Correlation between Child Sex Ratio and Literacy Rate in

Haryana, 2011

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INTRODUCTION

Sex ratio is not only a term used to define difference between number of females and males but it is also a great source to define the equality between male and female in a society. It varies from one region to another and from one age group to another age group. In India, when sex ratio is analyzed with age specific, child sex ratio (0 - 6 age group) plays an important role. It is expressed as the number of female children per thousand male children in the age group 0 - 6 years in population. The child sex ratio is 914 female children per 1000 male children in India during 2011 which shows the worst condition of the society. There exists a great variation in child sex ratio with respect to state level in India. The highest child sex ratio (0 - 6 age group) was found in Kerala state which was 964 female children per 1000 male children during 2011. On the other hand, the lowest child sex ratio (0 - 6 age group)was found in Haryana state which was 830 female children per 1000 male children in 2011. Child sex ratio is determined by many factors. Literacy is one of them. Literacy is an important social indicator that reveals the quality of population. Education not only supports the process of socio-economic growth, but also helps in deleting the social ills of tradition. According to the Census of India, 2011, a person whose age is seven years or more than seven years can understand, read and write any language is called literate. If a person who can neither read nor write or read a language but cannot write is also called illiterate. The children under seven years of age, even if they go to school and have learnt to read and write, will be non-literates grade. A percentage ratio of literate persons and total population is called literacy rate. The literacy rate in India is 74.04 percent during 2011. When discuss at state level, the average literacy rate of Haryana is found 76.64 percent which is above the national average during 2011 (Census of India, 2011).

STUDY AREA

Haryana state came into existence on 1^{st} November 1966 from Punjab state. It is situated in the northwestern part of India. It lies between 27°30' to 30°35' North latitude and

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74°28' to 77°36' East longitude (Figure 1). It covers an area of 44,212 sq. km. There are 21 district, 74 tehsil, 80 statutory towns, 74 census towns and 6841 villages in Haryana state during 2011. According to Census of India 2011, Haryana has 2,53,51,462 population. The sex ratio of this state is 877 female per 1000 male which is lowest in India and child sex ratio is 830 female children per 1000 male children which is also lowest in India during 2011 (Administrative Atlas of Haryana, 2011).



Sources: Resource Atlas of Haryana, 2004

Figure 1

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DATA SOURCES AND METHODOLOGY

The study is related to Haryana state and based on secondary data. The data related to child sex ratio and literacy was calculated from Census of India, 2011. District wise child sex ratio was calculated from population of 0 - 6 years age group and it is expressed as the number of female children per thousand male children. Literacy rate is calculated by divide the total number of literate population of a given age group by the corresponding age range of total population and multiply the result by hundred. This is the crude literacy rate because it also includes the population below seven years age who cannot include the literate grade. In the present study, Spearman's Rank Coefficient of Correlation is selected to find out the correlation between child sex ratio and literacy rate in Haryana during 2011. Major causes to select this method in present study are it is easy to calculate and simpler to understand as compared to other methods. Spearman gives formula for the calculation of coefficient of correlation method as follows:

$$R = 1 - \frac{6\sum d^2}{N^3 - N}$$

Where R is used for Rank Correlation, $\sum d^2$ is used for squares of the difference of rank of each pair of items in series and N is number of items in series. Sometimes, it may be possible that there are multiple items which have same value in the series. In that case all items of the same value are assigned with tied rank (average rank) or equal rank in series. In such case, the Spearman's Rank Difference method is applied with two methods i.e., Bracket Rank method and Average Rank method. There is also important change in formula with adding $\frac{1}{12}$ (m³ – m) in the value of $\sum d^2$. Here 'm' is the number of frequency an items is repeated. This adjustment is added to each repeated value in both the series (Gupta and Gupta, 2007). In such case, the formula may be written as below:

$$R = 1 - \frac{6[\sum d^2 + \frac{1}{12}(m^3 - m) + \frac{1}{12}(m^3 - m) + \dots}{N^3 - N}$$

Beside the types of correlation, degree of correlation is also important. As per Gupta and Gupta, 2007, there are three type of degree of correlation i.e., perfect correlation, Absence of correlation and limited degree of correlation. Table 1 shows the degree of correlation proposed by Gupta and Gupta, 2007.

