

## A Geographical Study of Spatial Variation in Rural-Urban Sex Ratio in Solapur District of Maharashtra

Amol S. Shinde<sup>a</sup>, T. N. Lokhande<sup>b</sup>, Anita D. Muluk<sup>c</sup>

<sup>a</sup>Assistant Professor in Geography, Walchand College of Arts and Science, Solapur M.S, India

<sup>b</sup>Associate Professor and Head in Geography, K.B.P.College, Pandharpur, Solapur, M.S , India

<sup>c</sup> Assistant Professor in Geography, H.R.S.M. ACS College, Dehane, Tal-Khed, Dist-Pune, Maharashtra, India

**Corresponding author:** Amol S. Shinde

### Abstract

Sex composition is a population refers to balance between male and female in any population. Sex composition is one of the significant demographic characteristics of population. In any population, distribution by sexes is generally unequal. The existing sex ratio in any area is determined by three basic factors. These are sex ratio at the time of birth, differences in the mortality rates of the two sexes, at different ages and differences in the migratory ethos of the two sexes. The present study aims to examine the spatial pattern and fluctuation of rural urban sex ratio during 2001-2011. For the purpose of present study tahsil has been taken as a basic unit of investigation. The period selected for the present study is two decade from 2001-2011. The proposed study is entirely based on secondary data. Present analysis shows that males and females are unequal and also tehsil wise magnitude of rural-urban inequality varies in the study region. Sex ratio in general and rural-urban is computed formula and new mainly FRUSR (fluctuation of rural-urban sex ratio) is method using for the changing difference value between in rural-urban sex ratio in 2001-2011. In fact, present rural –urban sex ratio shows opposite situation in 2011, compare to 2001 census. In 2001, we found that rural sex ratio was higher than urban sex ratio, while in 2011, urban sex ratio was higher than rural sex ratio.

**KEYWORDS:** Spatial variation, sex composition, sex ratio, fluctuation, FRUSR.

### INTRODUCTION

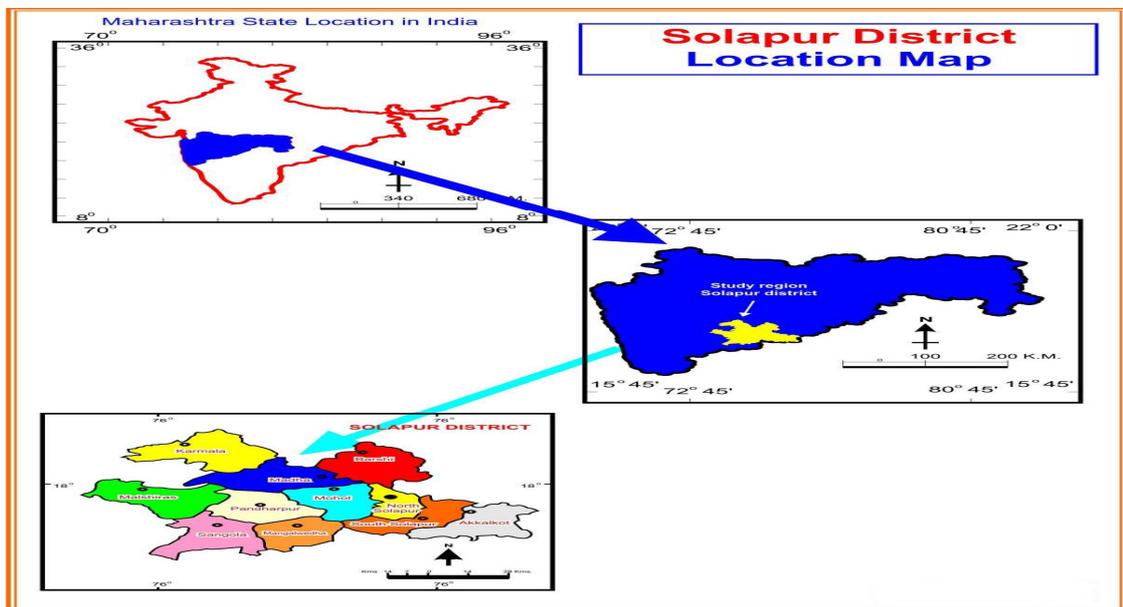
These are sex ratio at the time of birth, differences in the mortality rates of the two sexes, at different ages and differences in the migratory ethos of the two sexes Sex ratio is an important social indicator which defined the number of females per thousand people. Sex ratio has great importance in the study of population because it is closely related to socio-economic condition of area. Sex ratio also influences the volume and nature of social need and employment and consumption pattern. Sex composition also influences fertility potential of the population, the labour participation and the types of jobs. The variations in sex ratio are to a large extent determined by three factors such as, sex ratio at birth, differentials in mortality rate in two sexes and sex selectivity among migrants. Sex composition is one of the significant demographic characteristics of population. The separate data for male and females are important for various types of planning and for the analysis of other demographic characteristics such as naptulity, mortality, migration, marital status, economic characteristics etc. In all the demographic narratives the low sex ratios are taken as a stark indicator of the inferior position of women in India. Declining sex

