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Gender Gap in Adult Malnutrition : How Does India Fare?

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Abstract

This paper examines two interrelated questions: What is the extent of gender gap in adult malnutrition in India and whether such gender gap is specific to India alone? These questions are examined by analysing the National Family Health Survey (2005-06) unit-level data. The analysis suggests that a huge gender gap in iron-deficiency anaemia coexists with an absence of a gender gap in CED. These contrasting patterns indicate that the gender gap in nutrition is likely to be complex than generally thought of. This complexity is reinforced further by a wealth-based hierarchy in CED and a gender-based hierarchy in anaemia.

These contrasting patterns raise a number of important issues. But, it also appears that these contrasting patterns are not specific to India alone. In fact, a huge gender gap in anaemia is found in almost all regions of the world. But, what renders India different is the much higher levels of incidence. This higher level of incidence clearly calls for a detailed enquiry so as to identify the possible causes and potential cures.

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Gender Gap in Adult Malnutrition: How Does India Fare?

The paper seeks to examine the extent of gender gap in adult malnutrition in India. By extension, it also tries to assess that how does it differ from other developing countries. Incidence of undernutrition—an indication of absence of freedom to lead a minimally healthy life—remains quite high among adult women (15-49 years)¹ in India: about 36 per cent of adult women in India suffer from chronic energy deficiency indicated by a body mass index below 18.5 in 2005-06. This is much higher than the incidence in most countries of Sub-Saharan Africa. For instance, of the 23 countries of Sub-Saharan Africa for which comparable data exist, with a singular exception of Eritrea all other countries have much lower incidence than that of India (Deaton and Dreze 2009, p. 54). Similarly, among 26 countries having comparable data on iron-deficiency anaemia, only four countries, such as Mali, Senegal, Ghana and Congo, have higher incidence than do India (55.3 per cent).²

Why does undernutrition among women in India remain quite high? The answer for this simple question is far from simple. Nonetheless, analyses on women's malnutrition do suggest that there is something regressive in the culture of the South Asian region that leads to the excessive neglect of women's nutrition, in addition to the usual determinants (Ramalingaswami et al 1996; Osmani and Bhargava 1998; Osmani and Sen 2003; Sethuraman and Duvvury 2007). These regressive aspects include, but by no means are limited to, the discriminatory practices against women in the allocation of healthcare and food and the excessive demands made on the time and energies of women (Ramalingaswamy et al 1996; Osmani and Bhargava 1998; Osmani and Sen 2003).

These analyses give birth to—by implication—a rather powerful perception: the supposed advantage of men in nutritional attainment. That is, given the entrenched norms and discriminatory practices against women, incidence of malnutrition among adult men *would be* much lower than among women in India. This perception persists pervasively despite scanty evidence, which relates to, to some extent, the paucity of data. The availability of a representative and comparable data on aspects of nutrition for men, along with women, in India for the first time enables us to examine the empirical basis of this belief. Apart from the verification of a belief, it is intrinsically important to know how women in India fare vis-à-vis men in nutritional attainment, one of the centrally important aspects of human development.

The questions the paper endeavours to examine are the following: Whether adult women in India lag far behind the men in nutritional attainment? Where is the gender gap in malnutrition higher: among poor households where hunger coexists with the absence of rigid norms against women or among richer households where the reverse seems to hold good? Additionally, do men from poor households and disadvantaged social groups have better nutritional attainments than women from non-poor households and advantaged social groups, or *vice versa*? What matters more, the household wealth or ethnicity, as far as the gender gap in nutrition is concerned? Does the gender gap in malnutrition vary in line with the varying intensity of norms and practices against women across the regions and states of

India? These questions are examined by analysing the National Family Health Survey-3 (2005-06) unit-level data.

Data and Measures

As stated above, the analysis makes use of the National Family Health Survey-3 (NFHS-3, hereafter), unit-level data, which provide nutritional information for men, along with women, for the first time in India.³ NFHS-3 provides information on two aspects of nutrition, such as the Body Mass Index and Iron Deficiency Anaemia, for 116,855 women aged 15-49 years and 70,130 men aged 15-59 years. The survey, carried out during 2005-06 in all the states of India, adopted systematic and uniform sampling techniques and field and clinical procedures (see IIPS and Macro International 2007 for details), and thereby yields comparable estimates on nutritional attainment from a large and representative sample. To ensure uniformity, the analysis is confined to women (116,855) and men (64,736) belonging to 15-49 years only.

