CHAPTER-1

INTRODUCTION

1.1 INTRODUCTION:

Provision of public health is a basic human right and a crucial merit good, defined as an activity with very high positive externalities. With the inception of the Human Development Index (HDI), the Human Poverty Index (HPI), and the Gender-related Development Index (GDI) by the United Nations Development Programme (UNDP), governments have been required to redefine development. Universal access to health together with safe drinking water, sanitation, nutrition, basic education, information and employment are essential to a balanced development. If India is to glean the gains of a demographic dividend and become a major economic power by 2030, it will have to guarantee that her people are healthy, live long and generate wealth.

Ever since the Bhore Committee Report (1946) and the Constitution of India, the Government of India (GoI) has reiterated many times its aim of advancing the average health of its citizens, reducing inequalities in health, and fostering financial access to health care, particularly for the most destitute. In the Directive Principles of State Policy (Bakshi 2006: 84-91) of the Constitution of India, Articles 38 (2) and 41 stress the need for equitable access and assistance to the sick and the underserved, along with the rights to employment and education, while Article 47 stresses improving nutrition, the standard of living and public health. Article 39 and Article 45 point to gender equality and the protection of children rights including education and Article 42 asks for just and humane work environment and maternity relief. Article 14 suggests that men and women have equal rights and opportunities in the political, economic and social spheres and Article 15 (1) prohibits discrimination against any citizen on the grounds of religion, race, caste, sex, etc.
Nevertheless, roughly by any benchmark, India's triumph in achieving these goals can at best be reckoned as varied (Goi, 2005). Longevity has doubled from 32 years in 1947 to 66 years in 2004 and the Infant Mortality Rate (IMR) has fallen by over 70 percentage points between 1947 to 1990. But levels of malnutrition, IMR and the Maternal Mortality Rate (MMR) almost stagnated during the 1990s. At present, life expectancy at birth (LEB), IMR and under-five mortality rates (U5MR) are worse than those of Bangladesh and Sri Lanka (UNDP 2009: 172-3; UNDP 2007/08: 262-3). Even if India accounts for 16.5 percent of the global population, she contributes to 20 percent of global diseases, 25 percent of maternal mal-conditions, 20 percent of nutritional deficiencies, and is the nation with the largest number\(^1\) of HIV/ AIDS cases (Goi 2005; UNAIDS 2006).

1.2.1 **The Concept of Gender Inequity:**

Inequality between women and men can come out in many diverse forms—it has many faces, e.g., survival inequality, natality inequality, unequal facilities, ownership inequality, unequal sharing of household benefits and chores and domestic violence and physical victimisation (Sen 2005: 224). Gender disparity is, in fact, not one hardship but a multitude of problems. Gender inequality of one type tends to encourage and sustain gender inequality of other kinds (*ibid*: 220). In most nations women have failed to ‘hold up half the sky’. There are extensive inequalities even in morbidity and mortality in substantial parts of Asia and North Africa (Sen 1995). In family behaviour, inequalities between men and women (and between boys and girls) are often accepted as ‘natural’ or ‘appropriate’ (*ibid*). Gender inequality takes the brutal form of remarkably high mortality rates of women and a subsequent predominance of men in the total population (Sen 2005: 224). Gender

\(^1\) India has 5.7 million HIV/ AIDS cases compared to 5.5 million in South Africa in 2006—UNAIDS 2006.
inequality is evident not just in the old form of mortality asymmetry, but also in the new form of sex-selective abortions aimed at eliminating female foetuses as many parents want the newborn to be a boy rather than a girl (ibid: 226). Daughters are likely to be put to work for the household at a very young age, are much less likely to be educated and to attain literacy than sons of the same households and, worst of all — being less valued than their brothers — they have less chance of staying alive, because they are more deprived of food or of healthcare (Dasgupta 1993; Drèze and Sen 1990: Ch-4; Papanek 1990; Sen 1990). Women in both rich and poor countries also suffer from severe 'time poverty', since they are carrying the 'double burden' of domestic and breadwinning responsibilities (Okin 1995). Along with these doubly burdened productive works women are also burdened with unpaid reproductive work.

Men and women play dissimilar functions in society, with their gender differences shaped by ideological, historical, religious, ethnic, economic and cultural determinants (Whitehead 1979). Hence we need to guarantee development in a more appropriate, i.e., gender-aware manner.

