DECLINING JUVENILE SEX RATIO IN INDIA: THEORETICAL INVESTIGATIONS

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It has been widely recognized that sex ratio (number of female per thousand male) is an important indicator to study the various aspects of a population, especially human development. In India, six point increase shown by 2001 census in overall sex ratio is applauded at several forums. However, decline in juvenile sex ratio has been a serious concern among social think tanks of the country. This paper investigates the related issues assuming that sex ratio technically depends on three factors: sex ratio at birth, sex-specific survival probabilities of juveniles and the degree of accuracy in age reporting by sex. Moreover, sex differentials in the accuracy of age reporting are either absent or negligible in population below 10 years of age. The paper clearly shows a continuous decline in sex ratio in considered age groups, particularly in age group 0-4, at the national and the state level at the last four censuses, besides few states level exceptions for 1981 census. Similar trends are observed for other two age groups 0-6 and 0-9. Interestingly, decline in juvenile sex ratio persists over the years. Nevertheless, the improvements in overall survival chances for female have installed for significant period. It reflects the postnatal discrimination again girls are weakening. Therefore, declining child sex ratios in India indicates an increase in sex-selective abortion.

INTRODUCTION

India, the second largest populated country in the world, has conducted its thirteenth census in 2001. The current estimate of juvenile sex ratio (0-6) has drawn much attention from demographers, social scientist, planners, media and different government and non-government social groups. According to 2001 census of India, over all sex ratio is 933 female per thousand male. This has improved by 6 points since last census of 1991. On the other end, the sex ratio in the age group 0-6 is measured as 927 female per thousand male, which is 18 points low as compared to 1991 census. In the recent census, declining sex ratio for age group 0-6 remains a prime issue among research communities. Decline in juvenile sex ratio has been seen solely in the context of sex-selective abortion or female infanticide in India. Further, the sex ratio for children will be a deciding factor for tomorrow's overall sex ratio in the population, and therefore today's improvement in overall sex ratio does not guarantee to its sustainability in the positive direction. Moreover, researchers advocate the women's relative position in any societies taking overall sex ratio of the population ignoring the fact that sex ratio is influenced by the current and the past vital rates of that population (Paula et. al, 2000).

So far, there is ample literature available to document that the sex-selective abortion prevails at an alarming rate in some parts of the country (Miller, 1981; Jeffery et al. 1984; Arnold et al. 1998; Sudha and Rajan, 1999; Hatti et al. 2004; Larsen et al., 2005). It is one of the significant factors in making sex ratio, especially child sex ratio, highly imbalance. According to the estimates based on NFHS-2 (Arnold, 2002), in states like Himachal Pradesh, Delhi, Haryana, Punjab, the sex ratio at birth (SRB) has crossed 115 male per 100 female (the natural limit is 103-106). In lineage

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inheritance, Indian society is patrilineal at large. Thus, a son is a sole heir of the father's property. This has gone in favour of the thinking where daughters are seen as disadvantageous and sons are welcomed by the parents. This is primarily due to socio-cultural taboos attached with preference for sons. In the Indian context, son is supposed to carry the family name, seen as a sole care giver to the parents in old age. It would be necessary to mention that majority of elderly were involved in agriculture sector that has no pension benefit or provided any other kind of social security from the state.

In some of the Indian states crimes against women are very common. Women more often become victims of high degree of eve-teasing, rape, acid burn, gang-rape, domestic violence and dowry related killings. The more appalling is that it takes the prestige of victim's family on stake. This also discourages parents to have a daughter. There are certain religious and cultural reasons due to which son is preferred. According to Hindu mythology, a son can only perform the rituals of funeral of his parents. Doing so, it is believed that they acquire Moksha (relieve from the pain of re-incarnation. The practice of arrange marriage is almost universal in India. These marriages are finalized by the parents and elder family members after matching appropriately on parameters, such as, caste, region, age, education, family status and structure, history of the character of prospective bride. The list also adds to the colour and complexion of prospective bride and groom, their physical appearances (weight and height) and horoscopes. This dramatically shrinks the probability of making an appropriate match, specially, for less prospective brides. As a result, matched grooms have high price that parents have to pay in terms of dowry in the name of gifts. The dowry is not the end, but continuing unidirectional flow of resources from woman's parental household to her in-laws drain her parents and siblings by resources. This is again seen as sacred practice in Indian society (Dasgupta, 1987; Dasgupta and Bhat, 1995; Hatti et al. 2004).