ratio is an important phenomenon for demographer, sociologist, geographers, planners, medical and public health worker. In India, in general and child sex ratio is higher in rural areas than urban areas. Similar trend is observed in most of the states. In general, highest decline in sex ratio is recorded in urban areas. Drastic decline is observed in the urban areas of Haryana, Gujarat and Utter Pradesh, while, heavy loss is found in both rural and urban areas of Punjab. Similarly in Maharashtra also, the magnitude of female child loss is higher, in rural areas than the urban areas. In the Indian context, a sex ratio of 950 and above can be considered as favourable. As per 2011 rural sex ratio is 934, while urban sex ratio is 936. Which shows interestingly rural – urban sex ratio remain adverse to female but, sex ratio is decreasing very rapidly in rural areas whereas it is slowly increased in urban areas of study region.

## MATERIALS AND METHODS

### The study region

Solapur District is a district in Maharashtra State of India. The city of Solapur is the district headquarters. It is located on the south east edge of the state and lies entirely in the Bhima and Seena basins. The entire district is drained by the Bhima River. Solapur located on the eastern slopes of the Western Ghats. It has a Geographical area of 14, 845 km<sup>2</sup>. The district is bordered by Osmanabad district to the north west, Ahmednagar district to the north Satara district to the west, Pune district to the Northwest Bijapur district of Karnataka to the south, and, the lowest elevation of which is 500 meters above sea-level. Sonnalagi has an average temperature of Max: 44.10°C Min: 4.4°C, Rainfall ≈759.80 mm, with the highest temperatures occurring in April and May. The district is divided into the administrative talukas: Akkalkot, Barshi, Karmala, Madha, Malshiras, Mangalvedhe, Mohol, Pandharpur, Sangola, North Solapur and South Solapur (Figure 1).



**Figure 01.** Location map of Solapur District

### Objectives:

1. Examination of the spatial pattern of rural and urban sex ratio in the study region.
2. Studying the differences of Sex Ratio in rural and urban areas (2001-2011).
3. Analysing the fluctuation of rural-urban sex ratio during the period 2001-2011.

**DATABASE AND METHODOLOGY**

The present study was entirely based on secondary data which were collected from Socio-Economic Review and District Statistical Abstract of Ahmednagar, Census of India, Census Handbook of Maharashtra and Ahmednagar District, District Gazetteer and also concern information is collected from various published thesis, articles, books and journals, etc. The Study Region in tahsil has been taken as a basic unit of investigation for study purpose. The period selected for the present study is from 2001 to 2011. The collected data were processed and presented by using appropriate quantitative and cartographic techniques. General and rural-urban sex ratio was computed and mainly FRUSR method for the changing differences between rural-urban sex ratio in 2001-2011 by given following formulas (1, 2):

$$1) \text{ Sex ratio} = \frac{P_f}{P_m} \times 1000$$

Where: P<sub>f</sub> = Total number of females, P<sub>m</sub> = Total number of males

$$2) \text{ FRUSR} = \text{Each Tahsils (2011 Rural - 2001 Rural)} \pm (\text{2011 Urban} - \text{2001 Urban})$$