Almost all over the world, cultural traditions pose obstacles to women's health and empowerment. Many traditions have portrayed women as less important than men, less deserving of basic life support, or of fundamental rights that are strongly correlated with quality of life, such as health, education, self-respect, right to work, social and political liberty and participation (Nussbaum 1995; Sen 2005: 232). According to the 1995 UN Human Development Report, there is no country in the world in which women's quality of life is equal to that of men, according to a complex measure that includes longevity, health status, educational opportunities, employment and political rights. In developing countries, on average, recorded work participation rates of women are typically less than half of those of men. Even when women are employed, their
situation is demeaned by pervasive wage discrimination and by long hours of unpaid household labour (Nussbaum 1995). Women are much less likely than men to be literate. Two-thirds of the world's illiterate people are women. In South Asia, female literacy rates average around half of male rates (ibid). Given equal nutrition and health care, women live on average slightly longer than men, even allowing for a modest level of maternal mortality. However, discrimination against females in many parts of the world meant that there were more than 100 million 'missing women' in the world in 1986 (ibid, Sen 1990).

The Constitution of India promises women equal employment opportunities (as men) and equal pay for equal work. But still today there is a significant degree of gender inequality in work opportunities and remuneration, and an astonishing range of variation in female labour force participation (Chen 1995). The social barriers on the lifestyles of women tend to become more rigid as one moves up in the caste hierarchy (Dreze 1990: 52). Generally, there is more seclusion of females in North India than in the South, and among upper castes and classes than among lower castes and classes (Miller 1981: 780).

1.2.2 Why Study the Gender Gap?

There is a need to study gender as it deals with 'emancipation of women from their subordination, and their achievement of equality, equity and empowerment' (Moser 1993). The United Nations Decade for Women (1976-85) played an essential role in highlighting the 'important but often previously invisible role of women in the social and economic development of Third World countries and communities, and the particular 'plight' of low-income women' (ibid). During this decade 'policy-makers began to shift their focus from a universal concern with welfare-oriented, family-centred programmes which assumed motherhood as the most important role for women in the development process, to a diversity
of approaches emphasising the productive role of women' *(ibid)*. Women are increasingly seen as active 'agents' of development from the earlier view of passive 'patients'.

In the early 1970s the term 'women in development (WID)' was coined by the Women’s Committee of the Washington, DC, Chapter of the Society for International Development. The rationale behind it was that 'women are an untapped resource who can provide an economic contribution to development'. Later on an additional shift in approach has recognised the limits of focusing on women in separation and has emphasised the need to look at ‘Gender and Development (GAD)’. It is interested in ‘the social relationship between men and women, in which women have been systematically subordinated' *(ibid)*. 'The focus on gender rather than women makes it critical to look not only at the category 'women’—since that is only half the story—but at women in relation to men, and the way in which relations between these categories are socially constructed' *(ibid)*. The purpose of GAD is that women through empowerment achieve equality and equity with men in society.

World Bank WID Division (1990) notes that ‘for women, as for men, the ability to realise their economic potential depends both on their human capital—i.e., their health and learning—and on their access to information, resources, and markets’. However, women face additional and more difficult hurdles to access than do men, because of their mothering role (multiple pregnancies and child care) and because of cultural customs, sometimes reflected in law or policy that tend to keep women more home-bound than men and make them more constrained in their work choices and social interactions (Moser 1993). Most women live in a situation in which only their productive work, by virtue of its exchange value, is valued as work. Reproductive work and community managing work, because they are both seen as 'natural' and 'non-productive', are not valued. This means that often the greater part of the work that women undertake is invisible. In contrast, most of men’s work
is valued, either directly through paid remuneration, or indirectly through status and political power (ibid).

Women and men have different positions within the household and different control over resources; they not only play different and changing roles in society, but also often have different needs. It is this role and needs differentiation that provides the underlying conceptual rationale for gender-aware planning and defines its long term goal as the emancipation of women (ibid). Hence we need to disaggregate households and families on the basis of gender. ‘Many Third World families... are more extreme inculcators of the inequality of the sexes as natural and justified than their developed world equivalents. And thus there is even more need for attention to be paid to gender inequality’ (Okin 1995: 283).

1.2.3 Gender Bias in Child Health in India:

Due to many reasons as discussed above, in India boys’ achievement in many indicators of health is much higher than that of girls’. The gap between boys’ and girls’ achievement in a particular indicator of health is the gender gap in that indicator. The measurement issues of gender gap will be discussed in the second chapter.