In general, girl's family compromises on many of the above parameters because parents want to perform a sacred duty of Kanayadaan ('Kanaya' means girl and 'daan' means donation) as soon as possible. Another reason is that a daughter by birth is treated as a member of other's family. That is why many families do not invest in their education and development, as its dividend will be enjoyed by husband's side family (Sheth, 2006). These aspects force to parents to eliminate the female foetus as it is much cheaper compared to the price they have to pay in long run. Such practices are continued even after implementing the Pre-Natal Diagnostic Test (PNDT) Act, 1996 by the government. Under the act, the use of medical techniques such as amniocentesis and ultrasound to detecting the sex of foetus is prohibited. The medical personnel violating it can be imprisoned up to five years and fined up to Rs. 50,000/-. The offence under PNDT Act is a cognizable, non-bailable and non-compoundable.

India's 'masculine' sex ratio remains an interest of many since long time (Visaria, 1968, Miller, 1981, Dyson and Moore, 1983). Studying the explanation of 'masculine' sex ratio between 1881 and 1931, Fisher and Ifeka (1984) pointed out: "…modern writers seem remarkably unaware of why they approach the sex ratio problem in the way they do, we hope this critical scrutiny will stimulate a general reassessment of the assumptions enshrined in the debate and perhaps facilitate progress towards formulating an alternative approach. Perhaps, too, such alternative will also be attuned to present-day realities in a rapidly changing society". They found that most of the works focused broadly on social habits, defective data, and racial factors masculining the sex ratio and suggested that the interpretations on it may be made in several ways through varieties of debates.

Conceptually, sex ratio is a byproduct of three factors; sex ratio at birth (SRB), gender differences in mortality, and the amount of age misreporting and under count by sex. Usually, in such situation, gender differentials in mortality contribute to a large extent in changing the sex ratio

of a population. This is because SRB of a population under natural condition does not depict the change in its value even over several decades. However, the combination of prevailing sex preference in a society and availability of advance medical techniques of sex determination test during pregnancy can create greater likelihood to manipulate the value of SRB through sex-selective abortion. As a result, sex ratio will be in favour of that sex which has preference in society. In case of age misreporting or undercount, it is found that its extent does not differ much by sex, and therefore its ultimate effect on sex ratio is minimal (Premi, 2002).

There are studies that have been carried out to estimate the extent of biases on the account of age misreporting in the estimates of mortality, fertility, and migration (Walle, 1968; Dandekar, 1986; Bhat, 1995). However, the quality of age reporting and its impact on sex ratio particularly of children has remained less explored. Such exercise becomes more difficult due to lack of good registration of vital events. In case of 'age', the responses are shown to have a larger degree of discrepancy in the countries where a large proportion of population is illiterate, rural, and conservative and with ineffective system of vital registration (Ewbank, 1981).

The present paper deals with the issues like, how far the regional variations in SRB, morality differences, and undercount or misreporting of age is individually responsible for making changes in age-specific sex ratio. An important feature of this paper is to examine whether sex ratio in age group 0-6 would be preferred instead of age group 0-4. It enables us to understand the extent of sex-selective abortion. This feature has its own importance because:

Errors in the tabulated data on age may arise from the following types of errors of enumeration; coverage errors, failure to record age, and misreporting of age. There is some tendency for the types of errors in age data to offset one another; the extent to which this occurs depends not only on the nature and magnitude of the errors but also on the grouping of the data (Methods and Material of Demography, 1980).

To reach the sole objectives of this research paper, data have been taken from 1961 census to 2001 census. Consecutively, the exercises have been made for India as a whole and it major states. There is another analysis, which will be carried out only for 1971 to 2001 censuses for all India and some selected states. Because of unavailability of accurate life-tables, it was not possible to incorporate the 1961 census in that analysis.