How do we measure malnutrition? The Body Mass Index (BMI), which measures the weight to squared height (W/H^2), below 18.5 is normally referred to as thinness or chronic energy deficiency (CED). By contrast, BMI above 25.0 and 30.0 refer respectively to overweight and obesity, which are also indicative of poor nutrition. From the perspective of human development, incidence of CED, which indicates the lack of freedom to lead a minimally healthy life, would matter more than that of overweight/obesity, which also relate to, inter alia, unhealthy lifestyle. Similarly, if haemoglobin in the blood is less than 11.9 grams/decilitre, it is taken as an indication of anaemia, in terms of deficiency of iron in the blood. We will examine how do women and men fare in these two aspects of malnutrition in India.

Gender Gap in Malnutrition

Three broad patterns can be seen from Table 1, which presents the incidence of malnutrition among adult women and men in India. One, around 36 per cent of adult women suffer from CED in India. It has been observed that with closer to 40 per cent of women being suffering from CED, 'the situation can be considered critical in India' (Black et al 2008, p. 244).⁴ But the incidence of CED among adult men is no less either: it is only marginally lower than among women. Hence, the gender gap in CED remains quite marginal. The gap does not go up, even if we disaggregate the incidence of undernutrition in terms of its severity, from mild/moderate to severe. By contrast, a marginally higher percentage of women are overweight/obese than men. Spatially, the incidence of CED among women is much higher in rural than urban India—the difference is as high as 15 percentage points. This huge spatial difference appears among men as well.

Two, much larger proportion of adult women than men are anaemic, in terms of iron-deficiency, in India. The difference stands as high as about 30 percentage points. Contrary to CED, the spatial gap in anaemia is smaller among women, though a fair measure of gap does exist among men as well. While the gender gap remains quite high, in absolute terms, in both rural and urban India, it is relatively higher in urban than rural India. The incidence

of anaemia is about 10 percentage points lower than the incidence of CED among men, the reverse holds good for women—incidence of anaemia is 20 percentage points higher than the incidence of CED.

Three, the incidence of CED among urban women is not only marginally lower than that of urban men, it is also substantially lower (by 12 percentage points) than the incidence among rural men as well. By contrast, incidence of anaemia among rural men is much lower (by 23 percentage points) than the incidence among urban women. These clearly call for going beyond the broad, binary distinction between women and men, as it can possibly cloak certain region specific patterns.

Table 1: Incidence of malnutrition among adult women and men in India, 2005-06 (%)

				Rural			Urban		
	Women	Men	Gap	Women	Men	Gap	Women	Men	Gap
CED*	35.6	34.2	1.4	40.6	38.4	2.2	25.0	26.5	-1.5
Mild/Moderate	28.7	28.6	0.1	33.0	32.3	0.7	19.6	21.7	-2.1
Severe	6.9	5.6	1.3	7.6	6.1	1.5	5.4	4.8	0.6
Overweight/Obese	12.6	9.3	3.3	7.4	5.6	1.8	23.5	15.9	7.6
No. of persons	111,781	65,741		75,415	42,438		36,366	23,303	
<i>Anaemia</i>									
Any anaemia	55.3	24.2	31.1	57.4	27.7	29.7	50.9	17.7	33.2
Mild/Moderate	53.5	22.9	30.6	55.5	26.1	29.4	49.4	17.0	32.4
Severe	1.8	1.3	0.5	1.9	1.6	0.3	1.5	0.7	0.8
No. of persons	116,855	64,736		79,888	41,963		36,976	22,773	

Note : * Excludes pregnant women and those who gave birth within two months preceding the survey.

Source: Computed from NFHS-3 unit-level data

These broad patterns seem to neither fully conform to, nor militate against, the widely held notion. Instead, they indicate that the gender gap in nutrition is likely to be quite complex than generally thought of: women and men are equally disadvantaged in one aspect, whereas women are unequally disadvantaged in another aspect of nutrition. These contrasting patterns also pose a rather disquieting question: Why does the gender gap remain quite low in CED and substantially high in iron-deficiency anaemia? Before attempting an answer, it is essential to examine whether these broad patterns remain unchanged across the economic and social groups in India. This is important for at least two related reasons.

