

# GENDER DISPARITY IN CHILD CARE IN INDIA AND ITS EAG STATES: EXPERIENCES FROM NFHS SURVEYS

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*Disparities in child care practices in India and its EAG states are examined to investigate whether the discrimination has declined over the time or not. Four rounds of National Family Health Surveys (NFHS) conducted in year 1992-93, 1998-99, 2005-06 and 2015-16 are used to examine gender disparity in child care. The four disparity composite indices are computed in this study are: child care disparity index (CCI), child nutrition disparity index (CNI), child morality disparity index (CMI), and child educational disparity index (CEI). Sopher's (1974) methodology is used to compute a gender disparity index for each indicator, and finally a composite overall disparity index is computed. Results of the study illustrate that gender disparity has been declining in most of child care indicators, but a few shows an increasing trend. For instance, differences in the proportion of male and female children who received full immunization increased between first and fourth rounds of NFHS survey, however, the gap in gender gap in child mortality in India is lows and remained almost unchanged over the period.*

**Keywords:** Health disparity, Health inequality, Education inequality, EAG states of India

## INTRODUCTION

The United Nations Millennium Declaration which was adopted by all 189 Member States of the United Nations on 8 September 2000 embodies a large number of specific commitments aimed at improving the lot of humanity in the new century. The third goal and many others targets précised under different goals stressed on gender equality. The UN Sustainable Development Goals (SDG-5 & SDG-10) also envisaged to reduce inequality within and among countries and achieve gender equality and empower all women and girls by year 2030 (UN, 2020). The UNDP Regional Human Development Report 2016 also stated that addressing social determinants of health and health inequities through action supporting all SDGs will improve health and well-being for all and reduce health inequities within and between countries (UNDP, 2016)

In developing countries gender discrimination against females is a well documented phenomenon. Females are more disadvantaged than males in terms of seven types of inequalities (Sen, 2001). Within the households, gender discrimination exists in terms of calories intake, sedentary activities, etc. A number of studies have found higher female mortality than males in many of the developing countries. Hill and Upchurch (1995) studied data from a large number of countries and compared their sex differentials in mortality decline with North-West Europe. They concluded that girls in the developing countries have a higher risk of mortality than boys for a given level of mortality. Female disadvantage is maximum for girls in age group 1-4 years, where care is more important than genetic factors in determining mortality risks.

Evidences from India have shows an adverse status of women which has worsened in recent decades. Female disadvantage is evident in India from the constantly declining sex ratio, lower literacy rate of females than males and lower participation of women than men in the work force.

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According to NFHS-4, neonatal mortality was 22.1 among male baby compared to 18 per 1000 live births in female babies. But more female babies compared to males babies (9.8 vs 7.2 per 1000 live births) dies during post-neonatal period. The prevalence of malnutrition in children in India is one of the highest in the world and over the years, there has been only a marginal improvement in the nutritional status of children. According to NFHS-4, 38 percent of children under age five years are stunted (too short for their age), twenty-one percent of children under age five years are wasted (too thin for their height), and 36 percent of children under age five years are underweight. Relatively more female children are malnourished in comparison of male children in India (IIPS, 2017).

However, the trend in child care, mortality and nutrition indicators have not been uniform across Indian states and similarly do the gender inequality. A comparative overview of demographic indicators across Indian states shows the existence of wide range of discrepancies among the states. State level inequalities are of particular importance in a large country like India, where decision-making is decentralized. Despite several steps taken in various sectors of life to bridge the gap between men and women and to bring them up and to achieve SDGs, the country is still far from it. The wide inequality in all these indicators makes the situation worse since inequalities in nutrition and mortality rates have been documented between and within the states of India (Kumar, et al., 2021).

## OBJECTIVES

The main objective of this study is to estimate the gender disparity in child care, child nutrition and education in India and to study trend in child discrimination during four rounds of the NFHS surveys.

## METHODS & MATERIAL

**Data:** The data for the present analysis is used from four rounds of National Family Health Survey (NFHS), conducted in 1992-93 (IIPS, 1995), 1998-99 (IIPS, 2000), 2005-06 (IIPS, 2007) and 2015-16 (IIPS, 2017) respectively. However the gender inequality at states level was carried out using NFHS-4 survey and EAG states. Eight EAG states and Assam state in view of their relatively poor demographic indicators and higher mortality indicators (viz., Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Odisha, Rajasthan, Uttarakhand and Uttar Pradesh) are included in the state level analysis. The all round of NFHS surveys were conducted covering a representative sample of ever-married women aged 15–49 years to provide estimates State/UTs and National level. The multi-stage sample design had been used and information on fertility, family planning, infant and child mortality, maternal and child health, etc. were collected using a pre-tested interview schedules by highly trained field investigators.