THEORETICAL ASPECTS AND METHODOLOGY USED

Mathematically sex ratio at any point of time and in given age group can be defined as follows

Sex Ratio (x to x+n) = SRB * fLx/mLx * PECf/PECm   ---------------------(1)

Where fLx is the person years lived by the female from age x to x+n and mLx is the person years lived by male from age x to x+n. PECf and PECm is the amount of undercount through Post Enumeration Check (PEC) for female and male respectively.

In the present work, national level analysis has been carried out for investigating variations in the sex ratio (F/M*1000) at every completed year of age under 10. This exercise enables us to understand, whether sex ratio of age group 0-6 is affected by quality of age reporting or gender differential in mortality forces to lowered the sex ratio. The level and trends for sex ratio for 15 major states have been studied between 1961 and 2001. Further, an exercise has been made to investigate the same, putting two groups of states of different demographic characteristics; one

group comprises all four southern states (Andhra Pradesh, Karnataka, Kerela, Tamil Nadu) and other having Gujarat, Maharashtra, Punjab and Haryana. The quality of age reporting under age 10 was examined through United Nation Age-Sex Accuracy Index.

Lx column[1] of the life table is used for calculating the female-male ratio (R) as follows;

R=[the ratio of survival chances of female children in age group 0-6 to the survival chances of female who is in age group 0-4 f(L7/L5)]/ [the ratio of survival chances of male children in age 0-6 to survival chances of male who is in age 0-4 m(L7/L5)].

RESULTS

Levels and trends in sex ratio (total number of female per thousand male) for age group 0-4,0-6 and 0-9 for India and major states are calculated at the census years from 1961 to 2001 (Table 1). Sex ratio at national level has been falling consistently for these age groups for last four decades, which caused various apprehensions. The ratio among children 0-4, 0-6 and 0-9 were found comparatively higher for Andhra Pradesh, Assam, Bihar, Orissa and West Bengal than other states and country as a whole. In general, sex ratio in most of the major states of India is continuously falling in these age groups, even in those states where sex ratio was favourable to female in the past. According to 1981 census, Bihar, Gujarat, and Haryana have shown a marginal increase in sex ratio in these age groups, but Madhya Pradesh showed a marginal increase only for age group 0-6 and 0-9 groups. For Kerala, an improvement in ratios for all three groups is seen at 1971 census. This census for West Bengal has shown a significant rise in ratios in all these children age groups. The figures for sex ratios in these age groups particularly, in states, like Punjab, Rajasthan, and Uttar Pradesh could not emerge with a consistent pattern.

The figures in the Table 1 show that the focus should have been given decades ago to avoid the present highly imbalance sex ratio in age group 0-6. Furthermore, states like, Gujarat, Haryana, Maharashtra, Punjab, Rajasthan and Uttar Pradesh should have been treated in such a way so that exiting decline in sex ratio in age group 0-6 could have been arrested. The outcomes of such oversights can be seen as from the sex ratio in 0-6 from the recent census where 207, 180, 122, 91, 84 and 83 per 1000 female children are missing in Punjab, Haryana, Gujarat, Rajasthan, Uttar Pradesh, and Maharashtra respectively. The census office has recently released the age-sex specific population data that show an improved sex ratio in age group 0-4 in states namely Gujarat, Madhya Pradesh and Uttar Pradesh between 1991 and 2001. Opposite to it, the levels of ratio in both the age groups do not differ for Punjab, Haryana, and Maharashtra in 2001. Moving from the sex ratio of age group 0-6 to 0-9, states like Haryana, Gujarat, Madhya Pradesh, Maharashtra and Punjab register an increase. This may be an indication of improved mortality condition for female compared to male at age 6 and above in these states. However, slightly lower sex ratio in age group 0-9 than the ratio in age group 0-6 for Rajasthan and Uttar Pradesh. In brief, it can be mentioned that results from censuses clearly reveals the states Punjab, Haryana, Gujarat, Rajasthan, Uttar Pradesh and Maharashtra will be having huge young male surplus populations in India.

