Hunger in India — Facts and Challenges

1. INTRODUCTION

Chronic hunger and undernutrition is the worst tribulation of the poverty that still plagues millions of households in India and the plight of children is of special concern. Undernutrition in childhood is one of the reasons behind the high child mortality rate and is also highly detrimental for the future for those who survive (Pelletier 1994). Chronic undernutrition in childhood is linked to slower cognitive development and serious health impairments later in life that reduce the quality of life and also the economic productivity of people (Scrimshaw 1996). Undernutrition is hence not only a consequence of poverty but also a cause.

The extent of undernutrition in India is widespread but the exact magnitude—both in absolute terms and in international comparison— varies considerably depending on which indicator is consulted. The first aim of this article is to contrast the nutritional situation in India to other parts of the world, based on two main methods for characterising undernutrition. A further objective is to investigate to what extent undernutrition in India has declined over time and how the inter-state differences have evolved. A third objective is to challenge the "conventional wisdom" that female children are more frequently undernourished than male children.

2. THE NUTRITIONAL STATUS OF INDIANS IN COMPARISON

There are only two sets of measurements that can be used to compare the incidence of undernutrition in various parts of the world. The first is the food-supply-based estimates emanating from the FAO. The second is the anthropometric data on children from the WHO (2001a) and the *Demographic and Health Surveys* (DHS) providing information on body weights of adult women (ACC/SCN 2000; Nubé 2001). We shall start out by making a comparison between India, South Asia in general, and Sub-Saharan Africa using the two sets of indicators. The choice of Sub-Saharan Africa (simply Africa in the following) for comparison is that both sets of estimates find this region and South Asia to have the highest incidence of chronic undernutrition. The two data sets lead, however, to different conclusions regarding which of these two regions is the most afflicted.

2.1 Estimates of undernutrition based on food supplies (FAO)

The UN agency for food and agriculture, the FAO, provides estimates of the prevalence of chronic undernutrition at the level of households for most developing countries and globally. These estimates are routinely cited in the media world-wide and have become the dominating view of the problem. The estimates from the FAO also formed the statistical basis for the chief resolution to halve the number of undernourished people by the year 2015 taken by 186 government representatives at the World Food Summit in 1996.

The FAO calculations of undernutrition are based on the estimated per-capita availability of food (converted into calories) in individual countries (own production and net imports). The distribution of the available calories across households is estimated from household food surveys. Subsequently, the FAO establishes a norm for the minimum per-person calorie requirement of an average household in the individual countries. This minimum norm is set so as to allow household members to maintain health-consistent body weights and to conduct some light physical activity (work). The share of the households in the distribution that has an availability of calories below the norm is classified as undernourished.

In its latest report, presented a few months ago, the FAO (2001) asserts that 777 million people in the developing countries were undernourished in 1997/99 and that the number had dropped by some 40 million only since the early 1990s. FAO hence conjectures that the objective of reducing the number of undernourished by half before the year 2015 will be missed by a large margin. According to its assessment, there has been a minuscule decline (by 1-2 percentage points) in the *share* of undernourished households in both Africa and South Asia. The incidence of undernutrition in 1997/99 was about 40 per cent higher in Africa (at 35 per cent) than in India and South Asia (at 25 per cent).

In *absolute* numbers, however, the FAO assessment suggests an increase by some 40 million undernourished people in the two regions combined (Table 1). That is, in the two regions where undernutrition was the most prevalent in the early 1990s, the number of undernourished people has increased rather than decreased, in sharp contradiction of the chief objective of the World Food Summit in 1996. This means that, while the number of undernourished people in the developing countries in other regions declined by some 80 million, the increase in Africa and South Asia by 40 million, reduced the net decline world-wide to 39 million only.

