Adult Under-Nutrition in India
Poverty or Ethnicity?

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The nutritional performance of adult women in India, at present, parallels a situation referred to famously as *The Asian Enigma*. Ramalingaswami, Jonsson and Rohde (1996) deployed this term to refer to the prevalence of higher levels of child under-nutrition in south Asia, despite its much better performance in economic and social spheres, than Sub-Saharan Africa. The analysis established that the Asian enigma was essentially a "low birth weight enigma", as the exceptionally high level of low birth weight was found to be the primary reason for the much higher incidence of under-nutrition, especially stunting, in south Asia than Sub-Saharan Africa (Osmani and Bhargava 1998). The low birth weight of babies relates essentially to the poor nutritional status of women (mothers, to be specific), which in itself has become a source for yet another enigmatic situation.

Prevalence of under-nutrition among adult women in India is among the highest in the world. About 36% of adult women (15-49 years) in India had chronic energy deficiency (CED, i e, body mass index (BMI) below 18.5) in 2005-06. This is much higher than the prevalence in most countries of Sub-Saharan Africa (for which comparable data exist). The higher under-nutrition among Indian *adults*,[1] despite a higher rate of economic growth, remains a puzzle, for want of empirically established reasons. However, a new hypothesis, very much in vogue at present, claims that there is no puzzle in this higher under-nutrition level. Instead, it is an outcome of an inappropriate measure. Hence, the higher under-nutrition among Indian adults is largely a statistical artefact, and not necessarily a fact. Specifically, the global cut-off used to measure under-nutrition, such as BMI below 18.5, overestimates its prevalence among Indian adults, because Indians as an ethnic group have something genetically specific to them which endows them with a relatively low BMI. This short note engages with this issue.

Enigma to Ethnic Predisposition

In an interview to *Tehelka* on 1 December 2012, Arvind Panagariya of Columbia University advanced this proposition to explain the higher prevalence of adult under-nutrition in India.[2] To a question, "Do you think that standard WHO indicators of adult nutrition (like the Body Mass Index or BMI) that we are currently using might be similarly flawed?" he answered in the affirmative by stating that

> This was indeed the conclusion of a 2008 study by Maarten Nube. Nube studied South Asian populations living in South Africa, Fiji and the US, and compared them with populations of other ethnicities living in the same countries, concluding that 'there exists among adults of South Asian descent an ethnically determined predisposition for low adult BMI' (Panagariya 2012).

Since Panagariya's answer is based solely on a study by Nube (2009), it is important to discuss this study briefly. In an attempt to shed some light on the Asian enigma of higher prevalence of adult under-nutrition despite better economic performance, Nube examined the prevalence of CED (BMI below 18.5) among population subgroups in three countries, namely, South Africa, Fiji and the US. His analysis brings out two important findings. First, he finds a relatively higher prevalence of CED among adult males and females from Indian/Asian population subgroups than among other population subgroups in these three countries. As an attempt to find the reasons for this higher prevalence, he examines a number of correlates. However, he finds that the correlates he considered fail to explain the higher prevalence of CED among Indian/Asian adults. Based on these findings, he proposes the following two hypotheses:

> First, 'on the basis of these outcomes it is *hypothesized that there exists among adults of South Asian descent an ethnically determined predisposition for low adult BMI.* This ethnic predisposition can be based on both *genetic* and *cultural factors*'. Second, 'it is further *hypothesized that such predisposition is mainly expressed under relatively low levels of living conditions* as prevailing in low income countries or in low-income segments of higher income countries' (Nube 2009: 519, emphasis added).

It is clear that Nube puts forth ethnically determined predisposition for low BMI for south Asian adults as a likely explanation, in the form of a hypothesis. To be sure, hypothesis cannot constitute definite evidence. To transform a hypothesis into evidence would require empirical proof, either existing or new. Nube does not provide clear evidence towards this end. Instead, he presumes the possibility of the presence of ethnic predisposition mainly because the correlates he examined fail to explain the higher prevalence of CED among Indian/south Asian adults. The absence of correlation between the limited factors he considered and the higher prevalence of CED among Indian adults is one thing. But considering such absence of correlation as a reason for presuming the presence of an ethnically determined predisposition for low BMI among them is another thing altogether.

But what renders the ethnic predisposition problematic is the second hypothesis, which suggests that such predisposition is mainly expressed under relatively low levels of living conditions. This would imply that the much higher prevalence of CED found among adult women from poor households in India is primarily the manifestation of an ethnically determined predisposition for low BMI. This ethnic predisposition leads to, via poverty, higher under-nutrition among the poor adults in India. This refutes the conventional understanding backed by empirical evidence that poverty and the socio-environmental conditions that breed and reinforce poverty are the primary causes of under-nutrition.