It is in high interesting to note that Bihar, Karnataka, Orissa, Tamil Nadu and West Bengal, where sex ratio used to be higher, are following the group of states remains low for decades together. Therefore, it is high time for these states to introduce suitable and holistic social measures to arrest the declining sex ratio. Kerala is the only exceptional case where the recent census shows an upward shift in the both age groups, 0-4 and 0-6. This might have been possible because of

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[1] It gives the number of person-years lived between age x to x+n.

higher female literacy and employment, deep-rooted matriarchal system, higher level of women autonomy, and the involvement of women in all spheres of life in the state.

A tool to measure the quality of age-data, the United Nations Age-sex Accuracy Index calculated under age 10 between 1961 and 1981 census shows that the quality of age reporting, instead of improving, is found deteriorated at the national level. However, it has improved from the 1991 census onwards. For state level, only Punjab and Haryana, among the eight selected states, continue to show deterioration even at the year of 1991. Karnataka, Kerala, and Maharashtra with index value of less than 20 falls in 'Accurate' category of age reporting, and Andhra Pradesh, Maharashtra, and Tamil Nadu are approaching quickly to gather the same status of age reporting under age 10. Though, Gujarat and Haryanaa show better reporting of age for children under age 10 for 2001 census but still have a long way to achieve the status of 'Accurate' quality of age reporting. This is to be mentioned that Haryana has shown maximum improvement in age reporting under age 10 during the last decade (Table 2).

Further, to understand the sex ratio affected by age reporting, one can look into the gender specific omission rates calculated on the basis of sampled information collected by the Office of the Census Commissioner of India. The data availability for omission rate is up to zone level, a group of states forms a zone. All the Indian states have been divided into four zones. The state level omission-adjusted figures for sex ratio in age group 0-4 and 5-9 by considering the omission rate a zone by which that particular state belongs. Omission adjusted figures at the national level suggest that there is no gender specific age misreporting by age of four years among children, but at the sub-national level it counts a large for a few states. Omission adjusted sex ratios of 0-4 group for selected states are lesser by a range of seven to nine points than the observed sex ratios except for state of Punjab, where the value of sex ratio has increased by one point after adjusting omission figures. But this marginal increase could not create an impact on sex ratio of 0-6 age group as the gender differentials in mortality are higher and remain favourable to male (Table 3). In studying the quality of age reporting (Table2 and Table 3), we restricted ourselves to eight states for comparison purpose; four are from lower sex ratio regime, and four southern states having higher sex ratio.

Investigating the sex ratio at each digit from zero to ten, it is found that there is a greater dip at digit 4, 5, 6, and 8 for India as a whole and its selected states as well. Therefore, ratios at digit 0 to 9 have shown a bi-modal curve. It is very unfortunate that sex ratio at each digit has declined during 1961 to 2001. Interestingly, sex ratio at digit 3 and digits beyond 6 is found to be better for all-India as well as at the state level (see Graph 1). In other words, one can hypothesize the possibility that female within this range of age get shifted to either their preceding or succeeding ages, if gender differentials in mortality are not so strong in age group 0-4 and 5-9. However, one can test such hypothesis with micro-level observations, and see what are the chances of its acceptance or rejection? Age reporting by sex shows a typical kind of behaviour that men exaggerating their age outnumber those understates it by 20-30 percent (Bhat, 1995). Among women this difference is found smaller compared to men. One can also see whether physical appearance of children affects the age reporting in low socio-economic and demographic profile populations (Dandekar, 1986).

Another important reason of the low sex ratio on specific digits is survival chances of female children i.e. survival chances of female children are found comparatively better up to age 3 and beyond age 6 with their male counterparts at the same age. But it is not as simple as it looks like. For that, one has to create a measure that can capture the relative sex-specific survival chances of children over the years at these digits. Before giving any inference, it is required to investigate further that which of the two factors is dominating more, either age misreporting or gender

differentials in mortality. An exercise towards the latter inference has been performed in Table 4a, 4b, 4c, 4d, Table 5. By analyzing the trends in survival chances only four states, two from the first group and two from the second group of states, are incorporated in Table 4a, 4b and 4c. To analyze it, the ratios (R's) as discussed in methodology section have also been calculated between age 0-9 and 0-4. Nevertheless, one has to be cautious as the linear assumption to get the value of L9 may create certain amount of biasness in the inferences. Therefore, restricting ourselves to age six will make us mathematically more sound. It is to be mentioned that sex ratio in 0-4 should be primarily explored rather than 0-6 because of its proximity with the female infanticide and sex-selective abortion. Ratios from age group 0-4 should have smaller bias of age misreporting, omission and recall lapse compared to age group 0-6.