Table 1: Prevalence of undernutrition in South Asia, India, and in Sub-Saharan Africa according to various assessments by the FAO, per cent and million people

	1990/92			1997/99	Change %	Change
Region Country	Assess-ment in 1996	Assess-ment in 2001	Revision	Assess-ment in 2001	Assess-ment in 2001	Million people
	(1)	(2)	(3)=(2-1)	(4)	(5) = (4-2)	(6)
South Asia	22	26	+4	24	-2	+14
India	21	25	+4	23	-2	+11
Sub-Sahara Africa	43	35	-8	34	-1	+26
All developing countries	21	20	-1	17	-3	-39

Sources: FAO 1996; 1997; 2001.

2.2 Undernutrition according to anthropometric indicators

The main alternative method for estimating the prevalence of undernutrition in Africa and South Asia is through observations of how large shares of the population in these regions show direct symptoms of undernutrition. These are people who are abnormally short for their age and have body weights below what is consistent with health. The shares of pre-school children and women of fertile age—the two categories examined the most frequently—who are stunted and underweight are considerably higher in South Asia than in Sub-Saharan Africa. This is quite the opposite of what is reported by the FAO (Table 2).

2.3 Are the FAO estimates to be trusted?

There are several reasons to mistrust the FAO estimates of undernutrition, especially for Africa. The main reason is that the FAO has underestimated the per-capita "availability" of food in this region where very primitive methods are used to enumerate acreage and yields for major crops. Moreover, much of the food produced in this region is for subsistence, which tends to be under-recorded (Heston 1994).

Table 2: Prevalence of undernutrition according to anthropometric indicators for young children and adult women in the late 1990s, per cent

	Children aged 0-5 years Indicators				Adult women (20-49 y) Indicators	
Region Country	Weight/ Height (-2sd)	Height/ Age (-3sd)	Height/ Age (-2sd)	Weight/ Age (-2sd)	Body Mass Index[a] (BMI<18.5)	Stature below 145 cm
South Asia[b]	18	32	54	49	49	16
India	20	36	57	49	49	-
Sub-Sahara Africa[c]	7	21	38	33	11	3

Sources: WHO 2001a (children in mid to late 1990s); Macroint 1996-2000 (BMI for adult women, various years in the 1990s); ACC/SCN 1992 (adult stature of women, in the late 1980s).
Notes: a) The body mass index (BMI) is defined as the weight (in kg) of a person divided by height squared (in meters); e.g. if a person's weight is 73 kilos and his height is 1.82 meters, his BMI is $(73/1.82^2) = 22.0$; b) Weighted average of six countries for children and three countries for BMI of adult women; no data on number of countries for adult stunting; c) Weighted average of 33 countries for children and 11 countries for BMI of adult women; no data on number of countries for adult stunting.

Another reason why the FAO has overstated the prevalence of undernutrition in developing countries in general is that its norm for minimum calorie requirement is based on at least two misconceptions. One is that the FAO has failed to recognise that the nutritionists have revised downward the basal metabolic rate (BMR), i.e. the number of calories that a person needs to maintain basic body functions (Hayter and Henry 1994; Shetty et al. 1996). The other is that FAO's norm does not take into account that households have different per-capita calorie requirements because they differ in terms of age- and sex composition. The FAO has hence ignored the fact that households with many young children have lower calorie requirements *per person* than the "average" household (Svedberg 2001a).

That its estimates of prevalence of undernutrition in Africa as compared to South Asia have been flawed has been acknowledged by the FAO in an indirect way. In 1996, in connection with the World Food Summit, the FAO purported that chronic undernutrition in the 1990/92 period was affecting twice as large a proportion of the

population in Africa (43%) as compared to South Asia (22%) and India (20%). Subsequently, these numbers have been revised, downward for Africa and upward for South Asia (Table 1). The difference between the two regions for 1990/92 has hence been reduced by half, from 21 percentage points according to the 1996 assessment to 10 percentage points in the most recent assessment (2001). The FAO is silent on what has motivated the revision, but further revisions in the same directions are probably to be expected. The FAO will find it increasingly difficult to gain trust in its estimates when the anthropometric evidence becomes richer and shows little resemblance to the "map" of undernutrition it produces.