**Statistical Analysis:** The analyses were performed using Microsoft Excel. Most commonly used tools to measures the gap/disparity are a) measuring the arithmetic difference between the two percentages, b) the ratio of one to the other, and c) scanning the two sets of data for pattern of variation, i.e. visually comparing the two mapped patterns, etc. But these techniques are not statistically valid and the imperceptive use of them can lead to erroneous conclusion. Keeping this view in mind, present study used index of disparity which was first time proposed by Sopher in 1974. According to this measure of disparity between two groups in their possession of a particular property (here it is child care indicators) is measured by the logarithm of the odds ratio of the odds that any member of one group has the property to the odds that any member of other group does (Sopher, 1974). Mathematically it can be stated as:

$$D_i = \left[ \log \left( \frac{X_1}{X_2} \right) + \log \left( \frac{K - X_2}{K - X_1} \right) \right] \dots\dots\dots(1)$$

Where  $X_1 > X_2$ ,  $K$  is a constant, when value of indicators are in percentages, we took  $K$  as 100, but in case of rate, like child mortality, we have assumed  $K$  as 1000.

To get a composite index, the average of all  $D_i$  are taken as a final index as:

$$Z = \frac{1}{n} \sum_{i=1}^n D_i \dots\dots\dots(2),$$

where  $D_i$  is the value of disparity index for  $i^{th}$  indicator and  $n$  is the number of disparity indices ( $i = 1 \dots n$ ) and  $Z$  is the final composite index. It has a number of useful properties, such as a) It ranges from minus infinity to plus infinity and each of these extremes can occur when one of the groups lacks the property altogether or when all members of one group have the property; b) The 0 (zero) value indicates no disparity; c) The sign is reversed when the disparity is measured in the reverse direction.

## RESULTS

To study the gender disparity in child care in India, four different indices were computed including different aspects of child care and rearing. These four indices are viz. (a) Disparity in child care, (b) Disparity in child nutrition status, (c) Disparity in child mortality and (d) Disparity in child education.

### (a) Disparity in Child Care

The growth of children depends on the care they receive in early years of their childhood. To examine the disparity in male vs. female child in India a Child care disparity index was computed including four components, viz. children received all vaccination, median duration of breastfeeding, treatment seeking for acute respiratory infections (ARI) and diarrhoea. To reduce the incidence of child morbidity and mortality, Government of India has made arrangements for free vaccination services of the required doses of BCG, DPT, polio and measles vaccines to protect children against tuberculosis; diphtheria, pertussis (whooping cough), tetanus; polio and measles respectively. Table 1 shows that 40-50 percent children are still not vaccinated for all preventable diseases. Mother's milk provides important nutrients to infants and young children and protects them against certain infections, and the initial growth of a child depends upon the duration and frequency of breastfeeding. The results show that the median duration of breastfeeding for male children is nearly two –three months longer than female children. Apart from discrimination in immunization coverage, females also receive less health care than males when they fall sick. Table 1 also shows the proportion of male and female children who did not receive any treatment when they suffered from Acute Respiratory Infection (ARI) and Diarrhoea. The female disadvantage over male children is higher for treatment in the case of ARI compared to that in diarrhoea. Child care disparity index (CDI) was prepared to find out gender disparity in health care of children in terms of receiving vaccinations,

duration of breastfeeding and treatment during sickness. The CDI value for India shows that overall the gender discrimination has been low, as we usually believe. The child care disparity index values were 0.073 in NFHS-1, 0.053 in NFHS-2, 0.064 in NFHS-3 and 0.07 in NFHS-4, which almost remained unchanged to no gender discrimination.

