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Original Research Article

Situation Analysis of Sex Ratio in Gujarat and India

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ABSTRACT

Background: In India, sex ratio becomes a most important issue in recent Indian demography because of its worst condition. Deficit for the girls in the second and third order child was more evident among women who were either educated beyond primary school level or from upper income group and not engaged in any economic activities.
Aims: To study demographic scenario of female number and comparison of sex ratio with previous & future trend.
Design and Setting: This cross-sectional secondary data analysis study was conducted during November-December 2011.
Methods: Study included the data of Indian census 1901 to 2001 and provisional data of census 2011. Study had focused mainly on data of Gujarat and India. Study had systemically searched the data and relevant information from internet and index journals.
Results: Sex ratio is highest decreased in Kuchchh district (35), Amareli (23), Surat (23). Sex ratio increased in 18 districts of Gujarat in 2011 census. , in India there is improvement in sex ratio after implementation of PNDT act 1971 but in Gujarat there is still decrease in the sex ratio.
Conclusion: Use of the new technology and advances are wide spread in all social sector but it is more in the well-educated and well off society. Study results shows that if there is no change in current situation or more actions are not taken, sex ratio will continuously decrease. Parents in a society should change their attitude towards certain norms that lead them to give better care to their sons than their daughters, and excess female mortality may be an unintended consequence.

Keywords: Census, Gender Discrimination, Pre-Natal Diagnostic Techniques, Sex Ratio

INTRODUCTION

'Better Rs 5000/- now than Rs 5 lakh/- later' i.e. it's better to spend Rs 5000 now to get rid of the female infant than to spend Rs 5 lakh in her dowry. With the birth of the female child, parents undergo a mixture of emotions, which includes happiness of adding a new member to the family as well as worry to collect dowry at the time of marriage. Discrimination is more evident in so called well educated and prosperous society. For example in some of the district of Haryana, Punjab sex ratio in 0-6 age group is even below 800 for every 1000 males. For this reason North- Western States of India i.e. Haryana, Punjab and

Himachal Pradesh are called by some as **'Bermuda Triangle' i.e. the triangle where girls vanish.** [1,2]

In India, sex ratio becomes a most important issue in recent Indian demography because of its worst condition. [1] Deficit for the girls in the second and third order child was more evident among women who were either educated beyond primary school level or from upper income group and not engaged in any economic activities. [1,5,8] So the study conducted with the objective to study demographic scenario of female number and comparison of sex ratio with previous & future trend.

MATERIALS AND METHODS

This cross-sectional secondary data analysis study was conducted during November-December 2011 and included the data of Indian census 1901 to 2001 and provisional data of census 2011. Study had focused mainly on data of Gujarat and India.

Data Sources: Study had systemically searched the data and relevant information from internet and index journals. Study analysed the data of National Family Health Survey (NFHS 1,2,3), District Level Health Survey (DLHS 1,2,3), Sample Registration System (SRS), Gujarat Government Publication, Census data of 1901 to 2011 (provisional data), 11th Five Year Plan of India, World Health Organization, Reports of Millennium Development Goals as primary data.

Statistical Methods: After collection of data, it was analysed by Excel Software. Bi-Variate analysis regarding to know the association between dependent and independent variable, correlation and linear regression model have applied accordingly.

RESULTS

Table 1 shows that high populated country like China & India have very low sex ration where high in America, Europe & Africa.

Table 2 shows that Gujarat covers 4.98% population of Indian population (6.03/121 crore) out of which 52.07% (3.14 crore) male and 47.92% (2.89 crore) female population. This shows that Gujarat (0.25 crore) has less deficiency of female population as comparison of India (3.8 crore).

Table 1: Women per 1000 men of world.

Region	Women per 1000 men
Europe & North America	1050
Latin America	1000
Caribbean	1030
Sub Saharan Africa	1020
south East Asia	1000
Central Asia	1020
South Asia	950
China	920
India	940

Source: The World's Women - Trends and Statistics, Dept of Economic and Social Affairs, United Nations, NY, 2010[9]

Table 2: Demographic information.

	India	Gujarat
Population	121.0 crore	6.03 crore
Males	62.4 crore	3.14 crore
Females	58.6 crore	2.89 crore
Deficient of women in 2011	3.8 crore	0.25 crore
Sex ratio (no. of women per 1000 men)	940	918

[Census 2011, provisional data, India]

Figure 1 shows that slow improvement in sex ratio in Gujarat. Only 2 districts have sex ratio more than 990 and 2 districts have less than 900 in year of 2011. On average, sex ratio is decreased in 2011 census of Gujarat as comparison of 2001 census.