2.4. Are the anthropometric measurements reliable?

To obtain anthropometric measurements is uncomplicated, relatively inexpensive and the estimates contain small measurement errors and biases (Marks et al. 1989). That the FAO's estimates of undernutrition for almost all major developing regions are considerably above the shares of children and adult women who are stunted and wasted therefore indicate that they are overestimates (Svedberg 2001a). The only exception is South Asia, where the shares of stunted children and wasted women by far exceeds the FAO estimate (cf. Tables 1 and 2).

One possible explanation for the exceptionally low anthropometric status of people in South Asia that has been ventured is that the population here has a genetic potential for growth in stature that is lower than in other parts of the world. When it comes to young children this seems not to be the case. Gopalan (1992) found that children from well-to-do urban households in India have the same average height and weight for age as their Caucasian cousins (the norms used by the WHO). It has also been observed that children of Indian stock living in the UK have norm-consistent heights on average (Eveleth and Tanner, 1990; also see Svedberg 2000). This suggests that the anthropometric failure among Indian children *below the age of five* is phenotypic rather than genotypic; that is, the growth faltering is caused by factors other than a genetic predisposition for low growth in stature and small body frames. To my knowledge, no scientific study has been made of the genetic potential for final growth in stature of adult women in South Asia.

The most commonly advanced explanation for the shortness and thinness of South Asian women is their "discriminated position" vis-à-vis men, which is passed on from generation to generation (Ramalingaswami et al. 1996; Osmani 1997; Ramakrishnan et

al. 1999). While their shortness *may* in part be due to genetic factors, this cannot explain the observation that almost half the adult women in India and South Asia have a body mass index (BMI) below 18.5— while only 11 per cent in Africa (Table 2 and note c). The high incidence of wasting in India must be explained by undernutrition and inadequate health status.

When it comes to health care we have the further puzzling observation that the anthropometric status of children and adult women in Africa is far better than in South Asia while the mortality rates (even before the HIV/AIDS pandemic) are much higher in Africa. The likely explanation is that the share of the population (especially in rural areas) with access to primary health care and basic sanitation is considerably lower in Africa than in South Asia (Svedberg 1999; WHO 2001b).

A common belief is that young children and women of fertile age, the two categories that have been examined in most countries, are the main victims of undernutrition. This may well be so, but we do not know for certain since the equivalent information on the height and weight of school-age children, teenagers, adult men and elderly people is simply not available. In the section on gender differential below (section 6), however, we will address the question whether the anthropometric evidence corroborates the conventional notion that female children in India are "discriminated" against vis-à-vis males in terms of nutrition and health.

3. TRENDS IN ANTHROPOMETRIC STATUS OF INDIAN CHILDREN

The three anthropometric indicators reported by the WHO and in the *DHS* are weight for age (W/A), height for age (H/A) and weight for height (W/H). In all the surveys, the shares of children who have a height and/or weight below two and three standard deviations (sd) of the median in the reference population (from the US) are reported. In the following, the cut-off points to be applied are two standard deviations below (-2sd) the median for these three anthropometric indicators. We will also report results based on the share below three standard deviations (-3sd) of the H/A norm. The latter indicator is applied as to capture "extreme" stunting. (That a child at the age of five is -3sd below the norm means that she/he is about 85-90 cm tall, while a "normal" child of this age is 110 cm, signifying a 20-25 cm shortfall.)