First, these broad patterns might cloak, as seen above, certain patterns specific to economic and social groups as well. Second, it is clear that the incidence of undernutrition among women from the poor and disadvantaged social groups in India remains unequally high (Jose and Navaneetham 2008). But, there is also some agreement that these disadvantaged groups in India do not strictly adhere to the rigid norms and practices against women (Bardhan 1993; Dreze and Sen 1995, p. 158; Miller 1997). This generates a rather

unique combination: the coexistence of hunger with less rigid gender norms among the poor or disadvantaged groups and the reverse among the rich or advantaged groups. Hence, assessing the extent of gender gap among the economic and social groups is of some relevance here.

Wealth and Social Groups

Table 2 presents the incidence of undernutrition among women and men across the wealth and social groups in India. Before discussing the incidence across the wealth groups, a note on the construction of wealth groups is in order. NFHS-3 did not collect information on household income or expenditure. Instead, it collected detailed information on a range of household assets and durables. Based on the approach advanced by Filmer and Pritchett (2001) which uses the possession of 33 household durables and assets to assess the wealth status of the households, all the households have been divided into five wealth groups or quintiles. We seek to assess the extent of gender gap across these wealth groups.

For a start, while over 50 per cent of women from the bottom wealth group suffer from CED, it is only 18 per cent at the top wealth group—a difference of about 32 percentage points or three times. This drastic decline, going along with a rise in the wealth status, gives rise to a stark and graded disparity, which is both unequal and unjust. Similar is the case with men as well, and the difference (29 percentage points) is only marginally lower than among women. The question that arises here is: What is the extent of gender gap in CED across these wealth groups? Surprisingly, not only is the gender gap quite marginal among the bottom wealth groups, but also the gap gets reversed to the favour of women among the top wealth groups.

Table 2: Malnutrition among social and economic groups in India, 2005-06 (%)

	CED*			Anaemia		
	Women	Men	Gap	Women	Men	Gap
<i>Wealth groups</i>						
Lowest	51.5	48.3	3.2	64.3	37.9	26.4
Second	46.3	42.4	3.9	60.3	30.2	30.1
Middle	38.3	37.4	0.9	56.0	24.8	31.2
Fourth	28.9	29.6	-0.7	52.2	18.8	33.4
Highest	18.2	19.1	-0.9	46.1	14.2	31.9
Lowest-Highest	33.3	29.2	—	18.2	23.7	—
<i>Social groups</i>						
Scheduled Tribes	46.6	41.3	5.3	68.5	39.6	28.9
Scheduled Castes	41.1	39.1	2.0	58.3	26.6	31.7
Other Backward Classes	35.7	34.6	1.1	54.4	22.3	32.1
Others	29.4	28.9	0.5	51.3	20.9	30.4
ST-Others	17.2	12.4	—	17.2	18.7	—

Note : Same as in Table 1.

Source: Computed from NFHS-3 unit-level data

Over 60 per cent of women from the bottom wealth groups are anaemic. Though the proportion declines, by 18 percentage points, well along with a rise in wealth status, the incidence among women from the top wealth groups is not low either—remains as high as 46 to 52 per cent. Despite much lower levels of anaemia, the extent of decline along with the improvement in the wealth status remains relatively higher (nearly 24 percentage points) among men than the corresponding decline among women. This generates a substantially huge gender gap in anaemia among all wealth groups. Contrary to CED, the gender gap in anaemia goes up, from 26 to 32 percentage points, along with a rise in the wealth status. Surprisingly, men from the bottom wealth groups have much higher incidence of CED than women from not only the top, but also the next two wealth groups. By contrast, incidence of anaemia among women from the top wealth group remains even higher than the incidence among men from the bottom wealth group.