Where: the fluctuation of rural-urban sex ratio +/- positive/negative value

**RESULTS AND DISCUSSION**

**Spatial pattern of rural-urban sex ratio (2001 -2011)**

It was very interesting to note that the Sex ratio was increasing in urban area from 957 in 2001 to 966 in 2011, whereas it continued to decline in rural area from 925 in 2001 to 916 in 2011 in the study region.

**Table 1.** Tahsilwise rural-urban sex ratio in Solapur district from 2001 to 2011

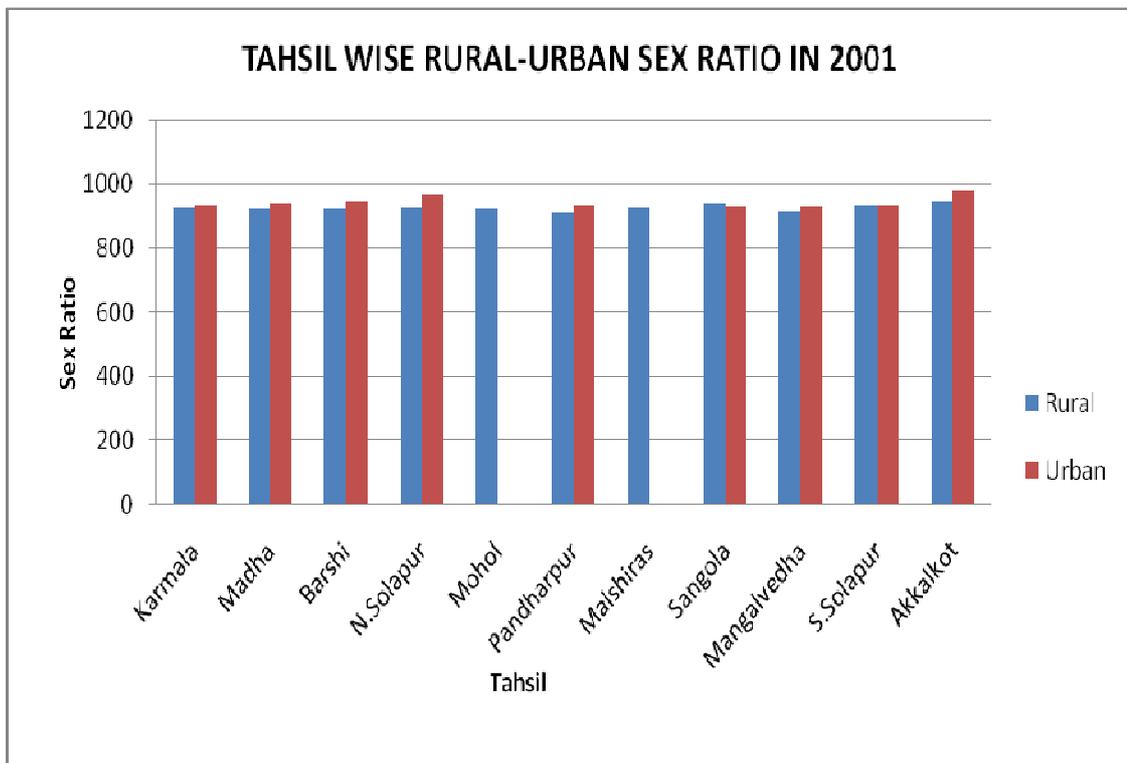
Sr. No.	Tahsil Name	2001		2011		Differences in 2001-2011 (FRUSR)	
		Rural	Urban	Rural	Urban	Rural	Urban
1	Karmala	924	934	907	947	-17	13
2	Madha	920	936	904	961	-16	25
3	Barshi	921	946	909	948	-12	2
4	N. Solapur	925	962	912	972	-13	10
5	Mohol	920	-	914	-	-	-
6	Pandharpur	912	933	904	948	-8	15
7	Malshiras	923	-	918	952	-5	-
8	Sangola	937	930	932	933	-5	3
9	Mangalvedha	915	929	892	957	-23	28
10	S. Solapur	933	933	941	-	8	-
11	Akkalkot	946	975	934	986	-12	11
	<b>District Mean</b>	<b>925</b>	<b>957</b>	<b>916</b>	<b>966</b>	<b>-119</b>	<b>109</b>