The column 4 of Table (4a, 4b,4c and 4d) depicts that survival chances of a female child moving from age group 0-4 to 0-6 has improved with respect to the survival chances of male child moving from 0-4 to 0-6 age group. Ideally, these ratios should stand very close or equal to unity in those populations where gender inequality in mortality rates does not appear. These ratios are regularly approaching toward unity during 1971 to 2001 censuses, for all India and selected states. However, approach in case of state Kerala is in opposite direction because survival chance favours female children but over the years gender differentials in mortality in Kerala are progressed towards narrowing the gap. Therefore, it can be inferred that gender gap in mortality at age 5 and 6 have declined, and it would have been possible due to improvement in mortality condition in either sex under the auspicious of various public health programmes. For example, in Punjab male children are found to be in advantage as far as the mortality matters but over the period it shows that the state has made consistent progress in case of female children too. Other two states, Maharashtra and Tamil Nadu have also shown an improvement, ratio value approaching towards unity during the last three decades.

DISCUSSION AND POLICY IMPLICATIONS

The analysis clearly reveals that a continuous decline in sex ratio is observed not only for the selected three age groups of children but also at each digit during the second half the last century. In general, sex ratio in age groups 0-4 has been declining regularly since 1981 census for all the states except Kerala. This must be taken as a serious and immediate concern for policy makers, especially in six states namely Punjab, Haryana, Gujarat, Rajasthan, Uttar Pradesh and Maharashtra. However, the trends in three age groups of children are not very encouraging in other states too.

This paper also shows that the survival chances of female children in the selected states are getting improved over the years. This contradicts the persistence of declining sex ratio in the selected age groups in most of the states. It clearly provides evidences of using of medical technology in the recent past in determining the sex of the foetus, and its removal if detected as female. It is violation of Pre-Natal Diagnostic Test (PNDT) Act, 1996 in various parts of the country.

The exercise reveals that there is an atypical tendency of age reporting at different digits for male and female that influences the figures of sex ratio in children age groups under age 10. Such fluctuation may be more in age group 0-6. Therefore, assessing the volume of female infanticide or sex-selective abortion, 0-4 age group would be an appropriate choice. However, over the years, less and less male-female mortality differential are contributing either to the difference between sex ratio in age group 0-4 and age- group 0-6 or between age group 0-4 and age group 0-9 in the selected states. If one can have sufficient evidences from large-scale sex-selective abortions,

the assumptions may be relaxed and exercise could be worked out again. Micro-level studies, regarding how the information are collected in the census, would definitely help to understand male-female age reporting mechanism completely.

The regular deterioration in sex ratio in many of the states may also be linked to the wider availability of the medical facilities, such as ultrasound and amniocentesis since 1980's. Over the period, it is also true that persistent competition in the market of private health services and the advancement of technology made these facilities cheaper and popular in India. There is another group of intellectuals, which thinks completely different about sex-selective abortion. They see it as a boon to girls. They perceive that all girls those are allowed to be borne would have been wanted by the parents. In such a situation, postnatal discriminations for girls tend to reduce (Goodkind, 1996). Some of the researchers have explored that sex-selective abortion along with 'stopping behaviour' will have adverse effect on sex ratio, specially, in those populations where fertility transition has gone much ahead. Thus presence of son preference will force more and more couples to stop childbearing even after the first birth, if the child is boy. On the other hand, if the first order child is a girl, couples tend to go for the next child in the hope getting a boy. This type of selective behaviour of the parents reduces the chance to have female children (Clark, 2000).

