

IMPACT OF TWO-CHILD NORM ON SEX RATIO IN INDIA

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ABSTRACT

In this paper, the sex ratio of India is examined, and the impact of the two-child norm on it. Here in this paper sex ratio and the literacy rate of 1991, 2001 and 2011 of the census of India are considered to check the impact of the norm on the educated society which is more affected by this norm. Two Child Norm was a consequence of population blast in India. However it is beneficial for the Indian community or not it is the topic of discussion, and here in this paper, it is discussed for one aspect i.e. sex ratio. In India where tradition also not support the girl child, this norm had impacted drastically the girl child.

Keywords: Child Sex Ratio (CSR), Literacy Rate (LR), Regression Analysis, Two-Child Norm (TCN).

Introduction

More or less impact of the two-child norm on an educated society is greater than uneducated society. Simply it could be concluded that the educated society is more aware of government programs and services. The two-child norm was adopted by several States when the Panchayati Raj Act, 1992 was implemented to give more powers to the Panchayati Raj institutions in the country and reserve 33 percent seats at the grassroots for women. It tells the story that how it worked wrongly in the current Indian society. First of all this act gives more representativeness to women from a man-oriented society. It means firstly this act snatch the dominant position from the man in a society that was enough to fill those with anger against this equality. Although that was good for women solely, it makes a negative impact on them when the act also includes the bar on the number of children. The man dominated house ever accept a woman with two girl child just because of their will to make carrier in politics.

Independent audits of the policy have clearly shown that women were at the receiving end because they had little said in deciding on the number of children and often faced disqualifications if they had a third child. There have been incidents where women have been abandoned by their husbands to avoid disqualification after the third of a child. Rajasthan was the first state in the country to implement the two-child norm in 1992 barring people with more than two children after 1994 from contesting Panchayat and municipal elections which was further extended to government employees with a cut-off date of June 2002. Table to understand the two-child norm in India.

Table 1: States which once adopted the Two-Child Norm

S.No.	State	Law adopted	Cut-off date for Municipals	Cut-off date for Panchayat election	Cut-off date for government employees	Revoked
1	Rajasthan	1992	1995	1995	2002	Active
2	Haryana	1993	1994	1994	NA	2005
3	Andhra Pradesh	1993	1994	1994	NA	Active
4	Orissa	1993	1993	1994	NA	Active
5	Madhya Pradesh	2000	2001	2001	NA	2006
6	Himachal Pradesh	2000	2001	2001	NA	2005
7	Chhattisgarh	2000	2001	2001	NA	2005
8	Maharashtra	2000	2003	NA	NA	Active
9	Gujrat	2005	2006	2006	NA	Active
10	Bihar	2005	2006	2006	NA	Active
11	Uttarkhand	2019	NA	2020	NA	Active
12	Assam	2017	2018	2018	NA	Active

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Sampling for selection of districts out of total 640 districts in India census 2011. Let's make homogenous groups of Indian states apply further statistical techniques. There are three categories for Two-Child Norm status namely 'Active: states in which norm active at the point of the year 2011'. Second is 'Not Implemented: states in which this norm ever introduced' and the third one is 'Revoked: the states which adopted the norm once but repealed it before 2011'. For this purpose, a map below shows the states with active, inactive two-child norm status and the other map shows the sex ratio according to census 2011.