Health policies are aimed at the betterment of all children—boys and girls. But, as we will see later, the persistent seemingly gender-blind health policies have resulted in a situation where boys’ achievements outperform that of girls’ in almost all indicators of health. Thus it is important to look at the extent by which girls are lagging behind boys in the indicators of health. It is not only the absolute level of achievement of girls but the relative achievement of girls to boys which is important to study. As reduction and removal of gender bias in health can go a long way in achieving gender parity in many other dimensions of human development, not only for the present generation but also over the generations, studying gender bias is of utmost importance. Health equity
is about enabling people to provide equitable access to services on the basis of need. Health inequality is about measurable variations in health status. Health inequity 'refers to those inequalities in health that are deemed to be unfair or stemming from some form of injustice' (Kawachi et al 2002).


On a biological basis, women tend to have a lower mortality rate than men in nearly all age groups, *ceteris paribus* (Sen 1998: 11). But owing to gender bias against women in many parts of the world, women receive less attention and care than men do, and particularly girls often receive very much less support than boys. As a consequence, mortality rates of females often exceed than those of males (Bairagi 1986; Caldwell and Caldwell 1990; D'Souza and Chen 1980; Faisel, Ahmed and Kundi 1993; Koenig and D'Souza 1986; IIPS 1995; Pande 2003; Sen 1998). Gender discrimination prevails regardless of the realisation that
prejudice in morbidity, nutritional status, or use of health care will probably contribute to greater gender bias in mortality (Arnold, Choe, and Roy 1998; Bardhan 1974, 1982; Doyal 2005: 10; Kishor 1993, 1995; Kurz and Johnson-Welch 1997; Makinson 1994; Miller 1981; Obermeyer and Cardenas 1997; Waldron 1987).

Gender bias in India was traced as early as the 1901 Census, which notes 'there is no doubt that, as a rule, she (a girl) receives less attention than would be bestowed upon a son. She is less warmly clad, ... she is probably not so well fed as a boy would be, and when ill, her parents are not likely to make the same strenuous efforts to ensure her recovery' (1901 Census, quoted in Miller 1981: 67). Due to unequal treatment of women, India now has the largest share of 'missing women' in the world (Klasen et al 2001). Female infanticide has been widely recorded in India, especially in North and North-western India (Clark 1983; Jeffery et al 1984). Such a practice has also been noted recently in South India, in Tamil Nadu (Chunkath and Athreya 1997; George et al 1992). Also the advanced technology to determine sex of the foetus helps in female foeticide (Sinha et al 2005).

Gender bias, even when it is not disastrous, may still create greater debility among surviving girls and its effect may be perpetuated over generations (Merchant and Kurz 1992; Mosley and Becker 1991; Mosley and Chen 1984; Pande 2003; Sen 1998). If the 'Barker thesis' (i.e., foetal origin of adult diseases hypothesis) (Barker 1995, 1993) is true, there is a possibility of a causal connection 'that goes from nutritional neglect of women to maternal under-nourishment, and from there to foetal growth retardation and underweight babies, thence to greater child under-nourishment' and to a higher incidence of permanent disadvantages in health much later in adult life (Osmani and Sen 2003; Sen 2005: 248). What begins as a neglect of the interests of women ends up causing adversities in the health and survival of all—even at
advanced ages' (Sen 2005: 248). Thus, gender bias not only hurts women, but inflicts a heavy economic cost on the society by harming the health of all, including that of men (Osmani and Sen 2003). Gender bias can be a blend of 'active' bias (e.g., 'intentional choice to provide health care to a sick boy but not to a sick girl'), 'passive' neglect (e.g., 'discovering that a girl is sick later than that would be the case for a boy, simply because girls may be more neglected in day-to-day interactions than are boys'), and 'selective favouritism' (choices made by resource-constrained families that favour those children that the family can ill afford to lose) (Pande 2003).

Women in India face discrimination in terms of social, economic and political opportunities because of their inferior status. Gender bias prevails in terms of allocation of food, preventive and curative health care, education, work and wages and, fertility choice (Arokiasamy 2004: 835; Miller 1997; Pande et al 2003; Pandey et al 2002). A large body of literature suggests that son preference and the low status of women are the two important factors contributing to the gender bias against women. The patriarchal intra-familial economic structure coupled with the perceived cultural, religious and economic utility of boys over girls based on cultural norms have been suggested as the original determining factors behind the degree of son preference and the inferior status of women across the regions of India (Arokiasamy 2004: 836; Pande 2003; Sinha et al 2005). Daughters are considered as a net drain on parental resources in patrilineal and patrilocal communities (Dasgupta 2000). Intra-household gender discrimination has primary origins not in parental preference for boys but in higher returns to parents from investment in sons (Hazarika 2000).
1.2.4 Gender Bias in Child Health in India — The Present Scenario:

Gender bias in child health prevails even today when India is “shining” in terms of aggregate economic growth indicators. The Tables-1.2-1.4 show gender bias in indicators of health outcome and health-seeking behaviour from the latest round of National Family Health Survey (NFHS)-3 (2005-06) data.