3.1 The broad picture at face value

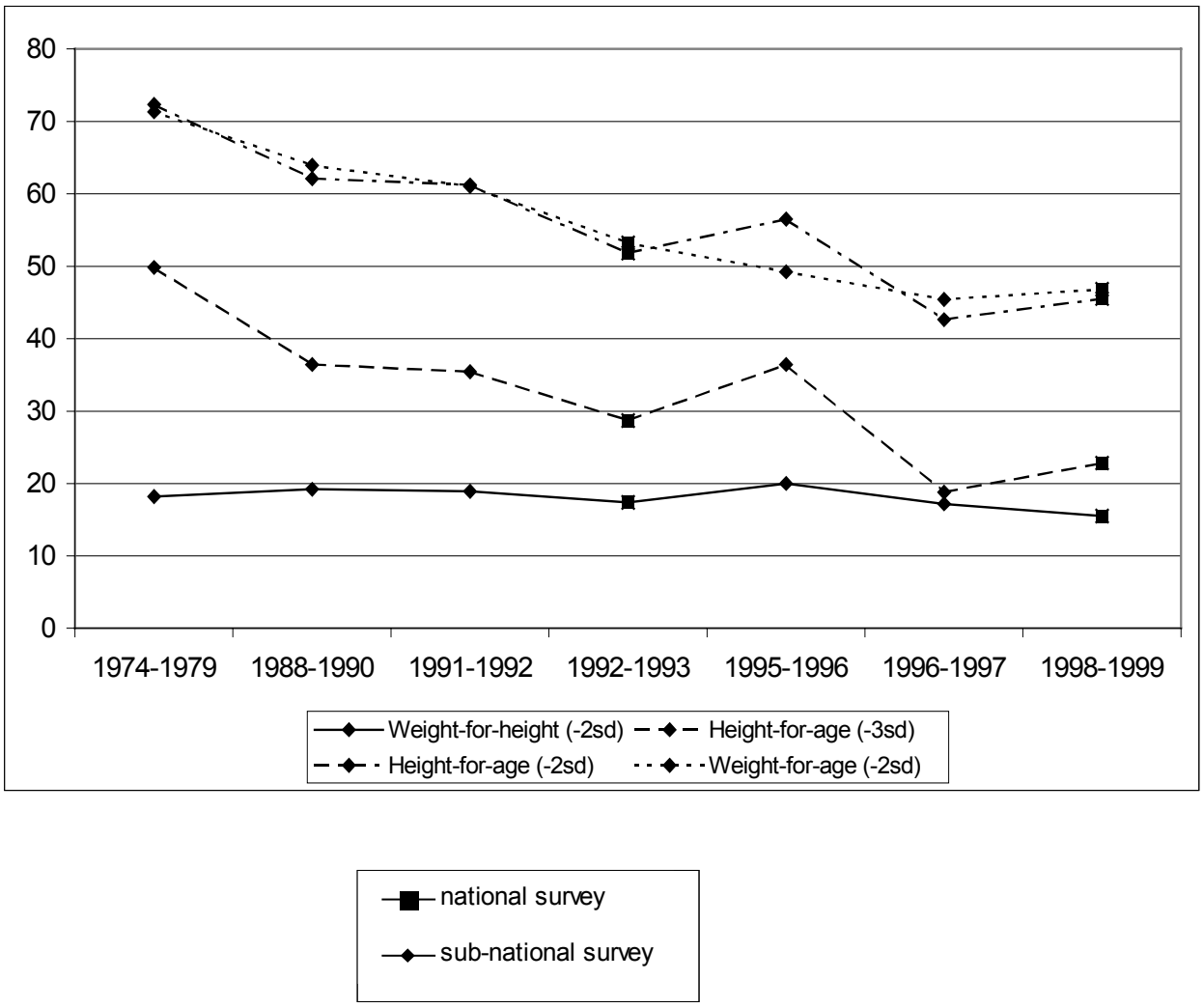
There are seven anthropometric surveys of young children in India reported in the latest WHO (2001a) *Global Database on Child Growth and Malnutrition* that are sufficiently large, detailed and comparable to merit consideration in the present context. The first such survey was undertaken during the years 1974-79 and the latest in 1998-99. The surveys cover between 3,000 and 46,000 children. All the seven surveys were originally carried out by the Indian National Nutrition Monitoring Bureau (NNMB). The original data have subsequently been re-tabulated by the WHO so as to increase comparability and ensure the use of uniform norms and ways of defining anthropometric ”shortcomings”.