Degree		Positive	Negative		
1. Perfect		+1	-1		
2. Limited	a. Very High	Above $+$ 0.9 and up to $+$ 0.99	Below - 0.9 and up to - 0.99		
	b. High	Above $+$ 0.75 and up to $+$ 0.9	Below - 0.75 and up to - 0.9		
	c. Moderate	Above + 0.25 & up to + 0.75	Below - 0.25 & up to - 0.75		
	d. Low	Above 0 and up to $+ 0.25$	Below 0 and up to - 0.25		
3. Absence		0	0		

Table 1 Degree of Correlation

Source: Gupta and Gupta, 2007.

RESULTS AND DISCUSSION

Correlation of Child Sex Ratio and Literacy Rate

Table 2 represents the district wise child sex ratio and literacy rate in Haryana during 2011. The highest child sex ratio is found in Mewat district i.e., 903 female children per thousand male children whereas the lowest child sex ratio is found in Jhajjar district i.e., 774 female children per thousand male children. The highest average literacy rate is found in Gurgaon district i.e., 84.44 per cent whereas the lowest average literacy rate is found in Mewat district i.e., 56.14 percent during 2011. The district wise correlation between child sex ratio and literacy rate in Haryana during 2011 is also shows in Table 2. In Table 2, in series X i.e., child sex ratio, the value 807 is repeated twice. The common rank given to the value 807 is 5.5, which is the average of 5 and 6 (i.e., 5 + 6 = 11/2) ranks which these values would have assumed if they were different. Here m = 2, so the correction factor to be added for this value will be $\frac{1}{12}(2^3 - 2)$. There is no value repeated in series Y i.e., literacy rate. In this case, the formula may be written as below:

$$R = 1 - \frac{6[\sum d^2 + \frac{1}{12} (m^3 - m)]}{N^3 - N}$$

R = 1 -
$$\frac{6[2307.5 + \frac{1}{12}(2^3 - 2)]}{21^3 - 21}$$
 = -0.498 or - 0.50

The result shows that there might be a negative correlation. As per Table 1, there exits very moderate limited degree negative correlation between child sex ratio and literacy rate in

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Haryana. The analysis shows that if the literacy rate increases then child sex ratio may be decreased and vice versa.

Table 2	District	wise	Correlation	between	Child	Sex	Ratio	and	Literacy	Rate	in
Haryana	during 2	011.									

Sr. No.	District	Child Sex Ratio (X)	Rank (R ₁)	Literacy Rate (Y)	Rank (R ₂)	$\mathbf{d} = \mathbf{R}_1 - \mathbf{R}_2$	d ²
1	Ambala	807	5.5	82.89	18	-12.5	156.25
2	Bhiwani	831	12	76.74	10	2	4
3	Palwal	862	20	70.32	3	17	289
4	Fatehabad	845	16	69.13	2	14	196
5	Mewat	903	21	56.14	1	20	400
6	Hisar	849	17	73.24	6	11	121
7	Jhajjar	774	1	80.83	16	-15	225
8	Jind	835	14	73.72	7	7	49
9	Kaithal	821	9	70.56	5	4	16
10	Karnal	820	8	76.44	8	0	0
11	Kurukshetra	817	7	76.7	9	-2	4
12	Mahendragarh	778	2	78.87	12	-10	100
13	Panchkula	850	18	83.44	20	-2	4
14	Panipat	833	13	77.46	11	2	4
15	Rewari	784	3	82.23	17	-14	196
16	Rohtak	807	5.5	80.39	14	-8.5	72.25
17	Sirsa	852	19	70.35	4	15	225
18	Sonipat	790	4	80.73	15	-11	121
19	Yamunanagar	825	10	78.93	13	-3	9
20	Gurgaon	826	11	84.44	21	-10	100
21	Faridabad	842	15	83.04	19	-4	16

Source: Compiled by Researcher.

 $\sum d^2 = 2307.5$

Correlation of Child Sex Ratio and Male Literacy Rate

Demography also divides the social indicators into two categories based on sex composition. According to sex composition, literacy rate is also divided into two parts i.e., male and female literacy rate. The male literacy rate is the percentage of the male literate population to total male population. There is a great gender disparity in literacy rate in India during 2011. According to the Census of India, 2011, the male literacy rate is 82.14 percent where as the female literacy rate is only 65.46 percent in India during 2011. Table 3 shows the district wise correlation between child sex ratio and male literacy rate in Haryana during 2011. This represents the great variation found in male literacy rate at district level in Haryana during 2011. About 92.9 percent male are found literate in Rewari district which has

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the highest male literacy rate in Haryana during 2011. On the other hand only 73 percent male are found literate in Mewat district which has the lowest male literacy rate in Haryana during the same period.