Source:

- 1) Census of India, 2001.
- 2) Provisional Population Totals, Census of India, 2011.
- 3) Socio-Economic of Abstract, Solapur, 2001 and 2011.

**Spatial pattern of rural-urban sex ratio (2001)**

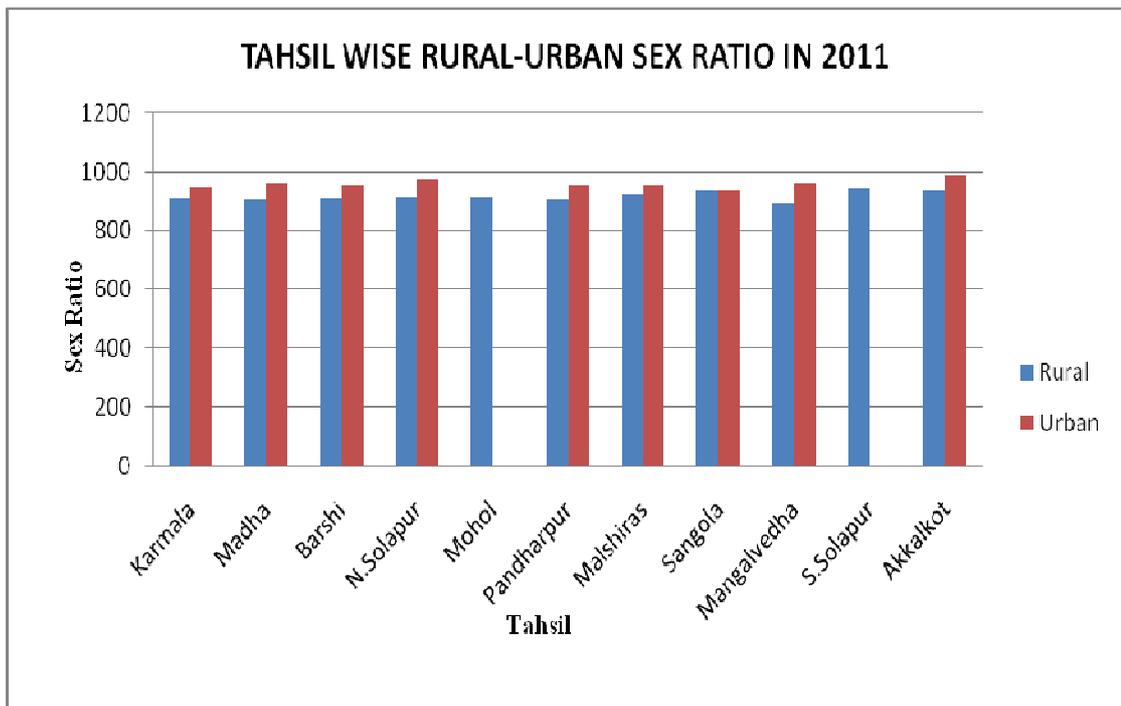
Table 1 and Figure 2 indicates that the tahsil wise rural-urban sex ratio differential in the study region. As per 2001 census, rural sex ratio is highest in Akkalkot tahsil (946) while, Magalvedha tahsil shows low rural sex ratio (915) as compared to district average. Urban sex ratio is Higer than the rural sexratio of the study region. Maximum urban sex ratio was observed in Akkalkot tahsil and minimum in Mangalvedha tahsil (915 and 929, respectively) as compare to district average. Tahsil wise rural –urban sex differentials show that 3 tahsils in above district average whereas 8 tahsils in below average with respect to rural sex ratio. Rural sex ratio is high in the tahsils such as S. Solapur (933), Sangola (937), Akkalkot (946). Because of the scarcity of water, uneven topography and less fertile soil are the major geographical factors responsible for the less agricultural development. It is observed that sex selective out migration taken place to seeking jobs leads to high rural sex ratio in the tahsils, which are located in drought prone area of the study region. Low sex ratio was observed in tahsils Viz., Panharpur (912), Mangalvedha (915) Mohol and Madha (920), Barshi (921), Malshiras (923), Karmala (924). Urban sex differentials in the study region shows that, 5 tahsils in above district average, whereas 2 tahsils below the average (933). Low urban sex ratio is observed in tahsils Viz. Mangalvedha (929) Sangola (930). Remaining tahsils such as, Barshi (946), N. Solapur (962), Akkalkot (975) showed high sex ratio it was predominantly in agricultural irrigated developed tahsils, Male out migration for employment purpose from drought prone and agriculturally less developed tahsil towards agriculturally developed tahsils also because of large cost of living in urban areas, people who migrate to urban areas keep their spouses in villages leads to sex ratio is decreasing in rural areas and increasing in urban areas.