Patterns almost parallel to the above appear among social groups as well. Incidence of CED remains as high as 47 per cent among Tribal women, though this is bit lower than the incidence among the bottom wealth group. Expectedly, a (so-called) rise in the social status goes along with a reasonable decline (17 percentage points), which is much lower than the decline associated with the rise in the wealth status. This implies that social and wealth statuses are associated with stark disparity in the incidence of CED among women. But, the extent of such disparity is much larger between the wealth than between the social groups. These clearly hold good for men as well. Here too, the extent of gender gap in CED is lower across all the social groups, and the largest gap (only 5 percentage points) is found among the Tribals.

Closer to 70 per cent of Tribal women in India are anaemic, which is marginally larger than that found among the bottom wealth group. Yet again, social differentiation coexists with a fair degree of difference, which, incidentally, is same as that of the difference between wealth groups. However, despite this huge difference between the social groups, incidence of anaemia remains quite high among all social groups. Interestingly, not only is the incidence of anaemia among men lower than the incidence of CED, the extent of decline is even larger than that of CED. This leads to substantial gender gap in anaemia across all social groups. In fact, the extent of gender gap in anaemia among Tribals and Scheduled Castes is marginally higher than that of the bottom two wealth groups. A cross-comparison between women and men across wealth and social groups suggests some interesting patterns. Incidence of CED among men from the bottom wealth group and Tribals is much larger than the incidence among women from the top quintile and advantaged social groups (Others), respectively. The pattern emerging from anaemia goes contrary to the above.

Can we infer from these broad patterns whether the gender gap in undernutrition is larger among richer households and advantaged social groups or vice versa? The answer is far from sure. Not only does the gender gap in CED remain lower across all wealth and social groups, but also marginal among richer wealth groups and advantaged social groups. Conversely, substantially large gender gap in anaemia appears across all wealth and social groups, and the gap is marginally higher among the richer and advantaged social groups. Moreover, incidence of CED remains higher among wealth groups when compared to social groups, and the inter-group disparity is also higher among the former than the latter. Contrary to this is the incidence of anaemia, which remains higher among social groups than wealth groups, though inter-group disparity remains almost same among wealth and social groups.

Wealth Groups within Social Groups

These complex and diametrically opposing patterns refuse to fit within any simple, generalised explanation. One of the factors that contributes to this complexity is the great degree of intersection between social and economic disadvantage, or lack of it. Though social and economic disadvantage reinforce the nutritional disadvantage, it is difficult, from the above discussion, to disentangle the influence of one from the other. But it is important to know, at least at the basic level, what matters more, the wealth status or social identity, as far as gender gap in adult malnutrition in India is concerned. This is attempted with the help of a cross-tabulation between wealth and social groups, presented in Table 3.

Table 3 suggests a couple of reinforcing patterns. One, the gender gap in CED remains relatively lower among all wealth groups within each social group. The only notable exception is the second (lower) wealth group among Tribals. Two, much larger levels of gender gap in anaemia exist among all wealth groups within each social group. Interestingly, in all social groups the bottom and fourth groups have the lower and higher gap, respectively. As seen earlier, huge disparity in aspects of nutrition exists, among both women and men, between wealth groups in all social groups. Surprisingly, the disparity between social groups within each wealth group—that is, between poor Tribals and poor Others—remains rather marginal. This suggests that not only do women but also men from the poorer households suffer unequally when compared to their counterparts from richer households. The disparity appears unaltered among all social groups. Taken together, these would imply that wealth status tends to matter more than the social status as far as the attainment of nutrition for women and men are concerned. Yet again, poor men are far more disadvantaged, in the incidence of CED, than richer women in all the social groups. The pattern gets completely reversed in anaemia in all social groups.

Table 3: Gender gap among wealth groups within social groups in India, 2005-06 (%)