The shares of the Indian children that fall below norms for the four anthropometric measures used here are depicted in Figure 1 for the seven surveys. At face value, it seems that the share of children with a W/H (-2sd) has remained more or less unaltered at slightly below 20 per cent since the 1970s, although it declined somewhat over the latter part of the 1990s. The shares of children with height and weight for age below the norms have declined more or less consistently since the late 1970s (the trends are highly statistically significant). By the indicator aimed at capturing *extreme stunting* (H/A -3sd), the decline is dramatic. In the 1970s, half the Indian children were below this norm; in the late 1990s, less than a quarter. The declines in *modest stunting* (H/A -2sd) and in *underweight* (W/A -2sd) are also quantitatively large, from about 70 to less than 50 per cent. A worrying message brought out by Figure 1, however, is that the shares of children below the three height- and weight-for-age norms have increased somewhat during the late 1990s.

3.2 Qualifications

The picture revealed by Figure 1 has to be qualified since the seven surveys are not strictly comparable. First, most results reported in Figure 1 are based on averages for surveys covering 8-18 Indian states; only two are claimed to be nationally representative. Second, some surveys cover children in rural areas only, while others include both rural and urban children. Third, the surveys cover different age cohorts; most surveys include children between 0 and 5 years, while others include 0-3 or 0-4 year olds. These differences should be controlled as far as possible before one can say more definitely by how much the prevalence of anthropometric failure among children in India has declined. But some tentative controls undertaken have not revealed anything that fundamentally

Figure 1: Per cent of young children in India falling below four anthropometric norms, selected years



Source: WHO/NNMB

changes the initial conclusion that there have been notable declines in the share of children who are stunted and underweight since the second half of the 1970s up to the late 1990s (Svedberg 2001b). The share of children who are wasted has declined only during the 1990s, but this period is too short to judge whether this is the beginning of a new trend or not.

4. INTER-STATE DIFFERENTIALS

As is well known, there are large differences between and within the 25 Indian states in dimensions such as per-capita income, educational attainment, child mortality, longevity and the female/male population ratio (Drèze and Sen 1995; Sen 2001). There are also large differences in the anthropometric status of children across the Indian states.