**TABLE-1.1: Percentage of illiterates among males and females of age 15-49 years**

<table>
<thead>
<tr>
<th></th>
<th>India Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>18.0</td>
</tr>
<tr>
<td>Female</td>
<td>40.6</td>
</tr>
</tbody>
</table>

Source: IIPS (2007)-Table 3.2.1 (pp-56) and Table 3.2.2 (pp-58)

**TABLE-1.2: Gender Bias in Mortality Rate (per 1000)**

<table>
<thead>
<tr>
<th></th>
<th>Urban</th>
<th>Rural</th>
<th>India</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boy</td>
<td>33.0</td>
<td>43.7</td>
<td>40.9</td>
</tr>
<tr>
<td>Girl</td>
<td>23.4</td>
<td>41.3</td>
<td>36.8</td>
</tr>
</tbody>
</table>

Source: IIPS (2007)-Table 7.3 (pp-184-5)

**TABLE-1.3: Gender Bias in Preventive Care and Nutrition (in %)**

<table>
<thead>
<tr>
<th></th>
<th>Full Immunisation Coverage (children age 12-23 months)</th>
<th>Vitamin-A Supplementation in last 6 months (children age 12-35 months)</th>
<th>Malnutrition (for age under 5 years; less than -2 SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Underweight</td>
<td>Stunting</td>
<td>Wasting</td>
</tr>
<tr>
<td>Boy</td>
<td>45.3</td>
<td>25.2</td>
<td>41.9</td>
</tr>
<tr>
<td>Girl</td>
<td>41.5</td>
<td>24.5</td>
<td>43.1</td>
</tr>
</tbody>
</table>

Source: IIPS (2007)-Table 9.4 (pp-229), Table 10.15 (pp-292), Table 10.1 (pp-270)

**TABLE-1.4: Gender Bias in Curative Care and Feeding Practice**

<table>
<thead>
<tr>
<th></th>
<th>Fever (% of children under 5 years with fever for whom treatment was sought)</th>
<th>Diarrhoea (in %) (among children under age 5 years who had diarrhoea in the last two weeks)</th>
<th>Breastfeeding (median duration in months among last born children in the last three years)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Taken to a health provider No treatment</td>
<td>Any Breastfeeding Exclusive Breastfeeding</td>
<td></td>
</tr>
<tr>
<td>Boy</td>
<td>72.8</td>
<td>61.6</td>
<td>25.6</td>
</tr>
<tr>
<td>Girl</td>
<td>68.4</td>
<td>57.7</td>
<td>26.8</td>
</tr>
</tbody>
</table>

Source: IIPS (2007)-Table 9.9 (pp-237), Table 9.12 (pp-242), Table 10.7 (pp-281)

Boys are more likely to die than girls in their neonatal age (on a biological basis). But after the first month of life, when factors other than biological ones begin to dominate, girl children face an increasingly
greater risk of dying than boys. In the post-neonatal period, girls' mortality exceeds boys' mortality by 36 percent in India (Table-1.2). The child mortality rate (deaths between 1-4 years age) and also the under-five mortality rate are higher for girls than boys (by 61 percent and 14 percent respectively) when the socioeconomic and demographic factors are likely to play their role (IIPS 2007: 183). Thus it seems that gender bias 'is likely to be the main pathway for excess female child mortality' (Pande 2003). 'The persistence of such discrimination against girls in South Asia, particularly in India, stems from the perceived greater economic, social, and religious utility of sons than of daughters' (Pande 2003).

It is also evident that there is gender bias in nutrition, preventive and curative health care and feeding practices (Table-1.3 and -1.4). The full immunisation coverage rate is almost nine percent higher for boys than girls of age 12-23 months. 'Boys are also somewhat more likely than girls to receive each of the individual vaccinations' (IIPS 2007: 230). Boys are three percent more likely to receive vitamin-A supplementation (to prevent night blindness) than girl children. Among the three measures of malnutrition, underweight (weight-for-age) is a composite index of stunting (height-for-age) and wasting (weight-for-height). It accounts for both acute and chronic malnutrition. Girl children are almost three percent more underweight than boys (IIPS 2007: 270). In case of fever, treatment was sought for boys are six percent more than that of girls (IIPS 2007: 237). Girl children are also five percent more likely to not to receive any treatment and seven percent less likely to be taken to a health facility or provider in case of diarrhoea than male children (IIPS 2007: 242).