Table 3 shows that sex ratio is highest decreased in Kuchchh district (35), Amareli (23), Surat (23). Table 4 shows that sex ratio increased in 18 districts of Gujarat in 2011 census.

Table 5 shows that sex ratio is continuously decreasing in Gujarat since last thirty years where it is increasing in India.

Table 6 shows highly nagative and significant correlation between sex ration and time (in year) both in India and Gujarat.

Table 3: Districts of Gujarat where sex ratio is decreased in 2011 census

No.	Name of district	2011	2001	No. of decreased
1	Kuchchh	907	942	35
2	Amareli	964	987	23
3	Surat	788	810	23
4	Rajkot	924	930	6
5	Bhavnagar	931	937	6
6	Jamnagar	938	941	3
7	Junagadh	952	955	3
8	Mehsana	925	927	2

[Census 2011, provisional data, India]

Table 4: Districts of Gujarat where sex ratio is increased in 2011 census

No	Name of district	2011	2001	No. of increase
1	Banaskantha	930	936	6
2	Patan	932	935	3
3	Sabarkantha	947	950	3
4	Gandhinagar	913	920	7
5	Ahmadabad	892	903	11
6	Surendranagar	924	929	5
7	Porbandar	946	947	1
8	Anand	910	921	11
9	Kheda	923	937	14
10	PanchMahals	938	945	7
11	Dohad	985	986	1
12	Vadodara	919	934	15
13	Narmada	949	960	11
14	Bharuch	921	924	3
15	The Dangs	987	1007	20
16	Navsari	955	961	6
17	Valsad	920	926	6
18	Tapi	996	1004	8

[Census 2011, provisional data, India]

Table 5: Sex ratio in India from 1901-2011 with decadal variation

Year	Gujarat	Decadal variation	India	Decadal variation
1901	954		972	
1911	946	-8	964	-8
1921	944	-2	955	-9
1931	945	+1	950	-5
1941	941	-4	945	-5
1951	952	+11	946	+1
1961	940	-12	941	-5
1971	934	-6	930	-11
1981	942	+8	934	+4
1991	934	-8	927	-7
2001	920	-14	933	+6
2011	918	-2	940	+7

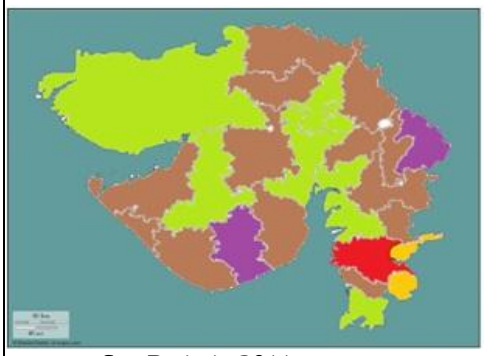
[Census 2011, provisional data, India]

Table 6: Simple regression analysis was done to determine the nature of correlation and future trend of sex ratio in India and Gujarat. (Sex ratio from 1901 to 2011).

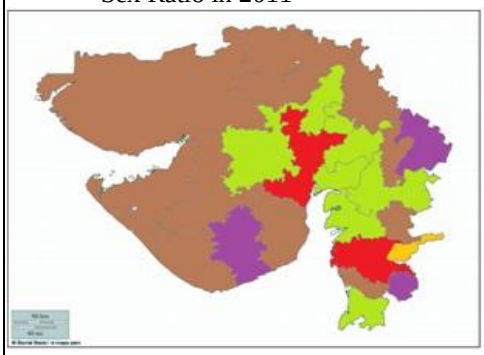
	Regression Equation	Correlation coefficient
India	Y = 1599.26 + (-0.335) X	- 0.87*
Gujarat	Y = 1450.74 + (-0.261) X	- 0.84*

[Y = Sex Ratio, X = Year, * = p value < 0.05]

Sex Ratio in 2012



Sex Ratio in 2011



Sex ratio per 1000 male	
	Less than 900
	900 – 930
	930 – 960
	960 – 990
	More than 990

Figure 1

[Census 2011, provisional data, India]