**Figure 02.** Tahsil wise rural-urban sex ratio in 2001

**Spatial pattern of rural-urban sex ratio (2011)**

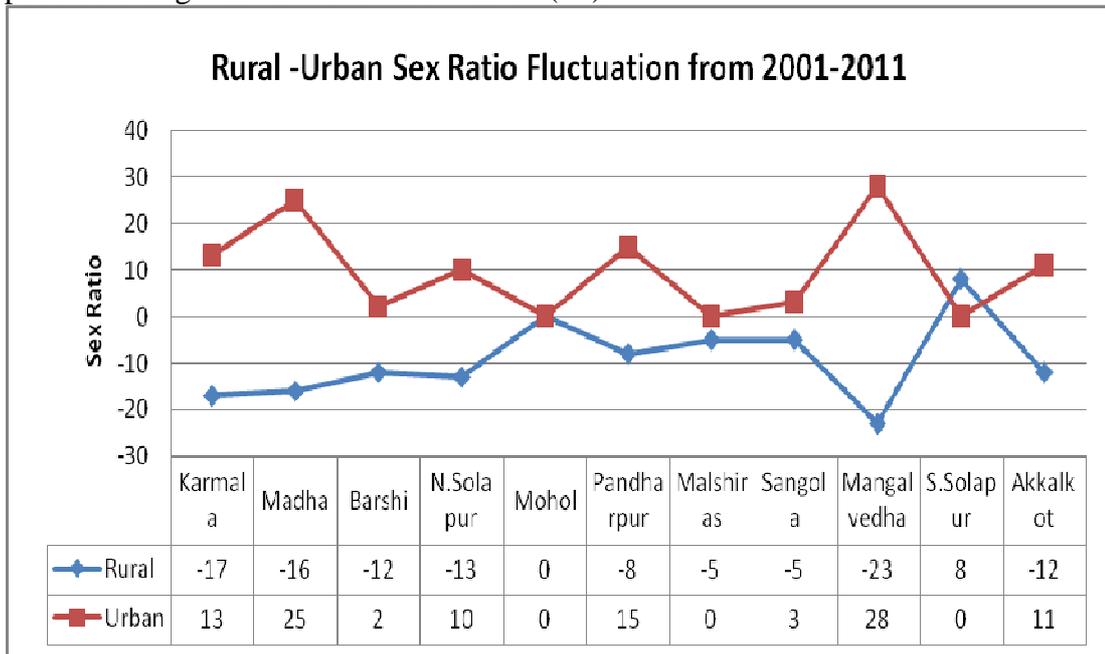
In 2011, rural sex ratio is highest in the S. Solapur tahsil (941) while, Madha tahsil shows lowest rural sex ratio (904), as compared to district average. Maximum urban sex ratio was observed in Akkalkot (986) tahsil and minimum in Sangola (933) tahsil. Respectively as compare to district average. Figure 3 shows rural-urban sex ratio variation in 2011. Rural-urban sex ratio shows that, 4 tahsils in above district average whereas 7 tahsils below average with respect to rural sex ratio. Rural sex ratio was high in the tahsils such as, N. Solapur (912), Mohol (914), Malshiras (918), Sangola (932), Akkalkot (934), S. Solapur (941) and Mangalvedha (892). Low sex ratio was observed in tahsils Madha and Pandharpur (904), Karmala (907), Barshi (909). Tahsil wise urban sex differentials shows that 7 tahsils in above district average whereas, 1 tahsil below the average. Low urban sex ratio is observed is Sangola (933) tahsils. Remaining tahsils such as Karmala (947) Pandharpur and Barshi (948), Malshiras (952), Mangalvedha (957), Madha (961), N. Soalpur (972), and Lastly Akkalkot (986) showed high and above average sex ratio. This reason was because of the grater preponderance of males in rural to urban streams of migration In the study region sex ratio reveals that urban sex ratio is greater than the rural sex ratio in some tahsils, because of both male-female rural-urban migration increases in last decade. In fact, in the study region in the rural-urban migration males out number female, but the rate of rural female migration towards urban areas increases