UNICEF and WHO recommend that children be exclusively breastfed—fed only breast milk with no other liquids (including water) or food—on demand for the first six months of life. Pre-lacteal feeding—giving liquids or foods other than breast milk prior to the establishment
of regular breast-feeding—deprives the child of the valuable nutrients and protection of colostrums and exposes the newborn to the risk of infection. Iron, lack of which causes irreversible cognitive impairments, in breast milk is generally adequate for term infants of birth weights greater than 2500gm who are exclusively breastfed for the first six months of life. During the transition period (age 6-23 months), when the child is given small quantity of family diet, the prevalence of malnutrition increases substantially in many countries because of increased infections and poor feeding practices (Mukuria, Kothari and Abderrahim 2006). Among the last-born children, boys are 11 percent more exclusively breastfed than girls (IIPS 2007: 281), and boys receive eight percent more of any breastfeeding (i.e., breastfeeding along with other supplementary diet) than girls. Among children under age five years with symptoms of acute respiratory infection (ARI), treatment was sought from a health facility or provider for 72 percent of the boys but only 66 percent of the girls (IIPS 2007: 235). For children age 6-59 months, girls are more anaemic than boys (IIPS 2007: 289).

1.2.5 Gender Bias in Child Health in India—Determinants and Regional Perspective:

There are several conflicting findings in the literature on the issue of gender bias. For example, gender bias tends to diminish with higher female literacy (Bourne and Walker 1991) and lower female literacy (Basu 1992); with higher levels of poverty (Krishnaji 1987; Dasgupta 1993; Miller 1993) and lower levels of poverty (Agarwal 1986); with higher levels of fertility (Das Gupta 1993, 1994) and lower levels of fertility (Basu 1992; Das Gupta 1987). Other household opportunities (e.g., urbanisation, higher household standard of living, better parental education, mother’s empowerment, etc.) can also affect gender bias. Female household headship can also affect female disadvantage. The
reasons behind women household headship may be economic, sociological, geographical or ecological (Bose 2006).

Rosenzweig and Schultz (1982) found that enhanced employment opportunities for adult women tend to raise the relative survival chances of girls. Kishor (1993, 1995) also shows that the relative survival chance of girls is positively related to female labour force participation. 'Higher levels of female literacy and (female) labour force participation are strongly associated with lower levels of relative female disadvantage in child survival' (Sen 2005: 244). Gender bias in child survival could also be affected by some other variables, e.g., mortality, fertility, development indicators, geographical location, etc. It is evident that gender bias in child survival tends to be relatively low among poor households, among backward castes, and among households with high levels of female labour force participation (Murthi et al 1995).

Given that there is a strong preference for sons in India, there are significant variations in the extent of this preference within the country (Sinha et al 2005). Prevalence of 'female disadvantage' is evident in large parts of India, particularly in the large northern states rather than the southern states (Caldwell, Reddy and Caldwell 1982; Caldwell and Caldwell 1990; Das Gupta 1987; Ganatra and Hirve 1994; Govindaswamy and Ramesh 1996; Kishor 1995; Murthi et al 1995; Ravindran 1986; Sinha et al 2005; Visaria 1988). There exists a 'Bermuda Triangle' for the female child in India in a zone of 24 districts consisting parts of Rajasthan, Haryana, western Uttar Pradesh and Madhya Pradesh (Agnihotri 1996). The country can be roughly divided into two by a line that resembles the contours of the Satpura hill range, extending eastward to join the Chota Nagpur hills of southern Bihar. To the north of this line sex ratios are high and to the south sex ratios are comparatively low (Dyson and Moore 1983; Sinha et al 2005). Dyson and Moore (1983) have explained the North-South demographic divide in
terms of female autonomy, *i.e.*, decision-making ability regarding personal matters, with low female autonomy in the North compared to higher female autonomy in the South.