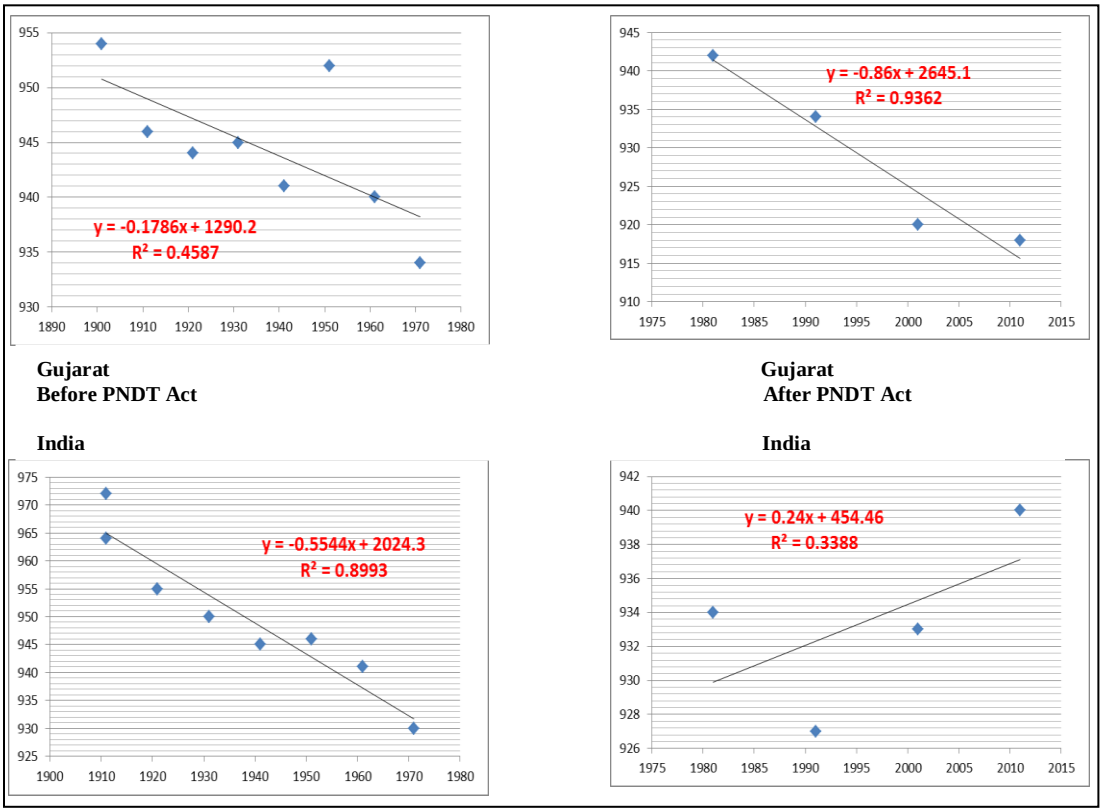


Figure 2: Correlation of sex ratio with time before and after implementation of PNDT Act 1971 in India and Gujarat.

❖ ***Implementation status of the PNDT Act:***

In 1970, Pre-natal testing was introduced in India. The centre had partial ban on sex determination tests in 1976. But it was applied on the government facilities, not on the private ones. After that, the centre passed the Pre Natal Techniques (Regulation and Prevention of Misuse) Act in 1994 covering the entire country. The law came into the operation on January 1, 1996.The act was amended in the year 2003 to include sex-determination at pre-conception stage and action against advertisements promising a male child. The amended act received the assent of the President on the 17th January, 2003. The act is now called PC & PNDT Act (Pre- Conception and Pre-Natal Diagnostic Techniques (Regulation and Prevention of Misuse) Act as amended by Amendment Act of 2002. [5,19]

Figure 2 shows that, in India there is improvement in sex ratio after implementation of PNDT act 1971 but in Gujarat there is still decrease in the sex ratio.

DISCUSSION AND CONCLUSION

In 1871, when India held its first census, there were 5.5 million fewer females than males. [3] One hundred and twenty years later, in 1992, Amartya Sen estimated a deficit of 37 million females in India, drawing attention to the ‘‘missing women’’ of South Asia. [4] Some 10 million female foetuses are estimated to have been aborted over the last two decades in India. [5]

Given the traditional preference for a male child, [10-13] it is not surprising that right from the first census of 1871, India has consistently shown an abnormal sex ratio (940 women for every 1000 men). Sex bias

regarding Education, Nutrition and Health Care has been found in several studies [14-18] which show that girls are constantly suffering from sex bias. Pregnancy-related morbidity and mortality account for 136,000 maternal deaths annually [19] and tend to further distort sex ratios. A steep decline in the sex ratio in recent years has coincided with an increased availability of ultrasound machines. [20,21] About 70% of all abortions performed in Delhi are terminations due to the foetus being female.[22] Results show that sex ratio is very less in highly populated Asian countries like China and India as in comparison of low populated countries of America & Europe.