**Table 1: Child Care Indicators and Child Care Disparity Index (CDI)**

Round of Survey	Percent of children (12-23 months) received all vaccinations			Median duration of breastfeeding			Percent of children who were taken to health facilities when child was sick						Child Care Disparity Index (CDI)
							In Case of ARI			In case of diarrhoea			
	Male	Female	Index	Male	Female	Index	Male	Female	Index	Male	Female	Index	
NFHS-1 (1992-93)	36.7	34.1	0.049	25.3	23.6	0.040	82.2	78.0	0.115	82.2	79.0	0.089	0.073
NFHS-2 (1998-99)	43.1	40.9	0.039	26.4	24.6	0.041	66.5	60.8	0.107	73.2	72.0	0.026	0.053
NFHS-3 (2005-06)	45.3	41.5	0.067	25.4	23.6	0.042	71.7	65.8	0.120	74.4	73.2	0.027	0.064
NFHS-4 (2015-16)	62.1	61.9	0.00	31	27.6	0.07	80.4	75.2	0.13	69.4	66.2	0.06	0.07

### **(b) Disparity in Child Nutrition Status**

The dietary intake of children also effects the physical growth of children. Balanced diets of child not only effect the growth of child but all provide protection from various infections and diseases. To examine the gender disparity in nutrition intake in India, a child nutrition disparity index was computed including four components, viz. proportion of children underweight, stunted and proportion of children wasted.

The measures used in the NFHS for assessing the nutritional status of children (below three years) are weight-for-age (underweight), height-for-age (stunted) and weight-for-height (wasted). The proportion of under-weight had declined from about half of children to one-third children during NFHS-1 and NFHS-4 surveys. Almost equal male and females children were underweight in India in these surveys. The stunting (too short for their age) also showed that over the period, the proportion of stunted children has declined from more than 50% in NFHS-1 to less than 40% in NFHS-4 survey (Table 2). The proportion of children wasted (too thin for their height) remained unchanged, infact it shows an increasing trend, i.e. 18.8% male children were wasted in NFHS-1, which increased to 21.9% in NFHS-4. Similarly, the proportion of wasted females children increased from 16.2% to 20.1% during this period. Overall, during NFHS-1 and NFHS-4 surveys, the nutritional status of children had improved in India and the proportion of undernourished children has declined, but the proportion of wasted children had gone up. The child nutritional disparity index (NDI) shows that the gender differences in child nutrition was negligible and remained almost unchanged during 1992-93 to 2015-16..

**Table 2: Child Nutritional Indicators and Child Nutrition Disparity Index (NDI)**

Round of Survey	Underweight			Stunted			Wasted			Child Nutritional Disparity Index (NDI)
	Male	Female	Index	Male	Female	Index	Male	Female	Index	
NFHS-1 (1992-93)	53.3	53.4	0.00	52.3	51.7	0.01	18.8	16.1	0.08	0.03
NFHS-2 (1998-99)	45.3	48.9	-0.06	44.1	47.0	-0.05	15.7	15.2	0.02	0.04
NFHS-3 (2005-06)	41.9	43.1	-0.02	48.1	48.0	0.00	20.5	19.1	0.04	0.02
NFHS-4 (2015-16)	36.1	35.3	0.02	38.9	37.9	0.02	21.9	20.1	0.05	0.03

### (c) Disparity in Child Mortality

Several studies carried out in developing world have shown that gender discrimination leads to higher female mortality than males. In India, child mortality is still very high, 33 babies per 1000 live births die in neonatal period, 46.5 die during infancy and 58.8 die before reaching age five (IIPS, 2017). Table 3 shows that males have a much higher mortality rate than females during the neonatal period (32.8 compared to 25.8). These differences narrow down during infancy (43.3 compared to 37.7) and further in under-five child mortality (51.5 compared to 47.8).

A mortality disparity index (MDI) was computed taking into account three mortality rates (neonatal, infant and under five mortality). Under-five child mortality is selected because despite of high sex ratio at birth (favourable to males) higher male mortality during first five years balances the child sex ratio (0-6 years). Overall, the values of MDI have also been very low, or in other words, there is no significant differentiation in child mortality by sex of child during these surveys.

**Table 3: Child Mortality Indicators and Child Mortality Disparity Index (CMI)**

Round of Survey	Neonatal Mortality			Infant mortality			Under-five mortality			Child Mortality Disparity Index (MDI)
	Male	Female	Index	Male	Female	Index	Male	Female	Index	
NFHS-1 (1992-93)	57.0	48.1	0.08	88.6	83.9	0.03	115.4	122.4	-0.03	0.04
NFHS-2 (1998-99)	50.7	44.6	0.06	74.8	71.1	0.02	97.9	105.2	-0.03	0.04
NFHS-3 (2005-06)	40.9	36.8	0.05	56.3	57.7	-0.01	69.7	79.2	-0.06	0.04
NFHS-4 (2015-16)	32.8	25.8	0.11	43.3	37.9	0.06	51.5	47.8	0.03	0.07