<i>Social groups</i>	CED*			Anaemia		
	Women	Men	Gap	Women	Men	Gap
<i>Scheduled Tribes</i>						
Lowest	53.4	48.2	5.2	73.8	48.0	25.8
Second	48.0	38.5	9.5	68.7	39.8	28.9
Middle	43.0	39.8	3.2	61.9	30.3	31.6
Fourth	31.6	30.5	1.1	61.8	25.8	36.0
Highest	22.6	22.1	0.5	52.8	18.5	34.3
<i>Scheduled Castes</i>						
Lowest	54.2	49.0	5.2	63.9	37.3	26.6
Second	48.2	44.6	3.6	60.7	29.3	31.4
Middle	38.8	37.1	1.7	56.7	24.5	32.2
Fourth	29.8	32.7	-2.9	55.2	20.2	35.0
Highest	23.1	23.8	-0.7	49.6	15.9	33.7
<i>OBCs</i>						
Lowest	48.1	47.2	0.9	59.5	31.7	27.8
Second	44.7	42.2	2.5	58.0	27.9	30.1
Middle	38.7	38.2	0.5	55.9	23.5	32.4
Fourth	29.0	29.0	0.0	51.9	18.1	33.8
Highest	19.4	19.7	-0.3	46.7	13.3	33.4
<i>Others</i>						
Lowest	52.0	49.7	2.3	61.3	38.0	23.3
Second	47.0	41.3	5.7	59.9	29.9	30.0
Middle	36.6	35.5	1.1	54.4	26.2	28.2
Fourth	28.4	29.4	-1.0	50.7	18.6	32.1
Highest	16.6	17.9	-1.3	45.0	14.4	30.6

Note : Same as in Table 1.

Source : Computed from NFHS-3 unit-level data

By and large, the patterns emerging from the previous two tables conform to the broad patterns emerging from Table 1. Nonetheless, they do also add an additional dimension. Gender gap in CED remains quite low in India, even across wealth and social groups. But, poor women and men, irrespective of their social groupings, suffer equally from unequal levels of CED. Conversely, huge levels of gender gap exist in anaemia across all social and wealth groups. Though anaemia among poor women remains quite higher than that of richer women, this does not mean that the incidence among the latter is low either. Instead, more than 45 per cent of richer women from all social groups are anaemic. However, when

economic disadvantage joins hands with social disadvantage, the outcome is depressingly higher, such as the incidence of anaemia among poor Tribal women.

In an interesting recent paper, Sen, Iyer and Mukherjee (2009) bring out an important finding which has a direct bearing on our attempt, and hence needs a brief discussion. With the help of a new methodology, which singles out the influence of gender from wealth, they establish an entrenched gender hierarchy, independent of wealth, in non-treatment for long-term ailments in rural Karnataka: the poorest women at the top, followed by poor women, non-poor women, and then come poorest men followed by poor men and non-poor men at the bottom (Sen, Iyer and Mukherjee 2009, p. 406). Since this finding has some relevance to our attempt, we are interested in ascertaining whether similar hierarchy emerges in the aspects of undernutrition in India as well. Table 4 presents the results.

Before discussing the results, a methodological note is in order. Following Sen, Iyer and Mukherjee (2009, p. 404), we have also regrouped the five wealth groups into three: the bottom, middle (consists of second and middle wealth groups) and top (consists of fourth and highest groups). A post-hoc analysis suggests that the mean differences between these five wealth groups are statistically significant. But comparing the nutritional performance of women and men from these five groups will yield ten groups which would render the discussion bit complex. Hence, notwithstanding the significant differences between these five groups, we have regrouped them into three so as to see whether such classification brings out any gender-based hierarchy.

Two contrasting patterns emerge from Table 4. A definite gender-based hierarchy emerges in the incidence of iron-deficiency anaemia: with much higher incidence, women, irrespective of the wealth differences, remain at the top. Though a hierarchy based on wealth does seem to emerge among both women and men, it is only additional and secondary to the gender hierarchy. By contrast, a clear wealth-based hierarchy seems to be in operation in the incidence of CED. Here, the poorest women are closely followed by poorest men, and non-poor women with much lower incidence remain at the bottom, who are preceded by non-poor men. Thus, if gender appears to be the mediating factor for anaemia, it is the wealth for CED.

Table 4: Undernutrition and gender hierarchy in India

<i>CED*</i>	%	<i>Anaemia</i>	%
Poorest women	51.5	Poorest women	64.3
Poorest men	48.3	Poor women	58.1
Poor women	42.2	Non-poor women	49.1
Poor men	39.8	Poorest men	37.9
Non-poor men	24.3	Poor men	27.3
Non-poor women	23.4	Non-poor men	16.5

Note : Same as in Table 1.