The long term implications of imbalances in sex ratio will be in the form of 'marriage squeeze'. It is the most relevant in the Indian context, as marriage is universal and extremely selective. In turn, social evils, like women trafficking, crime against them and marginalization of their rights may frequently be seen in the future. Such evils can never be the characteristics of a developed society, as many claims India will soon be a developed state. Therefore, at one front, the law enforcement agencies and medical fraternity are required to work together to abolish such evil choices, which are criminal offence. While on the other front, the society as whole should work for women education, employment, empowerment, their rights and representation within and beyond the household chores. In addition, provisions of incentives in case of bearing a girl child would influence positively unless such incentives are handsome and long term. In brief, son-preference, which is documented by various researchers in India, must be eliminated completely from the Indian society, and the sooner the better. Otherwise, current declining sex ratio among children may create several socio-cultural and demographic challenges before the country in future.

Graph 1: Levels and Trends in Decadal Sex Ratio at Each Age Below 10 years, 1961-2001, India
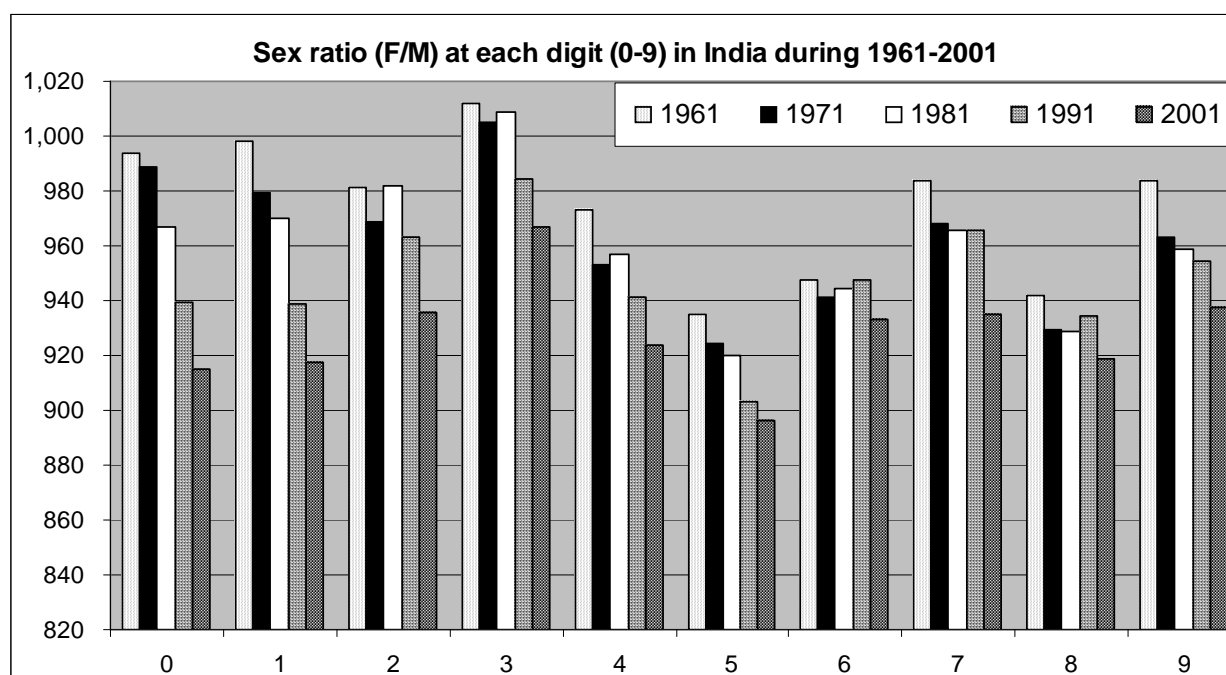
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Table 2. United Nation Age-Sex Accuracy Index from 1961 to 2001 for India and Selected States.

	1961	1971	1981	1991	2001
India	26.3	33.8	36.7	36.7	30.9
Gujarat	22.7	30.9	34.3	29.3	26.6
Haryana	NA	37.8	35.8	41.0	27.1
Maharashtra	17.0	23.2	27.4	26.3	19.8
Punjab	25.1	27.6	25.6	27.2	22.5
Andhra Pradesh	35.4	35.1	35.4	32.0	20.1
Karnataka	35.8	43.7	36.4	28.4	17.6
Kerala	21.2	22.6	18.4	18.2	11.6
Tamil Nadu	26.7	30.1	25.7	22.8	22.1

Table 3. Sex Ratio (F/M) incorporating Net Omission for 0-4 and 5-9 age groups in India and selected States.