Boys are much more likely than girls to be taken to a health facility when sick in both north and south India (Caldwell, Reddy and Caldwell 1982; Caldwell and Caldwell 1990; Das Gupta 1987; Ganatra and Hirve 1994; Govindaswamy and Ramesh 1996; Kishor 1995; Murthi *et al* 1995; Ravindran 1986; Visaria 1988). Again, girls are more likely to be malnourished than boys in both northern and southern states (Arnold *et al* 1998; Basu 1989; Caldwell and Caldwell 1990; Das Gupta 1987; Osmani and Sen 2003; Pebley and Amin 1991; Sen and Sengupta 1983; Wadley 1993). The states with strong anti-female bias include rich ones (Punjab and Haryana) as well as poor (Madhya Pradesh and Uttar Pradesh), and fast-growing states (Gujarat and Maharashtra) as well as growth-failures (Bihar and Uttar Pradesh). It is thus clear that we have to look beyond material prosperity or economic success or GNP growth into broadly cultural and social influences' (Sen 2005: 230). ‘... variables that relate to the general level of economic development and modernisation turn out, in these (Murthi *et al* 1995; Drèze *et al* 2001) statistical studies, to have no significant effect on gender bias in child survival, and can sometimes—when not accompanied by empowerment of women—even strengthen, rather than weaken, the gender bias in child survival. This applies *inter alia* to urbanisation, male literacy, the availability of medical facilities, and the level of poverty. In so far as a positive connection does exist in India between the level of development and reduced gender bias in (child) survival, it seems to work mainly through variables that are directly related to women’s agency, such as female literacy and female labour force participation’ (Sen 2005: 244).
1.2.6 **Determinants of Gender Bias in Child Health in India**:

The present position (also sourced from NFHS-3 data) of the proximate variables that could reduce gender bias in child health is also far from satisfying. For example:

- **Mother’s Education**: Almost half of all Indian women are illiterate. Education is a catalyst of change and its role in the process of national development cannot be over-emphasised. Women’s education is also critical for meeting the country’s health and demographic goals. High levels of women’s education are consistently associated with lower fertility and infant mortality and with better nutrition and health of women and children. It also has a strong bearing in reducing gender bias in child health from a long run policy perspective.

- **Standard of Living Index/ Wealth Index**: Households that have a low standard of living perform distinctly worse on most health and demographic outcome indicators than households that have a relatively high standard of living. How SLI will reduce gender bias in child health is quite misleading. One would expect that rise in SLI will help to reduce gender bias in child health; however, there are strong reverse examples of high per-capita income states like Punjab.

- **Mass Media Exposure**: 35 percent of all Indian, 45 percent of rural and 60 percent of illiterate women are not regularly exposed to any form of mass media (IIPS 2007: Table 3.5.1, pp-64-5). Mass media spread the Reproductive and Child Health (RCH) messages in a simple manner to raise awareness of the people that would help to reduce gender bias in child health.

- **Mother’s Age**: Early childbearing is fairly common in India. Twelve percent of all women aged 15-19 years and 44 percent of currently married women aged 15-19 years have already had a child (IIPS 2007: Table 4.5, pp-86). Among women aged 15-19 years, 27 percent are currently married. Among women aged 20-49 years, 27 percent
married by age 15 and 58 percent married before age 18 year, the legal minimum age at marriage for women set by the Child Marriage Restraint Act (1978) and 74 percent married before reaching age 20. The median age at first marriage is 17.2 (IIPS 2007: Table 6.1 and 6.2, pp-162-3). Children of young mothers are more likely to have physical debilities and higher health risks. But it is not clear how mother’s age affects gender bias.

- **Women’s Employment**: 57 percent of women of age 15-49 year were not employed in the 12 months preceding the survey. Women are about half as likely as men in India to be employed (IIPS 2007: 70-1). Higher women’s employment raises values attached to female children and help to reduce gender bias in child health.

- **Women’s Empowerment**: Among employed women, 24 percent are not paid. Only 24 percent of women who earn cash incomes can decide independently how to spend the money that they earn. Only about a quarter of currently-married women make decisions about their own health care and eight percent of currently-married women make decisions about major household purchases. Only 15 percent of women aged 15-49 years have a bank or saving account that they themselves use. Again, a higher level of women’s empowerment is expected to reduce gender bias in child health.

- **Antenatal Care**: Among the mothers who had a live birth in the five years preceding the survey, 52 percent had at least three antenatal visits. Only 41 percent of deliveries take place in health facilities, up from 34 at the time of NFHS-2 (1998-99). Antenatal care, indirectly by raising awareness, can reduce gender bias in child health.

- **Female Household Headship**: Females head only 14 percent of the households. Female household headship is also expected to reduce gender bias in child health.
Electricity: 68 percent of the households have electricity facility. It is expected to support in reducing gender bias in child health, although indirectly.

There is also the possibility of some connections by which the interaction of more than one proximate variable could affect gender bias in child health. For example, rise in literacy raises women's empowerment and both of these help to boost antenatal care and thereby reduce gender bias in child health.