Source : Computed from NFHS-3 unit-level data

Clearly, the two broad but contrasting patterns persist despite our disaggregated analysis. Before examining the possible reasons for these contrasting patterns and the questions that spring from them, we must see whether any of the state in India deviates from these broad patterns. It is clear that the two broad patterns emerge across almost all the states in India (results are not shown here). The gender gap in CED remains either marginal or negative in most of the states. While the Eastern states with relatively larger gender gap remain as exception, the incidence is quite low in most of the North-Eastern states. Both the incidence of CED among women and the gender gap remain higher in Bihar, whereas the gap is negative in Tripura, though the incidence is the lowest in Sikkim. Contrary to the above, a substantially large gender gap in anaemia appears in all the states of India. The gap is the highest in Andhra Pradesh and lowest in Meghalaya. Assam and Kerala with the highest and lowest incidence of anaemia for both women and men remain at top and bottom of the spectrum, respectively.

It may be relevant to examine here whether the extent of gender gap varies across the regions of India. Surprisingly, the gender gap in CED remains quite low in almost all regions of India. The singular exception is the region East, which is also the region with the highest extent of gap. The North, with a marginal advantage of women over men, remains at the other end. Yet again, diametrically opposite pattern appears in the incidence of iron-deficiency anaemia—irrespective of the variation in the norms and their forms, all the regions exhibit a substantially large gender gap in anaemia. Surprisingly, the gap is relatively higher in the South, which is known for relatively less rigid norms and practices against women. Contrast to this is the region Central, which houses states which are typically known for the rigid norms and practices against women.

Some Possible Factors

It may be pertinent to pose a question here: Are these contrasting patterns pertain specifically to India? Interestingly, these same contrasting patterns do appear from other South Asian countries as also from countries of Sub-Saharan Africa. What is more, incidence of anaemia is much higher among women than among men, leading to a large gender gap, in almost all regions of the world, though the prevalence rates are higher in South Asia (Nube 2009, pp. 511-2). It, thus, appears that the two contrasting patterns, including the large gender gap in iron-deficiency anaemia, are not exclusively the problems of India. In a sense, these broad patterns convey that India is no different from the global phenomena on gender gap in undernutrition. Instead, what makes India, for that matter the South Asia in general, noteworthy is the much higher levels of undernutrition, especially anaemia, among women.

Before examining the factors responsible for the higher levels of anaemia among women in India, it may be useful to see what the studies have to offer for the absence of significant gender gap in CED. Two related arguments are proposed here. One, incidence of CED among women in South Asia including India, or for that matter in the developing countries in general, represents the adult undernutrition as a whole (Nube and Boom 2003). Two, there are some genetic factors which seem to predispose South Asian adults, both women

and men alike, to higher incidence of CED. Based on such belief, it is suggested to suitably modify the BMI estimate, especially the cut-off, so as to make it sensitive to such region-specific factors (Nube 2009).

Though the role of genetic factors in predisposing women and men to higher levels of CED might sound sensible and compelling to consider, what these genetic factors are and how much of the variation in CED is explained by these factors remain unexplained. Moreover, this raises yet another question. We have seen from Table 2 that levels of CED among richer women and men are much lower than their poor counterparts. This also means that the absolute levels are quite lower among the former: 18.2 and 19.1 per cent respectively. Does this imply that the genetic factors which predispose women and men to higher levels of CED in India work largely through the poor women and men? Though this does not render the genetic factors unimportant, whether the genetic predisposition happens for all women and men equally irrespective of their varying standard of living is a matter that requires a careful scrutiny.

Since the higher incidence of anaemia among women is possibly the primary reason for the huge gender gap, identifying its potential causes becomes paramount. There are at least two arguments that directly relate to the higher incidence of anaemia among women in India and South Asia in general. One, studies attribute the poor quality of diet, especially an insufficient dietary intake of iron coupled with the poor absorption of iron from these diets, for such higher incidence of anaemia among women (Gopalan and Aeri 2001; Thankachan et al 2007; Nube 2009). At least two issues emerge from this dietary inadequacy argument. If dietary inadequacy is the primary reason, it would imply that it is predominantly the problem of poor households in India.