rapidly than the males. It was also observed a positive relation in between literacy and migration of female. In 2011, female literacy rate increases by higher rate than the male literacy, leads to increase in rural to urban migration of both male and females for the purpose of education and employment. Present analysis denotes declining sex ratio is the serious problem of the study region. The process of urbanization, migration pattern and other socio-economic factors affecting on sex ratio, in which migration is the one of the important factor, which is affecting on imbalance in sex ratio in urban and rural areas.



**Figure 03.** Tahsil wise rural-urban sex ratio in 2011

**Rural–urban sex ratio fluctuation from 2001 to 2011**

Figure 4 shows rural-urban sex ratio fluctuation in between 2001 to 2011. In fact, in Solapur district we found drastic changes in general and rural-urban sex ratio in last decade. Rural sex ratio shows tahsil wise negative fluctuation in all the tahsils except S. Solapur tehsil (+08) in the study region. The highest negative fluctuation in rural sex ratio is exist in Karmala tahsil (-17), followed by Madha (-16), Barshi (-12), N. Solapur (-13), Pandharpur (-8), Mangalvedha (-23), Akkalkot (-12) and lowest negative fluctuation exist in Malshiras and Sangola (-5). Positive Fluctuation in Urban sex ratio is observed in all the urban centers no except negative fluctuation exists. Highest Positive Fluctuation in urban sex ratio is observed in Mangalvedha tahsil (+28), followed by positive fluctuation found in the tahsils such as N. Solapur (+10), Karmala (+13), Pandharpur (+15), Madha (+25), Sangala (+3), whereas lowest positive change found in the Barshi tahsil (+2).