1.3 Objective and Research Questions:

The study will make an attempt to identify the pattern of gender gaps in child health in India, to find out its socioeconomic and demographic determinants and explore the possible role of female education and women's agency in reducing the gender gap. It will focus on selected indicators of health outcomes (e.g., post-neonatal mortality, child mortality, prevalence of malnutrition) and health-seeking behaviour (e.g., immunisation coverage [preventive health care], medical treatment in diarrhoea and medical treatment in fever/cough [curative health care] and breastfeeding [feeding practice]). Here neonatal mortality is not considered because it is least affected by socioeconomic and demographic indicators and is mostly due to biological reasons. On the basis of exploratory data analysis, the study intends to address the following questions:

- Is there evidence of gender gap in various indicators of health-seeking behaviour (e.g., immunisation coverage, medical treatment in diarrhoea, medical treatment in fever/cough and breastfeeding), and if so, how does the gender gap vary between different regions?
- Is there evidence of gender gap in various health outcomes (e.g., post-neonatal mortality, child mortality, malnutrition), and if so, how does the gender bias vary between different regions?
• If gender gap exists, what is the regional pattern of gender gap in child health in India? How has this regional pattern of gender gap changed over the study period of almost one-and-a-half decades?
• Can the gender gap (if any) in various health outcomes be related to a corresponding gender gap in various indicators of health-seeking behaviour? For instance, to what extent is the gender gap in child mortality accounted for by gender differences in immunisation rates, length of breastfeeding, etc.?
• What are the socio-economic and demographic determinants of gender gap in health outcomes and health-seeking behaviour?
• How does female education and women’s agency affect the gender gap in health outcomes and health-seeking behaviour?
• Are the results of previous analyses robust?

1.4 DATA AND METHODOLOGY:

The present study uses secondary data from National Family Health Survey (NFHS)-III (2005-06), NFHS-II (1998-99), and NFHS-I (1992-93). ‘NFHS-III collected information from a nationally representative sample of 109,041 households, 124,385 women age 15-49, and 74,369 men age 15-54. The NFHS-III sample covered 99 percent of India’s population living in all 29 states’ (IIPS 2007: xxix). ‘The NFHS-II survey covered a representative sample of more than 90,000 eligible women age 15-49 from 26 states that comprise more than 99 percent of India’s population’ (IIPS 2000: xiii). The NFHS-I survey covered a representative sample of 89,777 ever-married women age 13-49 from 24 states and the National Capital Region of Delhi, which comprise 99 percent of the total population of India (IIPS 1995: xix). The survey provides state-level estimates of demographic and health parameters as well as data on various socioeconomic and demographic factors that are
critical for bringing about desired changes in India's demographic and health situation.

According to Visaria et al (1999), NFHS-I was a 'landmark in the history of collection of demographic data through surveys'. They also argued that the view that the data provided by the Indian censuses and the sample registration system is adequate is 'not correct'. Comparability between the censuses and the incorporation of the 'Brass questions' in 1981 census are problematic. '...given the widespread age-misreporting and the likelihood of a net undercount in the census, there is no single estimate even on the size of population, or the number of women, children, youth, or the aged in the country' (ibid). Regarding the quality of census data, Bose (2008) argued for 'a serious look at the census methodology ... to assess the accuracy of the censuses'.

Estimates of birth and death rates based on the civil registration data understated the level of fertility and mortality and gives birth of the Sample Registration Scheme (later System) (SRS) (started on pilot basis in 1964, extended to rural India in 1967 and urban areas in 1969) (Visaria et al 1999). 'On vital rates, however, the National Sample Survey could not provide dependable estimates. The estimates of birth, death and infant mortality rates, obtained in the 1973-74 survey were so low, relative to the SRS rates, that they were not published' (ibid). Narasimhan et al (1997) have shown that there are higher rates of under-registration of births in SRS compared with NFHS data. Methodological difference between SRS and NFHS are discussed in chapter four.