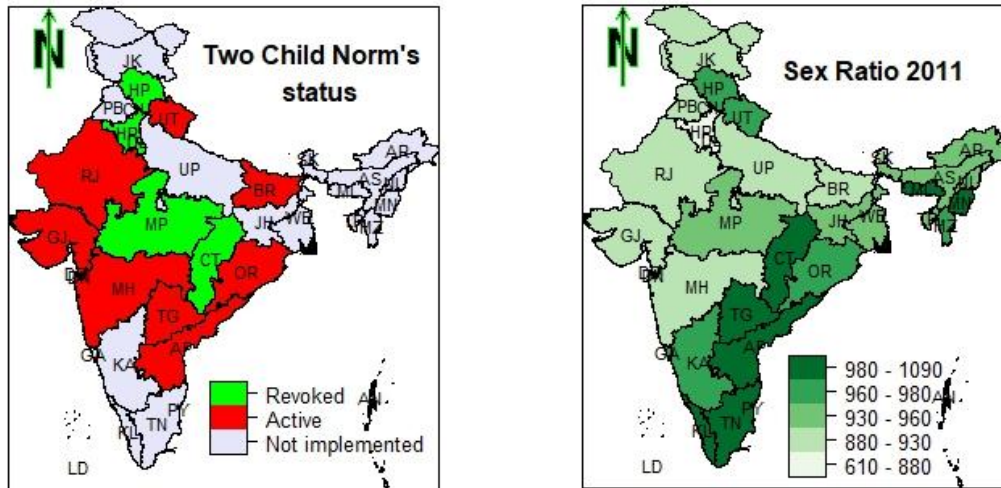


Figure 1: maps of 'Two-Child Norm' Status and sex ratio 2011

The maps above show that there are 11 states whichever entertain the two-child norm in India, but in which four states revoked it after some time, still there 7 states who have an active two-child norm. However, it is different states have a different type of restriction in their states, such as some have applied it only in the "Panchayati Raj" election however some of them extend it up to the "Nagar Nikay" elections too and some of them also implement it on government jobs.

The second graph shows the sex ratio of Indian states instead of the 2011 census. Is it comparable? Yes at first look it is but tricky one. So here we have an indirect variable (i.e. Literacy Rate) to see the effect of Two-Child Norm on Child Sex Ratio.

Calculations

At first the relationship between literacy rate and child sex ratio. For that purpose the correlation coefficient of those variables year-wise based on census data of subsequent three decades i.e. 1991, 2001 and 2011 of the state data.

Table 2: Correlation between literacy rate and child sex ratio of census 1991, 2001 and 2011.

	Child Sex Ratio 1991	Child Sex Ratio 2001	Child Sex Ratio 2011
Literacy Rate 1991	-0.18	-0.12	-0.02
Literacy Rate 2001		-0.13	0.02
Literacy Rate 2011			0.07

From this table, it is not clear that what happened with Child Sex Ratio in India because the correlation coefficient becomes positive in respect of previous of its decade wise, whereas the Child Sex Ratio shows decreasing pattern in census data for all three subsequent years.

When see the census data of 2001 and 2011 for all districts, here is the table which shows the number of districts covered.

Table 3: Number of districts that implemented the Two-Child Norm according to the respective census 2001 & 2011.

		Two Child Norm 2011		Total
		Yes	No	
Two Child Norm 2001	Yes	147	101	248
	No	0	392	392
Total		147	493	640

So, for that reason see the regression coefficient for overall states data, and found that the coefficients are statistically insignificant. To overcome that problem use the district-wise data of Literacy Rate and Child Sex Ratio. Here are the results of the regression analysis decade wise.

$$CSR \begin{pmatrix} 1991 \\ 2001 \\ 2011 \end{pmatrix} \sim \begin{pmatrix} \beta_{01} \\ \beta_{02} \\ \beta_{03} \end{pmatrix} + \begin{pmatrix} \beta_{11} \\ \beta_{12} \\ \beta_{13} \end{pmatrix} \times LR \begin{pmatrix} 1991 \\ 2001 \\ 2011 \end{pmatrix} + e$$

Table 4: Regression coefficients of literacy rate and child sex ratio of census 1991, 2001 and 2011

		Child Sex Ratio		
		1991	2001	2011
Literacy Rate	1991	-0.26 ^{***} (371)	-0.26 [*] (366)	-0.06 (371)
	2001		-0.73 ^{***} (523)	-0.98 ^{***} (524)
	2011			-0.42 ^{**} (639)

^{***} P<0.001, ^{**} P<0.01, ^{*} P<0.05, [†] P<0.1

Here it is seen that the situation is going verse with the time. In 1991 one percentage increase in literacy rate resultant in a decrease of 0.26 units in Child Sex Ratio or can say that decrease 1 female on approximate 4000 males. Whereas it's going worse in 2001 that is CSR decrease by 0.73 or 1 female on approximate 1350 male. Although it is improving a little bit in 2011 than 2001, here one percentage increase in literacy rate resultant in the decrease of 0.42 units in Child Sex Ratio or can say that decrease 1 female on approximate 2500 male. Its improving in CSR 2011 than 2001 can also be interpreted as in 1995, 9 states who implement the Two-Child Norm but in the year of 2001 and 2005, 4 states who withdrawn this norm and only five states remaining with the same.

It is also seen that the CSR depends upon the previous year's Literacy Rate, because LR includes the population more than age 6, and this population gets older after 10 years and enters into the reproductive population (i.e. age between 15 to 50 years) which is contributing in CSR.