Source: Computed by authors

**Figure 04.**

**Rural – Urban overall Sex Ratio Fluctuation in Solapur District From 2001 to 2011**

High and positive fluctuation in urban sex ratio is observed in Mangalvedha tahsil due to socio economically advanced, industrial and business center and source area of employment. The higher degree of urbanization and consequent lower proportion of joint families in western Maharashtra; as a result of development of non-agricultural activities, where large joint families are not considered an asset Along with socio-economic development and rapid urbanization in the study region, women work participation rate increases in secondary and tertiary activities such as governmental services, private sector, banking, insurance, industries and other services etc, it leads to more rural out migration of educated.Females towards urban centres in the study region. It was observed that sex ratio of workers and migrants affecting on the rural-urban sex ratio of the study region. Analysis shows generally sex ratio increases in urban area, while decreases in rural area. It are observed that inequality in between males and females and also tahsil wise magnitude of rural urban inequality varies in the study region. As per 2011, rural sex ratio was 916, while urban sex ratio was 966. Which shows interestingly rural-urban sex ratio adverse to female but, sex ratio was decreasing very rapidly in rural areas whereas it is increased in urban areas of study region.

## CONCLUSIONS

1. Present analysis reveals that males and females are unequal and also tehsil wise magnitude of rural-urban inequality varies in the study region. In fact, present rural-urban sex ratio shows opposite situation in 2011, compare to 2001 census. In 2001, we found rural sex ratio is higher than urban sex ratio, while in 2011, urban sex ratio is higher than rural sex ratio.
2. Sex selective out migration especially male for employment purpose from agriculturally less developed tahsil towards the agriculturally developed and urbanized tahsils leads to sex ratio is increasing in rural areas and decreasing in urban areas in 2001. It is observed that the proportion of female workers and migrants affecting on the imbalance in rural urban sex ratio of the study region in 2011.
3. In 2011, rural sex ratio is highest in the S. Solapur tahsil (941) while, Madha tahsil shows lowest rural sex ratio (904), as compared to district average. Maximum urban sex ratio was observed in Akkalkot (986) tahsil and minimum in Sangola (933) tahsil.
4. High and Positive Fluctuation in urban sex ratio is observed in Mangalvedha tahsil due to socio economically advanced, industrial and business center and source area of employment.
5. Rural-urban sex ratio fluctuation clearly shows interestingly rural-urban sex ratio adverse to female but sex ratio is decreasing very rapidly in rural areas whereas it is slowly increased in urban areas of study region during 2001 to 2011.
6. As per 2001 census, rural sex ratio is highest in Akkalkot tahsil (946) while, Magalvedha tahsil shows low rural sex ratio (915) as compared to district average. Urban sex ratio is higher than the rural sex ratio of the study region. Maximum urban sex ratio was observed in Akkalkot tahsil and minimum in Mangalvedha tahsil (915 and 929).
7. Rural-urban sex ratio is adverse to female, not only because of sex selective migration but also strong son preference and couples are moving towards a smaller family size and wants at least one or two sons, so they take the help of modern technology to detect the sex of foetus.

## REFERENCES

1. Natarajan, D. (1971): "Changes in sex ratio", Census of India, Census Countenance, Monograph No. 6, New Delhi, pp. 4.
2. Mitra, A. (1979) "Implications of declining sex ratio in India", Allied Publication, Bombay: pp. 6.
3. Kullar, X. (2011): "India - A Comprehensive Geography": pp. 225-229.
4. Jhingan, M. L., Bhatt, B. K., Desai, J. N. (2003) Demography, Vrinda publications, Delhi, pp.188-191.
5. Sawant, S. B., Khan, Y. S. (1982) "Variations in Marital Status in Western Maharashtra". The Deccan Geographer, Vol. XX (2), Jan-June 1982: pp. 181-195.
6. Pawar, S. N., Gatade, D. G. (2013) "Spatial Variations in Rural-Urban Sex Ratio in Ahmednagar District of Maharashtra", Indian Streams Research Journal [2230- 7850], Vol. 3, Issue 5: pp.02-07.
7. Ramaiah, G., Chandrasekarayya, T., Murthy, P. (2011) "Declining Child Sex Ratio in India: Trends, Issues and Concerns", Asia-Pacific Journal of Social Sciences, Vol. III (1), Jan-June 2011: pp. 183-198.
8. Husain, M. (2011) Population Geography Book, Rawat Publication, pp.127-128.