	With Omission			Adjusted for Omission		
0-4 age-group	1971	1981	1991	1971	1981	1991
India	979	978	955	978	979	955
Gujarat	959	966	939	957	966	931
Haryana	921	922	887	919	921	880
Maharashtra	975	961	946	973	960	939
Punjab	916	925	874	919	926	875
Andhra Pradesh	1002	1000	978	995	1002	970
Karnataka	984	981	962	978	983	953
Kerala	981	975	951	974	977	943
Tamil Nadu	983	974	951	976	976	943
5-9 age group						
India	943	941	938	940	940	938
Gujarat	921	925	937	920	926	938
Haryana	855	874	880	854	874	882
Maharashtra	979	968	947	978	968	949
Punjab	865	877	885	866	877	885
Andhra Pradesh	990	990	978	988	989	976
Karnataka	991	996	985	989	995	985
Kerala	973	973	977	971	972	976
Tamil Nadu	982	971	963	980	970	963

Table 4(a): Sex Ratio (F/M) and Mortality Differentials at 1971 census for India and its selected States.

	0-4	0-6	0-9	$\dfrac{{}^fL_7/L_5}{{}^mL_7/L_5}$	$\dfrac{{}^fL_9/L_5}{{}^mL_9/L_5}$
India	979	964	960	0.9898	0.9795
Kerala	981	976	977	0.9955	0.9910
Maharashtra	975	972	977	0.9935	0.9868
Punjab	916	899	889	0.9878	0.9749
Tamil Nadu	983	974	983	0.9922	0.9901

Table 4(b): Sex Ratio (F/M) and Mortality Differentials at 1981 census for India and its selected States.

	0-4	0-6	0-9	$\dfrac{^fL_7/L_5}{^mL_7/L_5}$	$\dfrac{^fL_9/L_5}{^mL_9/L_5}$
India	978	962	958	0.9920	0.9835
Kerala	975	970	974	1.0009	1.0013
Maharashtra	961	956	964	0.9950	0.9898
Punjab	925	908	900	0.9909	0.9810
Tamil Nadu	974	967	972	0.9955	0.9906

Table 4(c): Sex Ratio (F/M) and Mortality Differentials at 1991 census for India and its selected States.

	0-4	0-6	0-9	$\dfrac{^fL_7/L_5}{^mL_7/L_5}$	$\dfrac{^fL_9/L_5}{^mL_9/L_5}$
India	955	945	946	0.9969	0.9938
Kerala	951	958	964	1.0003	1.0005
Maharashtra	946	945	947	0.9986	0.9972
Punjab	874	875	880	0.9953	0.9906
Tamil Nadu	951	948	958	0.9991	0.9982

Table 4(d): Sex Ratio (F/M) and Mortality Differentials at 2001 census for India and its selected States.

	0-4	0-6	0-9	$\dfrac{^fL_7/L_5}{^mL_7/L_5}$	$\dfrac{^fL_9/L_5}{^mL_9/L_5}$
India	934	927	928	0.9974	0.9954
Kerala	962	960	963	1.0009	1.0016
Maharashtra	913	913	921	0.9991	0.9984
Punjab	794	798	809	0.9987	0.9977
Tamil Nadu	946	942	947	0.9993	0.9988

Table 5: Changes in the magnitude of Sex Ratio (F/M) explained by mortality differential alone from 0-4 to 0-6, 0-4 to 0-9 age group.

	Actual								Explained by Mortality differential alone							
	(SR0-4)-(SR0-6)				(SR0-4)-(SR0-9)				(SR0-4)-(SR0-6)				(SR0-4)-(SR0-9)			
	1971	1981	1991	2001	1971	1981	1991	2001	1971	1981	1991	2001	1971	1981	1991	2001
India	3	14	10	7	19	20	9	1	5	4	1	2	9	7	1	4
Gujarat	13	16	11	5	19	21	1	5	6	-3	2	2	10	-5	3	4
Haryana	22	20	8	-2	34	26	4	8	7	4	3	3	12	7	6	5
Maharashtra	3	5	1	0	-2	-3	-1	8	3	2	1	1	5	4	1	2
Punjab	17	17	-1	-4	27	25	-6	11	6	4	2	1	10	7	3	2
A.P.	12	8	3	4	6	5	1	4	2	0	2	1	4	1	4	2
Karnataka	6	7	2	3	-4	-8	-12	20	4	2	1	2	7	4	1	4
Kerala	5	5	-7	2	4	1	-13	3	2	-1	0	0	3	-1	0	-1
Tamil Nadu	9	7	3	4	0	2	-7	5	2	2	0	1	3	4	0	1