Sr.	District	Child Sex	Rank	Male Literacy	Rank	d =	d ²		
1 NO.	Ambala	Katio (A) 807	(\mathbf{K}_{1})	Kate (1)	(\mathbf{K}_2)	$\mathbf{K}_1 - \mathbf{K}_2$	72.25		
1	Allibala	807	5.5	00.5	14	-0.5	12.23		
2	Bhiwani	831	12	87.4	12	0	0		
3	Palwal	862	20	82.6	6	14	196		
4	Fatehabad	845	16	78.1	2	14	196		
5	Mewat	903	21	73	1	20	400		
6	Hisar	849	17	82.8	7	10	100		
7	Jhajjar	774	1	89.4	16.5	-15.5	240.25		
8	Jind	835	14	82.5	5	9	81		
9	Kaithal	821	9	79.3	4	5	25		
10	Karnal	820	8	83.7	9	-1	1		
11	Kurukshetra	817	7	83.5	8	-1	1		
12	Mahendragarh	778	2	91.3	20	-18	324		
13	Panchkula	850	18	88.6	15	3	9		
14	Panipat	833	13	85.4	11	2	4		
15	Rewari	784	3	92.9	21	-18	324		
16	Rohtak	807	5.5	88.4	13	-7.5	56.25		
17	Sirsa	852	19	78.6	3	16	256		
18	Sonipat	790	4	89.4	16.5	-12.5	156.25		
19	Yamunanagar	825	10	85.1	10	0	0		
20	Gurgaon	826	11	90.3	19	-8	64		
21	Faridabad	842	15	89.9	18	-3	9		
Source: Compiled by Researcher. $\Sigma d^2 = 2515$									

Table 3 District wise Correlation between Child Sex Ratio and Male Literacy Rate in Harvana during 2011.

Source: Complied by Researcher.

In Table 3, in series X i.e., child sex ratio, the value 807 is repeated twice. The common rank given to the value 807 is 5.5, which is the average of 5 and 6 (i.e., 5 + 6 = 11/2) ranks which these values would have assumed if they were different. Here m = 2, so the correction factor to be added for this value will be $\frac{1}{12}(2^3 - 2)$. In series Y i.e., male literacy rate, the value 89.4 is repeated twice. The average rank for the value 89.4 is 16.5 (16 + 17 =33/2). Here also m = 2, so the correction factor to be added for this value also will be $\frac{1}{12}(2^3 - 2^3)$ 2). In this case, the formula may be written as below:

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$$R = 1 - \frac{6[\Sigma d^2 + \frac{1}{12} (m^3 - m) + \frac{1}{12} (m^3 - m)]}{N^3 - N}$$
$$R = 1 - \frac{6[2515 + \frac{1}{12} (2^3 - 2) + \frac{1}{12} (2^3 - 2)]}{21^3 - 21} = -0.63$$

The result shows that there might be a negative correlation. As per Table 1, there exits moderate limited degree negative correlation between child sex ratio and male literacy rate in Haryana. It shows that if male literacy rate increases then child sex ratio may be decreased and vice versa.

Correlation of Child Sex Ratio and Female Literacy Rate

The female literacy rate is the percentage of the female literate population to total female population. Table 4 represents the district wise correlation between child sex ratio and female literacy rate in Haryana during 2011. The highest female literacy rate is found in Gurgaon district (77.6 percent) whereas the lowest female literacy rate is found in Mewat district (only 37.6 percent) in Haryana during 2011. In Table 4, in series X i.e., child sex ratio, the value 807 is repeated twice. The common rank given to the value 807 is 5.5, which is the average of 5 and 6 (i.e., 5 + 6 = 11/2) ranks which these values would have assumed if they were different. Here m = 2, so the correction factor to be added for this value will be $\frac{1}{12}(2^3 - 2)$. There is no value repeated in series Y i.e., female literacy rate. In this case, the formula may be written as below:

$$R = 1 - \frac{6[\sum d^2 + \frac{1}{12} (m^3 - m)]}{N^3 - N}$$
$$R = 1 - \frac{6[2236.5 + \frac{1}{12} (2^3 - 2)]}{21^3 - 21} = -0.45$$

The result shows that there might be a negative correlation. As per Table 1, there exits very moderate limited degree negative correlation between child sex ratio and female literacy rate in Haryana. The analysis shows that if the female literacy rate increases then child sex ratio may be decreased and vice versa.

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Table 4 District wise Correlation between Child Sex Ratio and Female Literacy Rate inHaryana during 2011.