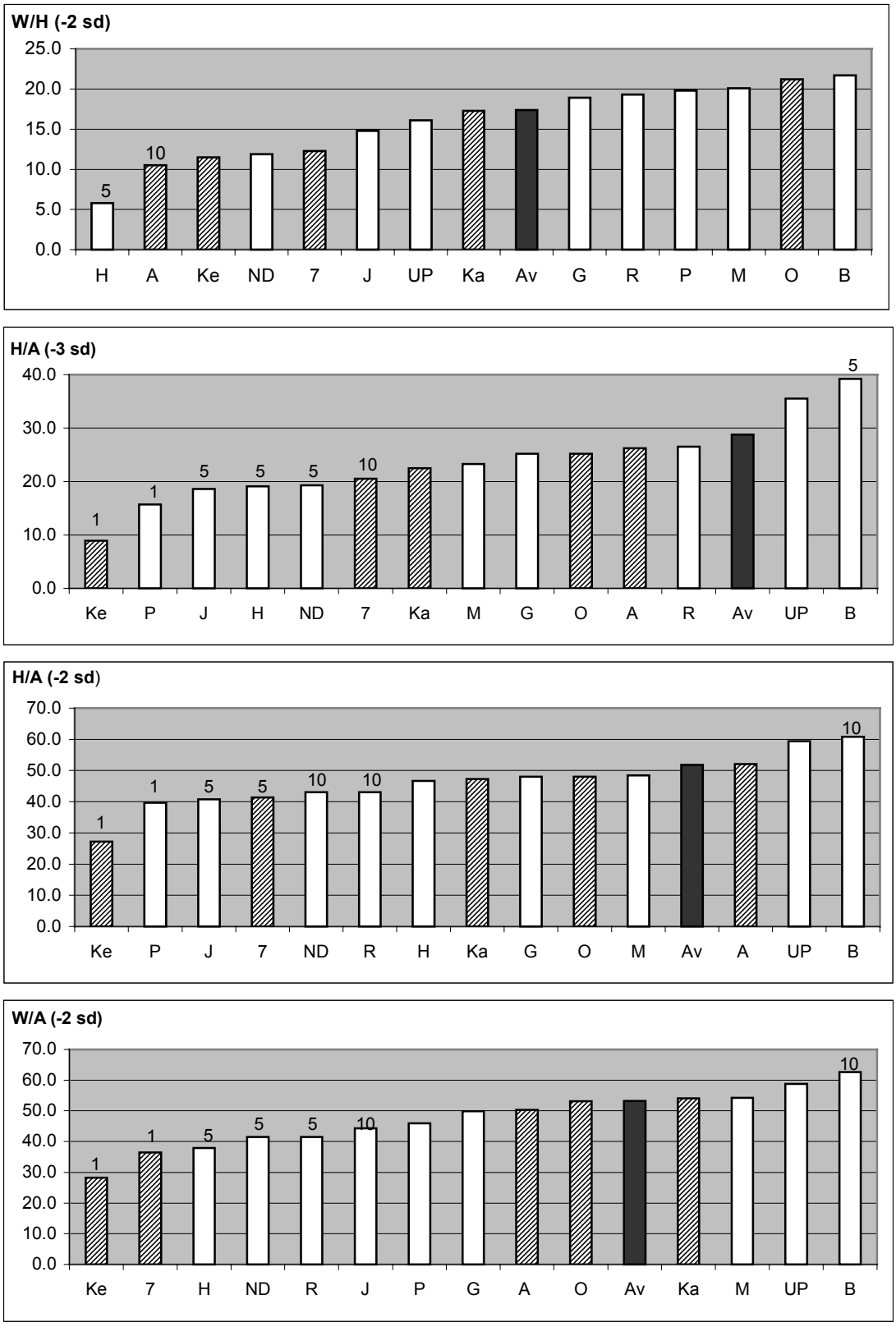
4.1. Inter-state variation in 1992-93

The survey that provides data for the largest number (20) of states is the one from 1992-93. This survey reveals marked differences in all the four anthropometric indicators across the 14 states for which sufficiently many observations are available (Figure 2). The highest state prevalence rate, as a ratio to the lowest, ranges from 2.2 (modest stunting) to 4.4 (extreme stunting) for the various indicators. The number on top of the "bars" at the lower and upper end of the inter-state distribution indicate that the observation for these particular states differs in a statistically significant way from the 20-state average at the 1, 5 or 10 per cent level.

The fact that for three of the anthropometric indicators, only 2-4 states have higher anthropometric failure rates than the 20-state averages may seem puzzling. This follows, however, from the fact that the average is weighted by the number of observations in the various states, and that these numbers are by far the highest in Uttar Pradesh and Bihar, the two states with the highest incidence of anthropometric failure. This also explains why only one state (Bihar) has a prevalence of (extreme) stunting that is statistically significantly higher than the (weighted) average.

Unfortunately, the 14 states represented in Figure 2 are not "randomly" distributed over the Indian continent. There is an under-representation of large states in the south-east (Andhra Pradesh, Tamil Nadu and West Bengal), while north-western India is well represented (although Madhya Pradesh is not covered). The hypothesis that there could be a north-west and south-east divide (see Sen 2001) can hence not be satis-factorily answered by the data from 1992-93 survey.

Figure 2: Per cent of children 0-4 years old below 2 sd of median anthropometric norm in **India**, by selected States, urban/rural, in 1992-1993



A - Assam
B - Bihar
G - Gujarat
H - Haryana
J - Jammu
Ka - Karnataka
Ke - Kerala
M - Maharashtra
ND - New Delhi
O - Orissa
P - Punjab
R - Rajastan
UP - Uttar Pradesh
7 - Other Seven States
AV - Weighted Average (weighted by number of observations)

Source: WHO/NNMB

4.2. Inter-state variation over time

Three of the seven surveys permit the study of inter-state variation in the anthropometric status of children in India over time (the surveys from 1974-79, 1988-1990 and 1996-97). These surveys are comparable in the sense that they provide separate data for the same eight states (mainly southern), based on rural samples of 0-5 year olds. This allows us to investigate:

(1) to what extent there are time trends in these particular states;