As we have seen already, incidence of anaemia among women from the richer wealth groups and advantaged social groups, though lower than their poor and disadvantaged counterparts, is not low at all. Do these, then, imply that there is something, either the presence or absence, which makes women from all households vulnerable to anaemia? Herein, the poor absorption of iron becomes relevant. It appears that in addition to the loss of vitamins found in the vegetables due to the prolonged cooking, the presence of large amounts of phytic acids and polyphenols found in the meals of Indian households significantly inhibit the absorption of iron present in the cereals, pulses and vegetables (Thankachan et al 2007). Notwithstanding the problems in extending this argument to the whole of India, it certainly calls for a critical scrutiny of the traditional understanding on the aetiology of the constituents of food and the practices of cooking followed in India.

If these factors are collectively contributing to the deficiency of iron, what does the broadly similar geographic patterning of anaemia for women and men in India convey? Specifically, what is common in such diverse states as Kerala, Punjab, Goa, Manipur or Mizoram, which have low levels of anaemia among women and more so among men? Alternatively, what is common in the Eastern states of India, wherein levels of anaemia among women and men are much higher, which makes them different from other states of

India? No common pattern on food consumption among women appears from the top and bottom five states, ranked in terms of incidence of anaemia (Table 5). Though the absence of patterns specific to these two groups of states does not undermine the importance of adequate dietary intake, it does call for going beyond it.

The relevant question here is: Is there something, over and above the dietary inadequacy and poor absorption, which leads to the unequal incidence of anaemia among women in India? Herein, the other argument that the discrimination against women as one of the possible reasons (Osmani and Sen 2003; Nube 2009) gains significance. If discriminatory practices against women in the intra-household resource allocation are partly responsible for the huge gender gap in anaemia, then does the huge gender gap found in all the states of India imply that no state in India, or for that matter no wealth or social group, is free from discrimination against women? Also, does the huge gender gap in some of the southern states, especially Andhra Pradesh and Tamil Nadu, imply that these states are no more different from the other states of India?

Table 5: Consumption of specific foods at least once a week among women, 2005-06 (%)

	Anaemia	Milk/ Curd	Pulse/ Beans	Leafy Vegetables	Fruits	Fish/Chicken/ Meat
<i>Top five states</i>						
Kerala	32.8	61.6	73.1	57.5	65.7	87.2
Manipur	35.7	28.3	77.0	97.0	68.6	70.7
Punjab	38.0	70.7	85.0	85.2	37.6	4.3
Goa	38.0	53.1	85.9	83.1	80.9	88.3
Mizoram	38.6	21.8	66.9	92.0	48.4	49.8
<i>Bottom five states</i>						
West Bengal	63.2	30.7	87.4	97.4	26.6	86.9
Tripura	65.1	49.0	87.5	96.9	40.7	83.6
Bihar	67.4	57.8	95.9	97.2	34.1	18.3
Jharkhand	69.5	22.5	81.0	85.7	24.7	23.7
Assam	69.5	33.4	86.5	96.6	32.9	73.6

Source : IIPS and Macro International (2007, p. 302).

Importantly, how would social policy influence the household decision-making and remove the gender bias in intra-household resource allocation, if it is responsible for the huge gender gap? The efficacy of social policy in influencing the resource allocation decisions within the households towards women's favour remains far from sure. If not social policy, then what else can possibly ensure that women's dietary and health needs are met at the intra-household resource allocation? Studies, both theoretical and empirical, suggest women's bargaining power or autonomy as a potential factor which might be able to influence resource allocation decisions in their favour. Specifically, bargaining power or autonomy brings to

the fore women's value in the household and the effort and resources that will probably be spent in ensuring their well-being (Gill, Pande and Malhotra 2007, p. 1351).

Table 6: Women's autonomy and anaemia across the regions of India, 2005-06

	% of women with anaemia						
	North	Central	East	North-East	West	South	India
<i>Participate in decisions on</i>							
Daily purchases No	51.6	51.9	64.7	67.3	53.0	54.6	56.3
Yes	49.7	54.5	66.4	64.4	50.5	52.8	55.9
Own healthcare No	51.6	52.8	65.5	66.8	52.3	56.4	56.9
Yes	49.9	53.7	65.7	64.8	50.8	51.8	55.5
Visiting relatives/friends No	52.1	52.2	65.7	66.7	53.1	56.1	56.9
Yes	49.3	54.5	65.6	64.9	50.6	52.2	55.5
Major purchases No	51.4	52.5	65.5	66.0	52.9	55.2	56.6
Yes	49.6	54.2	65.8	64.9	50.2	52.0	55.5
<i>Participate in making</i>							
No decision	52.4	53.1	65.1	68.9	55.0	58.1	57.8
At least one decision	51.4	50.1	66.5	67.6	50.7	53.9	55.8
More than one (but not all)	50.5	52.9	64.9	63.6	51.3	52.2	55.2
All four decisions	48.8	55.5	66.3	64.9	50.4	52.1	55.8

Source : Computed from NFHS-3 data.