Sr.	District	Child Sex Rank		Female Literacy	Rank	d =	d^2	
No.	District	Ratio (X)	(R ₁)	Rate (Y)	(R ₂)	$R_1 - R_2$	u	
1	Ambala	807	5.5	76.6	19	-13.5	182.25	
2	Bhiwani	831	12	64.8	8	4	16	
3	Palwal	862	20	56.4	2	18	324	
4	Fatehabad	845	16	59.3	3	13	169	
5	Mewat	903	21	37.6	1	20	400	
6	Hisar	849	17	62.3	7	10	100	
7	Jhajjar	774	1	71	15	-14	196	
8	Jind	835	14	61.6	6	8	64	
9	Kaithal	821	9	60.7	4	5	25	
10	Karnal	820	8	68.3	11	-3	9	
11	Kurukshetra	817	7	69.2	12	-5	25	
12	Mahendragarh	778	2	65.3	9	-7	49	
13	Panchkula	850	18	77.5	20	-2	4	
14	Panipat	833	13	68.2	10	3	9	
15	Rewari	784	3	70.5	13	-10	100	
16	Rohtak	807	5.5	71.2	16	-10.5	110.25	
17	Sirsa	852	19	61.2	5	14	196	
18	Sonipat	790	4	70.9	14	-10	100	
19	Yamunanagar	825	10	72	17	-7	49	
20	Gurgaon	826	11	77.6	21	-10	100	
21	Faridabad	842	15	75.2	18	-3	9	

Source: Compiled by Researcher.

$\sum d^2 = 2236.5$

CONCLUSION

Child sex ratio (0 - 6 age group) is expressed as the number of female children per thousand male children in the age group 0 - 6 years in population. The child sex ratio is 914 female children per 1000 male children in India during 2011. In India, the lowest child sex ratio (0 - 6 age group) was found in Haryana state which was 830 female children per 1000 male children in 2011. When concern at district level, the highest child sex ratio is found in Mewat district i.e., 903 female children per thousand male children whereas the lowest child sex ratio is found in Jhajjar district i.e., 774 female children per thousand male children. On the other hand the highest average literacy rate is found in Gurgaon district i.e., 84.44 per cent whereas the lowest average literacy rate is found in Mewat district i.e., 56.14 percent during 2011. The result shows that there might be a very moderate limited degree negative correlation between child sex ratio and literacy rate in Haryana. The analysis shows that if the literacy rate increases then child sex ratio may be decreased and vice versa.

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REFERENCES

- Administrative Atlas of Haryana (2011) Haryana a geo-historical outline. Chandigarh: Director of Census Operations, Haryana. Ministry of Home Affairs, Government of India: 228-235.
- Agriculture Contingency Plan of district Sonepat (2001) Hisar: Department of Agriculture. CCS Haryana Agriculture University, Haryana: 1-2.
- Census of India (2001) Administrative Atlas of Haryana. Chandigarh: Directorate of Census Operations, Haryana: 249 – 250.
- Census of India (2011) Administrative Atlas of Haryana. Chandigarh: Directorate of Census Operations, Haryana: 249 – 250.
- Gupta Das M, Zhenghua J, Bohua L, Zhenming X, Chung W, Bae H. Why is son preference so persistent in East and South Asia? A cross-country study of China, India and the Republic of Korea. The Journal of Development Studies. 2003 December; 40(2):153–187.
- Gupta, S.P. and Gupta, M.P., 2007. Business Statistics Sultan Chand and Sons. *New Delhi*.
- Resource Atlas of Haryana (2004) Chandigarh: State Natural Resources Data Management System (NRDMS) centre, Hisar. Haryana State Council for Science and Technology (Science and Technology Department, Haryana): 9-30.
- Sangwan, Dr. Randhir Singh and Kumari, Geeta. (2019). A Comparative Study of Literacy Rate in Mewat and Mahendragarh District of Haryana, 2011. *Journal of Advances and Scholarly Researches in Allied Education*. 16 (6), p1140-1145.
- Sangwan, Dr. Randhir Singh and Kumari, Geeta. (2019). Spatial-Temporal Change in Child Sex Ratio in Haryana: A Geographical Analysis. *Journal of Advances and Scholarly Researches in Allied Education*. 16 (5), p978-987.
- Singh, Devender, Singh, Dr. Mehtab, Gupta, Dr. J. P. (2017). Relationship of Rainfall and Depth to Groundwater Table in Sonipat District of Haryana, India. *The Konkan Geographer*. 17, 187-192
- Statistical Abstract of Haryana (2012 13). Chandigarh: Department of Economics and Statistical Analysis, Haryana. Available at: <u>http://www.esaharyana.gov.in</u> (Last accessed 15th April 2015).