The second hypothesis, by fortifying ethnicity with poverty, tries to score two points at a single stroke. It refutes the primacy of poverty as a determinant of undernutrition and, at the same time, does not reject the influence of poverty on under-nutrition fully either. By arguing that the ethnic predisposition for low adult BMI in south Asia is expressed under conditions of poverty, it tends to accept, though implicitly, the contribution of poverty towards under-nutrition. But to accord centrality to ethnic predisposition rather than to poverty would demand evidence demonstrating as to how and what extent ethnic factors specific to south Asian adults predispose them to a low BMI. In the absence of this, the second hypothesis would remain, at best, a conjecture. Let us look at the data, especially the unit-level data of National Family Health Survey-3 (NFHS-3), to see what it provides as possible support for this ethnic predisposition hypothesis.

Some Preliminary Results

Since ethnic predisposition is likely to manifest under conditions of low living standards, it is worthwhile to examine the incidence of CED among women across the wealth groups in major states of India. Table 1 presents the results. Before discussing the patterns, if any, emerging from the table, a methodological note is in order. Dilip and Mishra (2008) argue that the methodology used to compute wealth quintiles in NFHS-3 data is insensitive to both rural-urban and state variations. They suggested a methodology which, they claim, is sensitive to these variations. We use this spatially (state- and rural-urban-) sensitive methodology in computing wealth quintiles across states.

Table 1: CED among Adult Women across Wealth Groups in Indian States (2005-06, in %)

States	Poorest	Poor	Middle	Richer	Richest	Overall
Andhra Pradesh	42.7	43.7	35.4	30.1	18.3	33.5
Assam	44.0	44.7	41.1	36.8	21.5	36.5
Bihar	53.7	53.2	48.7	43.6	32.8	45.1
Chhattisgarh	52.0	48.4	49.7	40.7	31.8	43.4
Gujarat	50.1	47.8	39.2	29.6	21.8	36.3
Haryana	50.0	38.4	32.0	25.4	19.4	31.4
Jharkhand	51.9	50.6	42.3	40.1	34.7	43.0
Karnataka	46.6	40.5	38.4	33.0	22.3	35.5
Kerala	28.5	22.7	17.5	12.9	8.8	17.9
Madhya Pradesh	51.5	46.1	44.3	39.7	31.5	41.7
Maharashtra	48.3	38.7	38.8	34.1	23.9	36.2
Odisha	55.2	51.2	47.4	36.5	24.9	41.4
Punjab	35.0	23.4	17.8	14.6	10.7	18.9
Rajasthan	43.9	44.2	38.2	33.1	28.6	36.7
Tamil Nadu	43.7	36.5	28.6	23.6	13.4	28.4
Uttar Pradesh	48.4	42.4	38.8	32.3	25.9	36.0
Uttarakhand	42.2	34.9	33.3	26.2	19.0	30.1
West Bengal	54.2	47.0	40.9	34.7	22.1	39.1
India	47.1	42.2	37.7	32.1	23.7	35.6

Source: Calculated from NFHS-3 unit-level data.

At least three broad patterns can be noted from Table 1. First, incidence of CED remains much higher among bottom wealth groups and tends to decline along with an increase in the wealth status with the lowest incidence among the richest quintile in all the states. The decline in CED along with an increase in wealth status gives birth to a sharp wealth-based inequality. Surprisingly, the extent of inequality, measured in terms of incidence among the bottom as a proportion of the incidence among the top, remains the highest in Punjab and Tamil Nadu (3.3 times), closely followed by Kerala (3.2 times). On the contrary, Jharkhand and Rajasthan with the inequality of 1.6 times remain at the bottom.

Second, if we look at the incidence within the same wealth quintile across all the major states, an interesting pattern can be found. The incidence of CED among the poorest women in Kerala (28.5%) is almost half of the incidence found among the poorest women from Odisha (55.2%). Punjab is yet another state where the incidence among the poorest is also one of the lowest (35%). In these states, not only the poorest but also all wealth groups have a much lower incidence when compared to the similar wealth groups in other states. Thus, the general improvement in CED seems to have benefited all the wealth groups, including the bottom wealth group, but to an unequal degree. This is especially the case for Kerala.

The third, and most interesting, finding also comes from the poorest women from Kerala. Their performance is not only better than the poorest women of all the major states considered here, but also better than the performance of the richest women from some of the eastern states of India. The levels of CED among women from the richest wealth group in Jharkhand (34.7%), Bihar (32.8%), Chhattisgarh (31.8%), and Madhya Pradesh (31.5%) are higher, though marginally, than the incidence among the poorest women from Kerala (28.5%). This poses a disquieting question: Do the richest women from these four states have a higher ethnic predisposition to low BMI than the poorest women of Kerala? The ethnic predisposition hypothesis, it appears, suffers an unexpected jolt from the poorest women of Kerala.