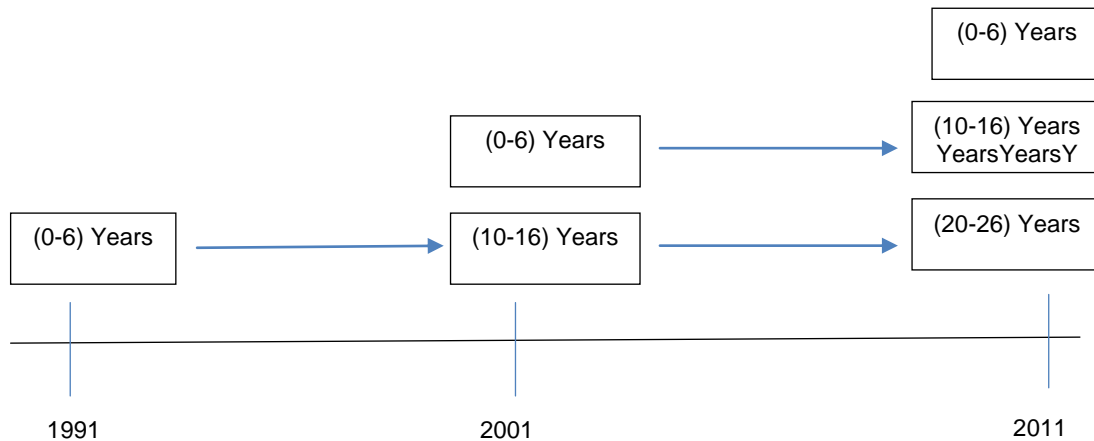


Figure 2: Population age changes over time of the Census of India

So it can be concluded that the Literacy Rate of previous years also affects the current CSR. So here we have also seen the regression of the Literacy Rate of previous years upon current CSR.

Now it is seen that higher literacy causes lower CSR, but is it the same for male and female literacy or have different coefficients for them? Here it is the regression coefficients for male and female literacy for CSR.

$$CSR \begin{pmatrix} 1991 \\ 2001 \\ 2011 \end{pmatrix} \sim \begin{pmatrix} \beta_{01} \\ \beta_{02} \\ \beta_{03} \end{pmatrix} + \begin{pmatrix} \beta_{11} \\ \beta_{12} \\ \beta_{13} \end{pmatrix} \times LR_{male} \begin{pmatrix} 1991 \\ 2001 \\ 2011 \end{pmatrix} + \begin{pmatrix} \beta_{21} \\ \beta_{22} \\ \beta_{23} \end{pmatrix} \times LR_{female} \begin{pmatrix} 1991 \\ 2001 \\ 2011 \end{pmatrix} + e$$

Table 5: Regression Coefficients of Literacy Rate Sex-Wise and Child Sex Ratio of Census 1991, 2001 and 2011

		SEX	Child Sex Ratio		
			1991	2001	2011
Literacy Rate	1991	Male	-2.14 ^{***} (371)	-2.37 ^{***} (366)	-3.19 ^{***} (371)
		Female	1.38 ^{***} (371)	1.56 ^{***} (366)	2.34 ^{***} (371)
	2001	Male		-1.57 ^{***} (523)	-2.38 ^{***} (523)
		Female		0.52 [†] (523)	1.47 ^{***} (523)
	2011	Male			-3.35 ^{***} (640)
		Female			1.96 ^{***} (640)

*** P<0.001, ** P<0.01, † P<0.05, † P<0.1

It's an almost jaw-dropping moment for all policymakers, what is this? Coefficients for the male literacy rate is lesser than the female literacy rate. And also coefficients are negative only with male literacy whereas the female literacy coefficients are all positive. Form it can make a general statement that the CSR improves with a higher female literacy rate whereas CSR decreases with improvising in male literacy rate. In 1991; one percentage increase in male literacy rate, 2.14 unit decrease in CSR Or can say that female drop by one on almost 450 male whereas one percentage increase in female literacy rate, 1.38 unit increase in CSR Or can say that female increase by one on almost 725 male.

In 2001; one percentage increase in male literacy rate, 1.57 unit decrease in CSR Or can say that female drop by one on almost 640 male whereas one percentage increase in female literacy rate, 0.52 unit increase in CSR Or can say that female increase by one on almost 1900 male. In 2011; one percentage increase in male literacy rate, 3.35 unit decrease in CSR Or can say that female drop by one on almost 300 male whereas one percentage increase in female literacy rate, 1.96 unit increase in CSR Or could say that female increase by one on almost 510 male. That's a Thumbs Up situation for females.

