimum. It means that sex selectivity among migrants from rural to urban is the main determinant of rural –urban differences in sex ratio. So rural – urban sex ratio does not confirm to the general observation i.e. sex ratio in urban areas lower than rural areas, these are two types of areas which emerged on the basis of rural- urban differences in sex ratio (Figure 3 & 4).

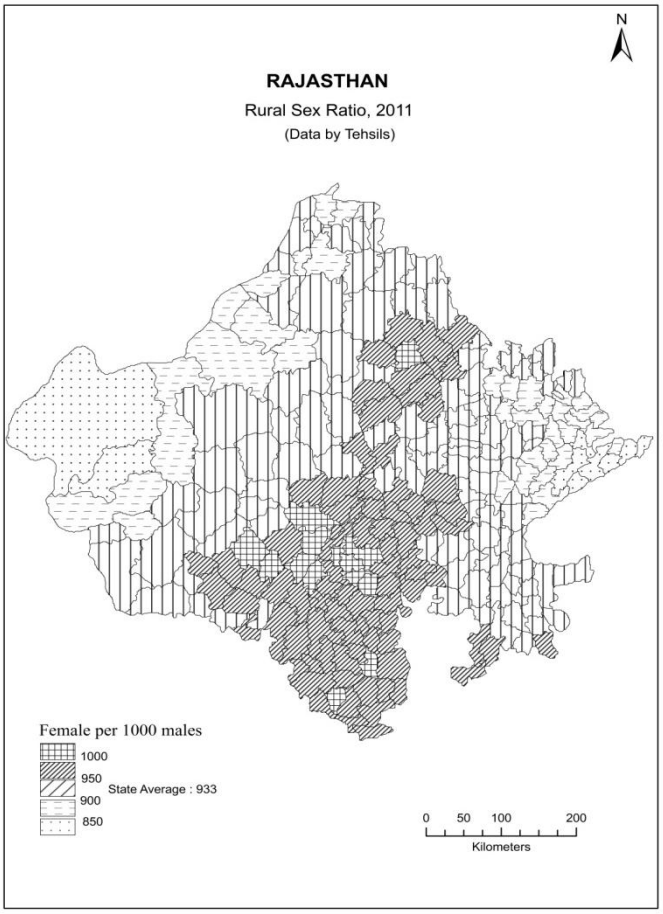

Fig.3

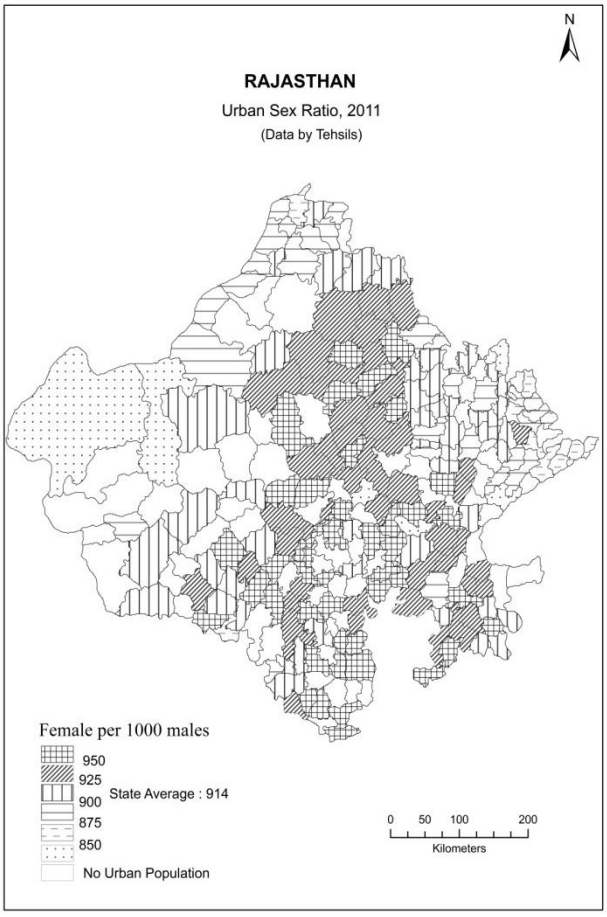

Fig. 4

A. High Sex Ratio in Rural Areas than Urban – In general sex ratio is lower in urban areas than in the countryside. There are 161 tehsils in Rajasthan where the rural sex ratio is higher than the Urban. Ganganagar, Karanpur, Raisinghnagar, Anupgarh, Gharsana, Khajuwala, Kolayat, Pokaran, Jaisalmer and Sheo tehsils are very close to the international border with Pakistan. So far, the security of the country some permanent military establishment have been increases there. During the Kargil war, many new army posts were created to strengthen the military force and increased the security of Indian border, which resulted in further lowering of sex ratio, mainly in urban areas. Dungarpur, Banswara. Chittaurgarh, Sirohi, Udaipur and Pali district lies in the tribal belt and have high rural sex ratio. Tribal population inhabits all these areas, which is overwhelmingly rural. Secondly, these areas have relatively high sex ratio in rural area than in urban area due to selective male out migration from the abroad. A large number of males have migrated to the industrial and commercial towns of Gujarat. In Northwestern, parts including the districts of Ganganagar also have rural sex ratio higher than urban areas. The lower urban sex ratio is due to male selective in migration to these areas. Similarly in the central parts and Eastern tehsils of the state rural sex ratio are higher than urban areas. The lower urban sex ratio is due to industrial centres, mining and administrative headquarters.

B. High Sex Ratio in Urban Areas than Rural – it is very interesting to note that urban sex ratio is higher than that of surrounding rural areas in 75 tehsils located in the districts of Tonk, Banswara, Dungarpur, Sikar, Jhunjhunun, Pali, Bhilwara, Udaipur, Rajsamand, Churu, Pratapgarh,Chittaurgarh, Bundi, Jaipur, Nagaur, Ajmer, Kota and Jhalawar. However, at the districts level only the eleven districts viz. Tonk, Banswara, Dungarpur, Partapgarh, Nagaur, Sikar, Pali, Rajsamand, Ajmer, Churu and Chittaurgarh have the urban ratio higher than rural areas. Higher urban sex ratio is characteristic of areas dominated by the Marwaris, the Rajputs and the Jats. The Marwaris dominated areas over 10 tehsils namely Ratangarh, Sardarshahar, Sujangarh, Taranagar, of Churu district, Fatehpur, Lachhmangarh of Sikar district, Nokha of