We need to pose the question rather differently: What enables the poorest women of Kerala to perform better than the richest women of these states, besides the poorest women of all the major states? While analysing the reasons for Kerala's relatively better performance in child nutrition when compared to other states of India, Gopalan identifies some factors which are not totally unrelated to women's nutrition as well: "infections which contribute to malnutrition are more promptly and efficiently combated in a state like Kerala" (Gopalan 1995: A139). Relatively, lower prevalence rates of CED among all five wealth groups in Kerala when compared to the corresponding wealth groups in other states seem to indicate the positive contribution of public health to the nutrition of adult women as well.

Public health alone, though critically important, may not fully explain the advantage of the poorest women from Kerala over the richest women from the four states of Jharkhand, Bihar, Chhattisgarh and Madhya Pradesh. It is also important to know as to how the poorest women of Kerala perform in some of the aspects which are likely to exert a positive influence on nutrition. At least four aspects become relevant here. The first is access to toilet facilities, whose positive contribution towards nutrition has been brought out by a number of recent studies (Chambers and Medeazza 2013). The second aspect is literacy, which plays a central role in health achievement, of which better nutrition is an integral part. The third aspect we consider here

is women's household autonomy, measured through participation in decision-making within the household. We measure female autonomy as the extent of women's participation in making the following four decisions within the household. The decisions are: (1) Daily household needs; (2) Women's health; (3) Major household purchases; and (4) Visits to their family or relatives. The fourth aspect considered, which has an important bearing on the nutrition of women, is a set of related variables, namely, mean age at first marriage and mean age at first birth.

Table 2 clearly brings out the advantage of the poorest women of Kerala over the richest women from the four states in all the four aspects considered here. As high as 84% of the poorest women of Kerala have access to toilet facilities. This is 12 percentage points greater than the extent of access the richest women of Bihar have, and nearly 50 percentage points greater than the access of the richest Chhattisgarh women. Though the extent of difference is relatively lower in literacy, here too the advantage of the poorest Kerala women persists. Also in female autonomy, measured through the participation in making all the four decisions, the poorest Kerala women maintain a creditable lead. The extent of the lead varies from 6 percentage points (over the richest women from Jharkhand) to 22 percentage points (over the richest women from Chhattisgarh). Finally, the advantage of the poorest Kerala women, manifested through relatively higher age at first marriage and first birth, prevails over the richest women of these four states.

Table 2: Performance of the Poorest Kerala Women Compared

	Poorest Kerala Women	Richest Women from			
		Jharkhand	Bihar	Chhattisgarh	Madhya Pradesh
Access to toilet facilities (%)	83.6	38.5	72.1	35.0	60.0
Literacy (%)	88.8	65.7	78.2	75.0	75.3
Autonomy* (%)	46.0	40.2	28.3	24.1	31.1
Mean age at first marriage (years)	19.7	17.0	16.9	17.6	17.3
Mean age at first birth (years)	21.1	18.7	19.2	19.3	19.6

*Autonomy, measured by participation in making all four decisions, is confined to currently married women only.
Source: Calculated from NFHS-3 unit-level data.

It is tempting to argue that, going by the prevalence rates of CED, the poorest Kerala women may have a lower predisposition to low adult BMI than the richest women from these four states. That might militate against the second hypothesis which alerts us that the ethnic predisposition, if there is any, would manifest through poverty, not the other way round. Why the richest women from the four states would have a higher predisposition than the poorest women from Kerala, or vice versa, is not clear. But what is clear from the limited aspects analysed above is that the poorest women of Kerala do have an advantage in aspects which are likely to contribute towards their better nutritional performance.

Interestingly, a look at the levels of CED among men between wealth groups across major Indian states also reinforces the patterns found from Table 1 except with a difference (results not shown here). For instance, the poorest men from Punjab with CED prevalence rate of 26.8%, who are closely followed by those from Kerala (29.3%), outperform the richest men from several states: Rajasthan (32%), Madhya Pradesh (31.5%), Jharkhand (28.4%), Uttar Pradesh (27.5) and Odisha (27.2%). What enables the poorest men of Punjab (and to some extent those from Kerala), despite their living conditions where ethnic predisposition to low adult BMI is more likely to be expressed, to outperform the richest men, who do not have living conditions where such predisposition is likely to be expressed, from these five states? Yet again, the ethnic predisposition hypothesis suffers a jolt from the poorest men from Punjab.

These preliminary findings instruct that we need to look carefully at the patterns emerging within the states of India, and more specifically from states, such as Kerala, Punjab and Himachal Pradesh, which present consistent performance in aspects of human development. Such a comparative analysis can possibly provide new insights and directions for public policy.

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NOTES

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1 Note that gender gap between adult women and men in CED prevalence is marginal not only in India, but also in most of the developing countries. Hence, CED prevalence among women can be considered as a representation of adult undernutrition at large (Nube and Boom 2003).

2 See also Panagariya (2013) to see the details of his arguments mainly on child malnutrition, but also on adult under-nutrition.

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