In comparison to others, NFHS is an independent nationwide survey and presumably generates valid estimates on an array of indicators. Regarding the quality aspect, in NFHS, there was a team of investigators usually accompanied by a supervisor and an editor, who checked and edited the data on computer on site. 'In India, data on marriage, use of contraception, duration of breastfeeding and length of
post-partum amenorrhoea and outcome of pregnancies have for the first time become available from one source—the NFHS’ (Visaria et al. 1999). In the foreword of the NFHS-I India report it is mentioned that the ‘principal objective’ of it was to provide ‘state-level and national-level estimates of fertility, infant and child mortality, the practice of family planning, maternal and child health care and the utilisation of services provided for mothers and children’. ‘Another important objective of the NFHS was to provide high quality data to academicians and researchers for undertaking analytical research on various population and health topics’. Also NFHS rounds are more comparable to each other than any other available data set. Unit-level NFHS data are freely available on the website, where it is presented in a user-friendly format. There are several indicators in NFHS for which there is no information in SRS or in census. NFHS also extended its scope in terms of fields of enquiry over the years. ‘It is widely recognised that the NFHSs play a pivotal role in providing valuable conventional and non-conventional demographic and health information on India’ (Rajan et al. 2004). It is worth noting that the NFHS series is regarded as ‘storehouse of demographic and health data in India’ (ibid). The NFHS is ‘unique’ (or ‘unprecedented’) because of—uniformity of its questionnaires, sampling method, data collection, analysis of data; a representative sample in the north-eastern states for the first time; in-depth uniform training of interviewers and strict supervision (Kanitkar 1999, Bhat and Zavier 1999). The NFHS sampling design followed a systematic, multi-stage stratified random sample of households, all over the country (Kanitkar 1999). A post-survey check (with five percent of samples) of NFHS-I also confirmed its ‘high quality data’ (Singh 1999).

The predictor variables could be birth order of the child (1, 2, 3, 4 and above), residence (rural, urban), mother’s education (illiterate, primary, secondary, higher), mother’s age (19 or less, 20-24, 25-29, 30-49), antenatal care (no, yes), religion (Hindu, Muslim, Christian and
other religious minorities), caste/tribe (general, other backward class, scheduled caste, scheduled tribe), standard of living index (low, medium, high) or wealth index (poorest, poorer, middle, richer, richest), media exposure (no, yes), sex of household head (female, male), mother’s empowerment index (low, medium, high), zone of states (Central, North, East, Northeast, West, South), electricity (no, yes).

Children under age three years are the unit of the present analysis. A child data file is created by merging selected household and mother’s characteristics from household and women’s data files respectively.

The study identifies patterns of gender gap in post-neonatal mortality, child mortality, prevalence of malnutrition, immunisation coverage, diarrhoea treatment, fever/cough treatment, and breastfeeding. The gender gap is calculated as a relative gap between the achievement of boys and girls (first two questions). The study uses the Borda rule and Principal Component Analysis to see the regional pattern in gender gap in child health for the third question. For the fourth question, state-level OLS regression is undertaken. For the fifth question, binary bivariate and multivariate logit regression analyses are performed. Structural estimation of the full model is beyond the scope of the present study, which estimates a few reduced form models examining the magnitude of gender bias in child health after controlling for socioeconomic and demographic factors that could influence gender bias. Logistic regression results are presented in multiple classification analysis (MCA) form. This involves calculating unadjusted and adjusted values of the response variable for each category of every predictor variable. Unadjusted values are calculated from logit regressions incorporating only one predictor variable. Adjusted values are calculated from logit regressions incorporating all predictor variables simultaneously. When calculating the adjusted values for a particular predictor variable, all other predictor variables are controlled by setting them to their mean values in the underlying regression. Unlike OLS
regression, logistic regression does not assume the linearity of relationship between the dependent and independent variables, does not require normally distributed variables, does not assume homoscedasticity, and in general has less stringent requirements. The effectiveness of female education and women’s agency (sixth question), can be seen from the adjusted effects of the logistic regression results. The robustness of the results is tested using the first and second round of the NFHS dataset.

1.5 Significance of the Study:

The dual causality between health and wealth is well documented, although there are debates regarding the extent of the strength of each causality as well as its gradient. Health and mortality status of infants and gender bias in health are ‘synoptic indicators’ of a society’s present social condition. A study of socioeconomic determinants of gender bias in child health is relevant as an area of research in its own right, since children are relatively helpless and subject to the social setting in which they born. Health being one of the most basic capabilities, the removal of gender bias in child health can go a long way in achieving gender parity in many other dimensions of human development. Identification of the determinants of gender bias in child health therefore has the potential to support gender-specific health policies that would make women more independent and empowered to add force to women’s agency and thus achieve some of the goals laid by the Millennium Development Declaration (declared in Sep, 2000 by 189 countries). The recognition of the role of female education and women’s agency in reducing gender bias in child health might help in reshaping policy perspectives that are sometimes myopic and insensitive to the more important long term goal of removing gender bias.