ÖZET

HİNDİSTAN'DA ÇOCUK CİNSİYET ORANININ AZALMASI: KURAMSAL İNCELEMELER

Cinsiyet oranının (bin erkeğe düşen kadın sayısı) nüfusun çeşitli özelliklerini, özellikle insani kalkınmayı çalışmak için önemli bir gösterge olduğu yaygın olarak kabul ediliyor. Hindistan'da genel cinsiyet oranındaki altı puanlık artış çeşitli forumlarda takdir edildi. Buna karşın, çocuk cinsiyet oranının azalması ülkenin önde gelen beyinleri arasında ciddi bir endişe yarattı. Bu makale, ilgili konuları incelerken cinsiyet oranının teknik olarak üç etkene bağlı olduğunu gösteriyor: doğumda cinsiyet oranı, çocukların cinsiyete özel hayatta kalma olasılıkları ve cinsiyete göre yaş beyanının kesinliği. Bu makale, ulus ve eyalet düzeyinde en az son dört sayıma göre, 1981 sayımında birkaç eyalet hariç, söz konusu yaş gruplarının cinsiyet oranında sürekli bir düşüş gösteriyor, özellikle 0-4 yaş grubunda. Benzer trendler diğer iki yaş grubu, 0-6 ve 0-9 için de gözlemlendi. Dikkat çekici olarak, kadın hayatta kalma olasılıklarında düzelmeler gözlemlenmesine rağmen, çocuk cinsiyet oranının düşüşü yıllar geçtikçe sürüyor. Bunun yanında, yaş beyanının kesinliğiyle ilgili cinsiyet değişkenleri mevcut değil.

Table 1: Sex Ratio (F/M) for 0-4, 0-6 and 0-9 age group for India and its major States from Censuses 1961 to 2001.

| | Sex Ratio 0-4 age group | | | | | Sex Ratio 0-6 age group | | | | | Sex Ratio 0-9 age group | | | | |
	1961	1971	1981	1991	2001	1961	1971	1981	1991	2001	1961	1971	1981	1991	2001
India	992	979	978	955	934	976	964	962	945	927	974	960	958	946	928
Andhra Pradesh	1009	1002	1000	978	965	1002	990	992	975	961	1011	996	995	977	965
Assam	1036	1009	NA	978	971	1021	1002	NA	975	964	1015	1001	NA	974	965
Bihar	1016	985	1004	978	957	988	964	981	959	942	976	955	967	950	931
Gujarat	971	959	966	939	888	955	946	950	928	883	949	940	945	938	888
Haryana	NA	921	922	887	817	NA	899	902	879	819	NA	887	896	883	827
Karnataka	993	984	981	962	948	987	978	974	960	945	1002	988	989	974	965
Kerala	976	981	975	951	962	972	976	970	958	960	972	977	974	964	963
Madhya Pradesh	996	992	989	967	938	982	976	977	952	932	982	974	976	960	935
Maharashtra	983	975	961	946	913	978	972	956	945	913	984	977	964	947	921
Orissa	1049	1030	1003	976	959	1035	1020	995	968	953	1032	1025	1005	973	956
Punjab	929	916	925	874	794	906	899	908	875	798	901	889	900	880	809
Rajasthan	929	955	978	936	913	906	932	954	916	909	909	925	947	918	907
Tamil Nadu	995	983	974	951	946	985	974	967	948	942	995	983	972	958	947
Uttar Pradesh	971	951	965	946	929	946	923	935	928	916	935	902	913	919	910
West Bengal	1023	1019	991	972	966	1008	1053	981	967	960	1004	1038	979	964	961