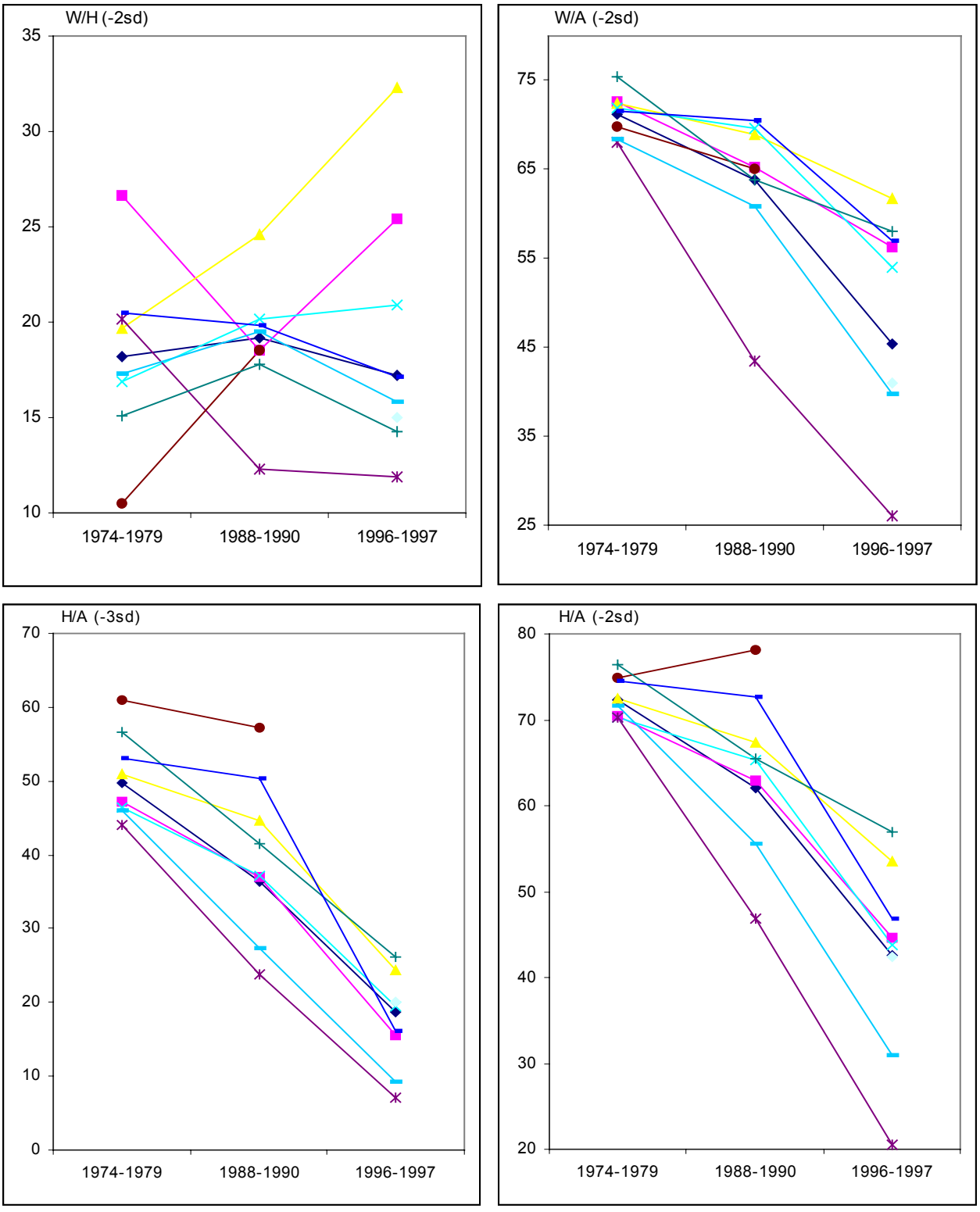
(2) the extent to which inter-state differences have been stable over time;