### (d) Disparity in Child Education

Table 4 shows the discrimination in the education of female and male child in India. It is observable that the proportion of literate children had improved during NFHS-1 and NFHS-4 surveys irrespective the sex of child, and the gap between male and female literate children had significantly gone down to 0.05 in NFHS-4 from 0.41 in NFHS-1. There was not difference in the proportion of children (10-14 years) completed primary education in NFHS-1 & NFHS-2 surveys, however this proportion declined in NFHS-3 for both male and female children. But in NFHS-4 survey, about 70% female children completed 5<sup>th</sup> standard compared to 67% male children. Similar to proportion of literate, the proportion of children attending school had also improved considerably over the period and the gap between male and female children have been narrowed down. The proportion of children (6-14 years) attending school increased from 75.5% to 93.3% for male children and 58.9% to 92.6% for female children respectively.

An educational disparity index (EDI) was created by taking an average of the sum of disparity index for literate, completed primary education and children attending school. The EDI value had declined greatly from 0.25 in NFHS-1 to 0.16 in NFHS-3 and 0.05 in NFHS-4.

**Table 4: Child Mortality Indicators and Child Mortality Disparity Index (CMI)**

Round of Survey	Percent of children (10-14 yrs) who						Percent attending school (6-14 yrs)			Child Educational Disparity Index (EDI)
	Are literate			completed primary education						
	Male	Female	Index	Male	Female	Index	Male	Female	Index	
NFHS-1 (1992-93)	82.1	64.1	0.41	46.0	46.1	0.00	75.5	58.9	0.33	0.25
NFHS-2 (1998-99)	87.0	76.1	0.32	46.3	46.1	0.00	83.1	73.7	0.24	0.19
NFHS-3 (2005-06)	92.3	87.1	0.25	44.5	41.2	0.06	82.6	76.4	0.17	0.16
NFHS-4 (2015-16)	96.8	96.4	0.05	67.5	70.5	-0.06	93.3	92.6	0.05	0.05

### Gender Disparity in EAG States of India

The UN Millennium Development Goals 2 focuses on universal primary education, which ensures that all boys and girls should complete a full course of primary schooling. Goal 3 is also cite for elimination of gender disparity in primary and secondary education, preferably by 2005, and in all levels of education no later than 2015 (UN, 2015). The UN **Sustainable Development Goal 4** (SDG 4) made of 10 different targets also endorsed education goal, it aims to “ensure inclusive and equitable quality education and promote lifelong learning opportunities for all” (UN, 2020).

To study the inter-state variation in gender discrimination, all four indices discussed above were also computed for all EAG - high priority states including Assam. Table 5 shows that there is no discernible gender discrimination in child care among EAG states. However, Odisha, Uttar Pradesh

and Assam states had relatively higher disparity in child care compared to EAG states. The value of child care disparity index (CDI) was 0.12 in case of Odisha and 0.10 in case of Uttar Pradesh and Assam states respectively. As observed at national level, no prejudice is observed in child nutrition status in any EAG states. As far the discrimination in child mortality is concerned, except few states, most of the states do not show any substantial variation in child mortality. However, the gap between male and female mortality rates was higher in Madhya Pradesh (0.16), Chhattisgarh (0.15), Assam (0.15), and Bihar (0.14).

In case of education, all EAG states about 95% or more children aged 10-14 years were literate. However, children (10-14 years) from Bihar, Uttar Pradesh and Jharkhand states were relatively less (< 55%) to complete 5<sup>th</sup> standard education, whereas more than three-fourth children from Odisha and Chhattisgarh completed the 5<sup>th</sup> standard education. Similarly, in Bihar, Uttar Pradesh and Assam states relatively lesser (<90%) children aged 6-14 years were in school, whereas, in all other EAG states more than 90% children (6-14 years) were in school. Overall, the educational disparity was most prominent in Rajasthan (0.24) and Assam (0.15) states. This may be because of very strong son preference in India. The educational disparity index (EDI) shows that in all EAG states the female children are at slightly disadvantaged in terms of education.