Now it is seen that the overall literacy is not an issue for CSR but the male literacy is. So the solution for it also tedious work because only to make CSR comfortable you can't stop male to get an education, then what the solution? It is a remarkable question, to get the answer of it let see the different regression coefficients for the states who implement or not implement the Two-Child Norm.

Table 6: Regression coefficients of literacy rate and child sex ratio of census 1991, 2001 and 2011 for Two-Child Norm

		Child Sex Ratio			
		2001		2011	
Two Child Norm		Yes	No	Yes	No
Literacy Rate	1991	-0.57 ^{***} (166)	-0.02 (200)	-0.604 ^{**} (97)	0.203 (274)
	2001	-1.77 ^{***} (204)	-0.31 [†] (319)	-1.21 ^{***} (126)	-0.07 (397)
	2011			-1.27 ^{**} (147)	-0.2 (493)

*** P<0.001, ** P<0.01, † P<0.05, † P<0.1

The table above shows that the child sex ratio in 2001 in the states which were imposed on the Two-Child Norm is decline drastically with a slight increase in the literacy of 1991 also with more amplitude than the states which were not implemented the Norm. Whereas the same story repeated with the scenario of CSR 2011 and the literacy rate of 2001. One percentage increase in LR 1991 results in a 0.57 decrease of CSR 2001 in the districts (i.e. 166) of active TCN. Whereas it is a 0.604 decrease in CSR 2011 in the districts (i.e. 97) which active TCN in 2011. Also the increase in one percentage of LR 2001 results in a decrease of 1.21 CSR 2011 in the districts (i.e. 126) in which the TCN active in 2011, whereas it is only 0.07 decrease in the districts (i.e. 397) where TCN not applied. It is seen that the literacy rate has an impact on the child sex ratio now it will be interesting to see that both sex-wise literacy's will have the same impact on CSR negatively or something else. Here in the table below see the impact of literacy rate sex-wise on CSR.

Table 7: Regression coefficients of literacy rate sex-wise and child sex ratio of census 1991, 2001 and 2011 for Two-Child Norm

		Year	Child Sex Ratio			
			2001		2011	
		Two Child Norm/ Sex	Yes	No	Yes	No
Literacy Rate	1991	Male	-3.2 ^{***} (166)	-1.17 ^{***} (200)	-3.01 ^{***} (97)	-2.99 ^{***} (274)
		Female	2.1 ^{***} (166)	0.82 ^{***} (200)	1.95 ^{***} (97)	2.32 ^{***} (274)
	2001	Male	-2.68 ^{***} (204)	-0.46 ^{***} (319)	-4.92 ^{***} (126)	-1.82 ^{***} (397)
		Female	0.38 ^{***} (204)	0.09 ^{***} (319)	2.21 ^{***} (126)	1.26 ^{***} (397)
	2011	Male			-6.28 ^{***} (147)	-2.71 ^{***} (493)
		Female			2.86 ^{***} (147)	1.76 ^{***} (493)

*** P<0.001, ** P<0.01, * P<0.05, † P<0.1

The table above shows that the 1% increase in male literacy in 1991 will result in a 3.2 decrease in CSR 2001 and a 3.01 decrease in CSR 2011 in the districts which have TCN. However, it is less in the districts which haven't TCN i.e. 1.17 and 2.99 respectively 2001 and 2011 CSR. Now see the same scenario for the female literacy rate of 1991. 1% increase in 1991 female literacy rate will result in a 2.1 increase of CSR 2001 and a 1.95 increase of CSR 2011 in the districts which have TCN. Also, it has more impact on the districts which hasn't TCN i.e. 0.82 and 2.32 respectively 2001 and 2011 CSR.

Also, see the impact of literacy rate of 2001 on the CSR 2011. 1% increase in male literacy in 2001 will result in a 4.92 decrease in CSR 2011 in the districts which have TCN. However, it is less in the districts which hasn't TCN i.e. 1.82. Same year's comparison for female literacy rate and CSR shows that the one percent increase in female literacy rate will result in 2.21 units increase in CSR 2011 in the districts which have TCN and the 1.26 units increase in the districts in which TCN not applicable.