Construing participation in household decision-making as a proxy measure of women's autonomy, we have tried to assess whether an enhancement in autonomy goes along with a significant decline in anaemia among *currently married* women across the regions of India. It is surprising to note that participation in any of the four decisions, including the decision on own health care, fails to make a significant dent on the incidence of anaemia across the regions of India (Table 6). Since it is possible that many women might participate in more than one decision, let us examine whether an increase in number of decisions being participated makes any significant impact on the anaemia. Strangely, even an enhancement in autonomy does not seem to go with a significant decline in anaemia among currently married women in almost all the regions of India. The only exception seems to be the region South, where the decline is about six percentage points. If participation in these decisions can be taken as an indication of women's autonomy, then what appears from this table is not really encouraging.

Concluding Remarks

Is there a huge gender gap in the incidence of undernutrition among adults in India? The answer is far from clear. A huge gender gap in iron-deficiency anaemia coexists with an absence of a gender gap in CED. These contrasting patterns indicate that the gender gap in nutrition is likely to be quite complex than generally thought of. This complexity is

reinforced further by a possible wealth-based hierarchy in CED and a gender-based hierarchy in anaemia.

These contrasting patterns raise a number of disquieting questions. Why does gender gap remain quite low in one aspect of nutrition and substantially high in yet another aspect? What does specifically prevent the richer women and men from higher levels of CED? Similarly, what does collectively expose all women, rich and poor, to such higher levels of anaemia? If it is wealth which prevents richer women from higher level of CED, why doesn't it prevent them equally from anaemia? If the huge gender gap in anaemia indicates discrimination against women, what does lack of a gender gap in CED indicate?

Interestingly, the two broad patterns and these questions are not specific to India alone. The huge gender gap in anaemia found in almost all regions of the world would imply that these questions are applicable to them as well. But, what renders India different is the much higher levels of incidence. Deficiency in the dietary intake of iron, compounded by the poor absorption of iron found from the foods seems to be one of the primary causes for such higher incidence. Though the dietary deficiency argument has some merit and thereby raises a number of issues, it alone cannot fully explain the much higher incidence of anaemia among women, even from the richer households in India. Additionally, why does this dietary deficiency fail to affect men in India, both poor and rich?

Admittedly, our analysis fails to offer any definite, generic answer for the higher incidence of anaemia among women in India. Instead, what we have done is to question the taken-for-granted notions on the gender gap in adult malnutrition in India as well as to help refocus the locus of discussion: Why is incidence of iron-deficiency anaemia much higher among women than among men in India? Such higher incidence in all the states of India, irrespective of their variations, and among all wealth and social groups in India calls for a detailed and systematic examination so as to clearly identify the possible causes and potential cures. Such an attempt would also offer possible reasons for the substantially large gender gap in anaemia.

Notes

- ¹ We have preferred to deploy the term adult, for want of a better term, to refer to the age group 15-49, though it may not be the most appropriate term to use.
- ² This is based on the estimate, made with the help of Measure DHS STATcompiler on January 2010, on the incidence of iron-deficiency anaemia among countries wherein the DHS survey was carried out between 2003-04 and 2007.
- ³ Note that NFHS-2, carried out during 1998-99, provided nutritional information for women, but not for men. Also, NFHS-1, carried out during 1992-93, provided nutritional information for children, but not for women.
- ⁴ Note that Black et al (2008) made this observation based on the estimates from NFHS-2 (1998-99) data. The observation still holds good, as the decline in CED between 1998-99 and 2005-06, a period of higher rates of economic growth in India, has been quite marginal. See, in this regard, Jose and Navaneetham (2008).

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