The previous cruel and visible practice of choking the female infants on the rice husk or putting opium on the mothers nipples has been replaced by the more of the indiscernible deed with the advent of new technologies and its misuse for their petty benefits[1]. Role of the technocrats in the unacceptable practice has promoted the behaviour of the society, with noticeable impact on the sex ratio. PNDT act for prevention of female foeticide implemented in 1971 by Indian government and it was revised in 1994 & 2003. During 1977-1982, 78000 female foetuses were aborted in India. [23] In Bombay during 1982 -1987 [4] sex determination clinics increased to 248 and from 8000 abortions 7999 were female fetuses.[23] Though use of the new technology and advances are wide spread in all social sector but it is more in the well-educated and well off society. In a study conducted by Voluntary Health Association of India (VHAI) in the States of Punjab, Haryana and Himachal Pradesh, it was suggested that though use of sex selective abortion techniques were facilitated by their easy access to the medical facilities and good road network, but more determining factor was their paying capacity for the procedure.[7] Study results shows that if there is no change in current situation or more actions are not taken, sex ratio will continuously decrease. Parents in a society should change their attitude towards certain norms that lead them to give better care to their sons than their daughters, and excess female mortality may be an unintended consequence

Conflict of interest:
There is no any type of conflict of interest with paper or data provided in paper.

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REFERENCES

1. A.Dave, S. Dave, G.S. Preetha, B. Pant. Why Me? A Missing Girl. Indian Journal of Public health 2009; 53(4): 259-263.
2. Government of India. Census 2001. Available from http://www.mapsofindia.com/census2001/sexratio/sex ratio-india.htm. (Accessed on March 2008)
3. Monica Das Gupta. Selective Discrimination against Female Children in Rural Punjab, India. *Population and Development Review* 1987:13(1);77-100.
4. S V Subramanian and S Selvaraj. Social analysis of sex imbalance in India: before and after implementation of PNDT Act. *J Epidemiol Community Health* 2009;63;245-252.
5. Jha P, Kumar R, Vasa P, et al. Low female (corrected)-to-male (corrected) sex ratio of children born in India: national survey of 1.1 million households. Lancet 2006;367:211–18.

6. The World's Women - Trends and Statistics, Dept of Economic and Social Affairs, United Nations, NY, 2010
7. Government of India. Ministry of Home Affair. Census 2011. Available from http://www.censusindia.gov.in/2011-prov-results/ sexratio-india.htm. (Accessed on March 2011).
8. India Go. Sample design and estimation procedure, employment–unemployment situation in India. New Delhi: National Sample Survey Organisation, Ministry of Statistics and Programme Implementation, 2006.
9. Natarajan D. Changes in sex ratio. New Delhi: Census of India, 1972.
10. Sen A. Missing women. BMJ 1992;304:587–8.
11. Miller Barbara D. The Endangered Sex: Neglect of Female Children in Rural North India, Cornell University Press, Ithaca, New York; 1981.
12. Gupta D, Monica and Mari Bhat PN. Fertility decline and increased manifestation of sex bias in India. Population Studies 1997; 51(3): 307-315.
13. Oldenberg P. Sex ratio, son preference and violence in India: A research note. Economic and Political Weekly 1992; 27 (49-50): 2657-2662.
14. D'Souza, Stan, and Lincoln C. Chen. 1980. "Sex differentials in mortality in rural Bangladesh,"Population and Development Review 6, no. 2 (June): 257-270.
15. Sen, Amartya, and Sunil Sengupta. 1983. "Malnutrition of rural children and the sex bias,"Economic and Political Weekly 18, nos. 19-21 (May): 855-864.
16. Wyon, John B., and John E. Gordon. 1971. The Khanna Study. Cambridge: Harvard University Press.
17. Levinson, F. J. 1972. Morinda: An Economic Analysis of Malnutrition among Young Children in Rural India. MITiCornell University Press.
18. Kielmann, Arnfried A., Cecile De Sweemer, Robert L. Parker, and Carl E. Taylor. 1983."Analysis of morbidity and mortality," in Child and Maternal Health Services in Rural India: The Narangwal Experiment, Vol. I, ed. A. A. Kielmann et al. Baltimore: The Johns Hopkins University Press.
19. ManjuToppo, AvadheshDiwakar, D.K. Pal. A Study of sex ratio in relation to birth order in Bhopal city.healthline 2012:3(1);45-49, ISSN 2229-337X.
20. Central Bureau of Health Intelligence, Health Information of DGHS, Government of India, New Delhi: 2003.
21. Bardia A, Paul E, Kapoor SK, Anand K. Declining sex ratio: Role of society, technology and government regulation in Faridabad district, Haryana. Natl Med J India. 2004;17:207-11.
22. Sahni M, Verma N, Narula D, Varghese RM, Sreenivas V, Puliyel JM. Missing girls in India: infanticide, feticide and made-to-order pregnancies? Insights from hospital-based sex-ratio-at-birth over the last century. PLoS ONE 2008;3:e2224.c2008.
23. Imam Z. India bans female feticide. BMJ 1994;309:428.

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