Original Article

Impact of pre–natal diagnostic technique (PNDT) act implementation on child sex ratio in India

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Abstract

Aim and Objectives 1. To determine the major state wise net decrease of CSR from 1991 to 2001 and from 2001 to 2011.2.To determine the relationship of feticide during 2005 to 2010 on the 2011 CSR. **Methodology:** The CSR net decrease of major states for the census years 1991, 2001, and 2011 was calculated and average decadal net decrease compared for significance. The total reported feticide crimes during 2005 to 2010 were collected and correlated with 2011 CSR. **Results:** The mean net reduction of CSR from 1991 -2001 was 23.2 ± 22.4. And from 2001to 2011 was 6.3±17.6. The reduction between the two decades was significant (P<0.05). The reported feticide crimes were negatively correlated with 2011 CSR. (r = -0.469, n = 19, P = 0.043). **Discussion:** The association between feticide and CSR shows negative correlation. The significant reduction of CSR is attributed to the impact of implementation of PNDT Act 1994.**Conclusion:** The study reveals that the illegal practice of sex selective abortions has been curtailed by enforcement of PNDT Act 1994 as feticide is negatively correlated with CSR.

Keywords: PNDT Act- Feticide - impact- child sex ratio.

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INTRODUCTION

Abortion inducements were prohibited in India. To improve the maternal and child health, the Govt. of India (GOI) constituted a committee under the Chairmanship of Shantilal Shah (1964). The committee submitted the report in 1966. The Indian Parliament enacted the Act on 10th August 1971 to liberalize the induced abortions. The Act is called 'Medical Termination of Pregnancy Act 1971' (MTP Act 1971)[1]. The act is not a legalized one. There are some restrictions to undergo and conditions for performances. Because of that the Act is called a liberalized Act. Based on the liberalizations, the GOI introduced Rules and Regulations during 1975. The advent of Ultra Sonagraphy (USG), sex determined induced abortions were being performed by the economically affluent community as female feticide. And the down trodden community performed female infanticide. The *Times of India* (2010) cited that affluent couples in India fly to neighboring Thailand in order to take a Pre Implantation Genetic Diagnosis test which ensures that only male embryos are placed in the womb with a success rate of 100%[2]. Jha *et al*. (2011) found that if second order births where the first born is a girl, systematic prenatal sex determination and abortion of girls is occurring in India[3] The child sex ratio (CSR) is defined in India as "Number of girls /per 1000 boys in the ages between 0-6 years". Global level the CSR is being calculated as boys /1000 girls. The Sex Ratio at Birth (SRB) is 105 boys/100 girls. The excess of 5 males were adjusted during the 1st year of life to balance the sex ratio equal. In India, the child sex ratio is being chronologically decreased after the first census of

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independent India from 1951. According to the latest census of India the CSR is 927 girls /1000 boys. The reason for such declining was attributed mainly to the sex determined abortions of female fetus by determining the sex of the fetus with the advent of Ultra Sonagraphy (USG). The enactment of MTP Act 1971 and advent of USG instead of improving the child health, the two instruments harmed the female fetus and was unfavorable to CSR. The GOI realized and regretted the evil incidences of sex determined abortions. On the consequences, the GOI introduced the Pre- natal diagnosis technique Act (1994) and enacted in Indian Parliament on 20th September 1994. Subsequently, the Act was amended in 2003 to regulate the pre-conception and sex selection of fetus. Now it is called the Pre-Conception and Pre-Natal Diagnostics Techniques (Prohibition of Sex Selection) Act. According to the Act pre-natal diagnostic techniques shall be conducted except for the purposes of detection of any of the following abnormalities, namely: (i) chromosomal abnormalities (ii) genetic metabolic diseases (iii) haemoglobinopathies (iv) sex-linked genetic diseases (v) congenital anomalies (vi) Any other abnormalities or diseases as may be specified by the Central SupervisoryBoard. The Act was brought into operation from 1st January, 1996, in order to check female feticide.The Act prohibitsdetermination and disclosure of the sex of fetus and advertisements. The person who contravenes the provisions of this Act is punishable with imprisonment andfine. According to the directions of Hon'ble Supreme Court of India ordered slow implementations with amendments. These amendments have come into operation with effect from 14th February, 2003[4].

Figure 1: Missing

Figure 2:

At this context, the study was conducted to interpret and to evaluate the impact of the act on the child sex ratio from 1991 to 2011 with following aims and objectives.

AIM AND OBJECTIVES

1. To determine the major state wise net decrease of CSR from 1991 to 2001 and from 2001 to 2011.
2. To determine the relationship of feticide crimes during 2005 to 2010 on the 2011 CSR.