**Table 5: Values of Different Disparity Indices in EAG state, NFHS-5 (2015-16)**

States	Child Care Disparity Index (CDI)	Child Nutrition Disparity Index (NDI)	Child Mortality Disparity Index (MDI)	Child Educational Disparity Index (EDI)
Assam	0.10	0.05	0.15	0.15
Bihar	0.06	0.03	0.14	0.04
Jharkhand	0.03	0.03	0.07	0.05
Madhya Pradesh	0.08	0.03	0.16	0.09
Chhattisgarh	0.03	0.08	0.15	0.10
Odisha	0.12	0.03	0.03	0.04
Rajasthan	0.05	0.06	0.03	0.24
Uttarakhand	0.09	0.02	0.06	0.10
Uttar Pradesh	0.10	0.03	0.10	0.07

## DISCUSSION AND CONCLUSION

Every child deserves to reach her or his full potential, but gender inequalities in their lives and in the lives of those who care for them hinder this reality. Across India gender inequality results in unequal opportunities, and while it impacts on the lives of both genders, statistically it is girls that are the most disadvantaged (UNICEF, 2021). Gender inequality in child care subsists prevails in all sectors of life like early child care, child nutrition, mortality, health utilization and education. Male children relatively have the upper hand in these aspects of child care, depicting how deeply patriarchy is entrenched in India system.

Results of present study illustrate that gender disparity in India is low and declining in most aspects of child care. For instance, differences in the proportion of male and female children who received

full immunization had increased considerably between first and fourth round NFHS. However, still 40% children do not received all freely available immunization in the country. The median duration of breastfeeding has also improved 4 - 6 months in the country, but the male-female difference in the median duration of breast-feeding almost remained unchanged during four rounds of NFHS surveys. The study also shows that male children are more likely to received treatment for health facility/taken to health facility when sick with ARI or Diarrhoea. The difference between treatment seeking for male and female children was much higher in case of ARI and it remain almost unchanged during NFHS-1 and NFHS-4. These finding are similar to other studies. Boys are much more likely than girls to be taken to a health facility when sick in both north and south India (Caldwell and Caldwell 1990; Das Gupta 1987). The present study also reviled that though the proportion of underweight and stunting has declined from more than half in NFHS-1 to less than 40% in NFHS-4, the proportion of wasting (weight by height) has marginally increased during the period. Again, girls were more likely to be underweight than boys in all surveys. Overall, the gaps between male and female children in nutrition status remained constant and low over the period in the country. The similar trend was observed in all EAG states and difference in boys and girls nutrition status was very low in all states. However, more girls were recorded underweight compared to boys in several other studies (Arnold et al 1998). A study in Punjab revealed that although both sexes receive the same number of calories, girls are given more cereals, while boys receive more high valued food items like milk and fat (Das Gupta, 1987).

This study also revealed that though child mortality has declined considerable during NFHS-1 and NFHS-4 surveys, but still child mortality is very high in the country, especially in EAG states. Overall child mortality rates were higher among male children compared to female children, which is similar to global trend. However, the differences in neonatal and infant mortality rates for male and female children remained almost at NFHS-1 levels. According to Hill and Upchurch (1995) female mortality disadvantage is not related to nutritional status (anthropometric measures) and sickness rates, rather it shows a positive association with relative lack of immunization coverage for girls and a negative relationship with female disadvantage in treatment of diarrhoea.

The UN Millennium Development Goals 2 focused on universal primary education, which ensures that all boys and girls should complete a full course of primary schooling. Goal 3 is also cite for elimination of gender disparity in primary and secondary education, preferably by 2005, and in all levels of education no later than 2015 (UN, 2015). Similarly, the UN **Sustainable Development Goal 4** (SDG 4) made of 10 different targets also endorsed education goal, it aims to “ensure inclusive and equitable quality education and promote lifelong learning opportunities for all” (UN, 2020). Despite of Government of India special drive to improve enrollment of children across all section of societies, still many children are not going to school, especially in EAG states. The study revealed that over the period enrollment has improved in all states, still 10-12 percent children aged 6-14 years not attended school and 25-45% children aged 10-14 years had not completed their primary schooling. The gender difference was highest in NFHS-1, which declined significantly in NFHS-4 in all states, but still difference is prominent in Rajasthan and Assam states. However, few earlier studies have reported vast gender difference in male and female education (Sharma & Rani, 2008, Sharma, et al., 2010). Globally, girls have higher survival rates at birth and participate in preschool, but India girls are also more likely to drop out of school (IIPS, 2017).

Thus overall, studies revealed that gender inequality in different aspects of child care, nutrition, mortality and education is low in the country and has been declined significantly in the most of its EAG states over the period. But few states still need to take extra efforts to improve child health,



school enrolment and minimize the gender gap. More steps are to be taken in various sectors of life to bridge the gap between boys and girls in utilization of health services and to bring them up to the same level.

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