Bikaner, Phalodi of Jodhpur district Dungarpur of Dungarpur District and Ladnu Tehsil of Nagaur district. All these tehsils are inhabited by the famous Marwaris noted for their commercial activities. Excess in small urban areas of this area of this region is the result of large scale out migration as well as of Gujarat and Delhi etc. in search of better economic opportunities and jobs. Rajput dominated areas includes the tehsils of Chaksu of Jaipur district, Jahazpur of Bhilwara district, Pipalda of Kota district, Pirwa of Jhalwara district, Chhotisadri of Partapgarh district, Bundi of Bundi and Tonk Tehsil of Tonk district. In this region especially among Rajputs female infanticide neglect of female children and repeated pregnancies are the reasons of female mortality in rural areas creating lower sex ratio. In nutshell , high sex ratio in urban areas may be mainly related to the:

a. Selective male out migration from small urban centres to big urban centres, for business purposes and in search of jobs.
b. Impact of literacy in urban areas resulted in high sex ratio while low sex ratio in rural areas.

Conclusion

Sex ratio of population of a state or region is mainly the outcome of the interplay of sex differential in mortality, sex selective migration, sex ratio at birth and at times the sex differential in population enumeration. The following points have emerged from the study of the sex ratio of the states:

In Rajasthan, the sex ratio fluctuating in a narrow band and always remained at a low level. Presently, its sex ratio is same as in 1951 and it is highest in the twentieth century. Since independence, sex ratio is fluctuating 908 to 928. In Rajasthan, number of females was never more than males. In the study of population one attribute always effected by the other. It generally perceived that if the one attribute deviate from the normal pattern then certainly it would be cumulative effect of the other attributes and certainly will produces anomaly in other attributes. The factors awing to which the state has low sex ratio are enumerated here. Firstly, low sex ratio in Rajasthan is due to low literacy rate. It is needless to say that education create awareness among society and help to eradicate the orthodoxy and conventional thinking by revolutionizing the human mind with rational ideas.

Secondly, in Rajasthan, women status is much degraded and due to this, the neglect of girl child leads to her death. Besides this negligence during parturition, also create a life hazard for the mother's life. Thirdly, female foeticide and infanticide is more prominent in developed and less developed areas respectively. This is mainly due to social factors. Less awareness, more orthodoxy and a strong patriarchal society give birth to such type heinous crimes; this further lowers the sex ratio. Fourthly, in improvement of survival of male child due to greater access to elementary medical facilities and on the other hand denial of these elementary facilities to a female child has further worsened the situation. High sex ratio in rural areas than in urban areas is due to selective male out migration for the abroad. A large number of males have migrated to the industrial and commercial towns of Gujarat. The lower urban sex ratio is due outnumber of male workforce to industrial centres, mining and administrative headquarters.

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