This comparison shows a significant effect of Two-Child Norm on the literate population, sex-wise. Here it could be concluded that the norm is anti-women surely. Now it could be interesting to see that the states who withdrawn TCN, although have the same figures who still entertain the rule. So here it is the comparison of these states.

Table 8: Regression coefficients of literacy rate and child sex ratio 2011 for states with active TCN, Never introduced TCN and TCN in 2001 but NTCN in 2011

		Child Sex Ratio of 2011		
		TCN 2001-2011	NTCN 2001-2011	TCN 2001 – NTCN 2011
Literacy Rate	1991	-0.60 ^{**} (97)	0.28 [*] (205)	-1.70 ^{***} (69)
	2001	-1.21 ^{***} (126)	0.14 [*] (319)	-1.30 [†] (78)
	2011	-1.27 ^{***} (147)	0.21 [*] (392)	-2.33 ^{***} (101)

*** P<0.001, ** P<0.01, * P<0.05, † P<0.1

The regression coefficients above show that the 1% increase in literacy rate causes the 0.60 decreases in CSR 2011 for the districts which were covered by norm in 2001 as well as 2011. For the districts which were adopted the law once but repealed it before 2011 (i.e. 69), one unit increase in literacy rate of 1991 result in the decrease of CSR by 1.70. Now also see that table with sex bifurcation, to make a clearer image. One percentage increase in LR 2001 results in 1.21 decrease of CSR 2011 for the districts of active TCN and the decrease of 1.30 for the districts which TCN in 2001 and repealed it before 2011.

Table 9: Regression coefficients of literacy rate sex-wise and child sex ratio 2011 for states with active TCN, Never introduced TCN and TCN in 2001 but NTCN in 2011

		Sex	Child Sex Ratio of 2011		
			TCN 2001-2011	NTCN2001-2011	TCN 2001-NTCN 2011
Literacy Rate	1991	Male	-3.00 ^{***} (97)	-2.31 ^{***} (205)	-2.80 ^{**} (69)
		Female	1.95 ^{**} (97)	1.87 [*] (205)	1.14 (69)
	2001	Male	-4.92 ^{***} (126)	-1.38 ^{**} (319)	-0.24 (78)
		Female	2.21 ^{**} (126)	1.10 [*] (319)	-0.80 (78)
	2011	Male	-6.28 ^{***} (147)	-2.03 ^{***} (392)	-2.23 (101)
		Female	2.86 ^{***} (147)	1.57 ^{**} (392)	-0.20 (101)

^{***} P<0.001, ^{**} P<0.01, ^{*} P<0.05, [†] P<0.1

The table above shows that one percentage increase in male literacy in year 1991 results in CSR 2011 decrease by 3 units in the states with active TCN, whereas it is 2.80 unit decrease in the states which once adopted the law but after repealed it and least change 2.31 units in the districts where this norm is not applied ever. The scenario tells that the improvised literacy rate of females doesn't harm the sex ratio. One percentage increase in the female literacy rate in 1991 improve the sex ratio of 2011 by 1.95, whereas it is 1.87 for the districts in which this law not applicable. Here suggestions are the same as the regression model for the literacy rate of 2001 and the child sex ratio of 2011. If one percentage increase in the literacy rate of 2001 in the male the CSR of 2011 will decrease by 4.92 units in the districts where TCN active, whereas it is decreased by only 1.38 units where TCN was not active. But for the same years one percentage increase in literacy rate of female the CSR 2011 increase by 2.21 units in TCN active districts, whereas 1.10 unit increase in CSR where TCN not applicable. This scenario which is seen in our analysis is more or less because of person who get literate also need the government services and the Two-Child Norm prevent them from it.

Conclusion

It is seen that the two-child norm to prevent families to make two girl child subsequently which tends them to sex-selective abortion, it causes to low sex ratio for girls. The study suggests that female literacy doesn't harm the child sex ratio where the male literacy did. It is also seen that such a tendency is more likely in persons who are educated and more aware of government schemes and also for government jobs. This law also a barrier for politically ambitious people and make them forcefully illegal abortion for a girl child. It is well known in the Indian culture that here families want a baby boy necessarily at home than the girl. If a family has an only girl child and not any boy then it is very tough for them to handle the society or religious pressure but the vice versa (only boy child and no girl child) there is no need to worry for them. With this kind of mindset and culture, a state can't make such rules which leave citizens with no choice. The norm is anti-women and anti-poor which both have a massive impact on the child sex ratio in India. There is a need to rethink about this norm.

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