MATERIAL AND METHODS

The CSR of 19 major states was collected from the respective census for the years1991, 2001 and 2011[5] .The net decrease of CSR from 1991 to 2001 and 2001 to 2011 was calculated. The mean net decrease of census intervals were calculated and compared between the two census intervals. The 2011 census is the recent and latest census as well as the next census of implementation of PNDT Act 1994 in 14th February 2003. The births occurred during the period were contributing to the CSR in 2011 census. Based on the concept, the CSR was correlated with the crimes reported with reference to the PNDT Act 1994.The study design is a quasi experimental design. The period of 1991-2001 was considered as non intervention and 2001-2011 was considered as interventional period. The analysis and interpretations were made with help of IBM SPSS statistics-20. The paired "t" tested results were confirmed by the repeated measures of ANOVA statistical model. The P-values less than or equal to 0.05($P \leq 0.05$) were considered as statistically significant.

RESULTS

The calculated test statistics were tabulated as follows.

Table 1: Comparison of net CSR decreased from 1991- 2001 and 2001-2011

2011Census	Census-1		Census-2		Decrease		"t"	df	Sig
	Mean	SD	Mean	SD	Mean	SD			
1991-2001	941.1	32.2	912.9	49.8	28.2	22.1	5.550	18	P<0.001
2001-2011	912.9	49.8	907.9	38.2	5.0	18.9	1.153	18	P>0.05

The decrease of CSR from 1991 to 2001 and 2001 to 2011 census was stated in the above table-1. The mean CSR of 1991 was 941.1±32.2 and 2001 was 912.9±49.8 and the net mean decrease of CSR was 28.2±22.1.The decrease was statistically very highly significant (P<0.001).Similarly, the mean CSR of 2001 was 912.9±49.8 and the 2011 was 907.9±38.2. The net mean decrease from 2001to 2011 was 5.9±18.8. The decrease was not statistically significant (P>0.05).

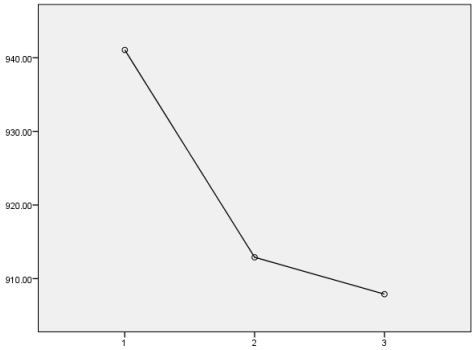

Figure 3: The mean decrease of CSR from 1991to 2001 and 2001to2011, Mean CSR of 1991, 2001 and 2011 censuses.

CSR: 1991 Census 2001 Census 2011 Census. The fig-3 (Repeated Measures of ANOVA) shows that the decrease of CSR from 1991 to 2001 was significantly more than the decrease from 2001to2011.

Table 2: Correlation between feticide crimes and CSR 2011.

Correlated variables	"r"	n	Sig.	r^2	% determined
Feticide crimes X CSR 2011	-0.469	19	P<0.05	0.22	22.0

The table-2 correlates the feticide crimes and CSR 2011. The feticide crimes and CSR 2011 was negatively correlated (P<0.05). That means the feticide crimes 2005 to 2010 decreased but the CSR 2011increased. The feticide crimes determined 22.0% (r^2 =0.22) of 2011CSR.

Figure 4: Save girl child and save the future generations

DISCUSSIONS

The CSR decrease from 1991 to 2001 was significantly greater than the decrease of 2001-2011. The significant difference was attributed to the impact of implementation of Pre conception and Pre natal technique diagnosis Act 1994, implemented on 14-02-2003.According to the act the feticide crimes were reported by the Govt. of India. At the beginning of the act, the crimes were more and subsequently the crimes were in the decreasing trend. These arguments were evidenced by the negative correlation of feticide crimes with the 2011census CSR. This showed that the sex determined induced abortions may be one of the contributing factors for decrease of CSR. The Feticide crimes were contributing 22% in the improvement of 2011CSR.

CONCLUSION

According to the MDG, India has achieved Total Fertility Rate (TFR) 2.1in 2015. The Sustainable Development Goal (SDG) emphasize that the TFR would be sustained up to 2030. The sustainability is required to stabilize the population by achieving the Net Reproduction Rate (NRR) unity. By observing the TFR scenario in most of the southern part of India the TFR is less than 2.1/woman. It will reflect in the prevalence of NRR. The states, which are having the low TFR, would take care of the NRR unity by the end of 2030 in view of equalizing the CSR between genders. And thus the states can avoid negative growth or growth rate of Z (0).

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