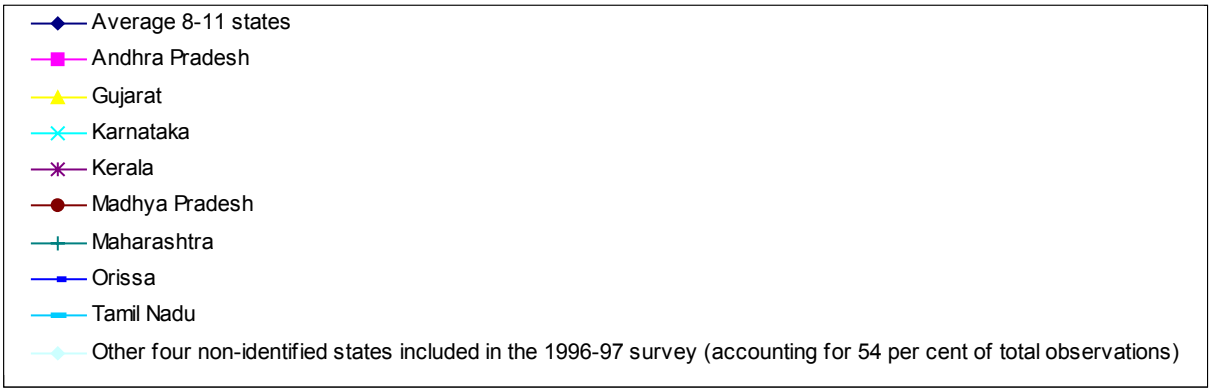
(3) whether the inter-state variation has increased or not.

When it comes to the W/H (-2sd) indicator, there is little consistency in any of these dimensions. In a few states, there has been an increase, in others a decrease, and in still others a reversal. No single state has had the lowest or the highest score throughout the periods covered. The inter-state spread was high in the first and third period and less so in the middle period (1988-90).

The indicators for height- and weight for age show more consistent developments over time. With one exception (Madhya Pradesh), there has been a steady decline in the share of children below the norms in all the states covered. Most of the states have not changed their position in the "ranking" notably (as indicated by crossing lines in Figure 3). By the H/A (-2sd) and W/A (-2sd) indicators, there have been notable increases in the inter-state differences in the anthropometric status of Indian children since the 1970s. In those days, over 70 per cent of the children observed had a weight and height for age below the standard norms (-2sd), and there were practically no differences across the eight states covered. Also the indicator of extreme stunting (H/A -3sd) shows between 45 and 60 per cent of the children to be below norm in the 1970s (Figure 3).

Figure 3: Inter-state differences in weight-for-height failure rates for rural Indian children aged 0-5 years, selected states and survey years (per cent)





4.3. Caveats

A few cautious words on the limitations of the above analysis of inter-state differences in anthropometric failure rates are in order. The *time* analysis permitted by the data is restricted to eight of the 25 Indian states, and these eight states do not include any one from northern India. A more detailed comparison of states along the south-east and north-west divide— a comparison that would be interesting in the perspective of notable differences along this "border" in other welfare indicators (Drèze and Sen 1995; Sen 2001)—is hence not possible to conduct.

5. URBAN VS. RURAL AREAS

Most of the seven surveys scrutinised above are restricted to rural areas. Only two surveys permit comparisons of anthropometric failure rates in urban and rural areas. These two surveys, from 1992-93 and 1998-99, are based on nationally representative samples and differ only in that the earlier one covers children aged 0-4 years, while the latter covers 0-3 year olds. The surveys suggest a widening urban-rural gap in anthropometric failure rates in all four indicators. The rural disadvantage is the largest for the indicator of extreme stunting (H/A -3sd), and has been intensified the most between the two surveys. In 1998-99, the incidence of extreme stunting in urban areas was only 61 per cent of that in rural areas, down from 71 per cent in the early 1990s (Table 3).

Table 3: Ratio of shares of children below anthropometric norms in urban and rural areas in national surveys for India, 1992-93 and 1998-99

Survey years (national)	Sample size	Age group	Anthropometric indicators			
			W/H (-2sd)	H/A (-3sd)	H/A (-2sd)	W/A (-2sd)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1992-1993	25,580	0-4	0.88	0.71	0.82	0.83
1998-1999	24,600	0-3	0.81	0.61	0.73	0.77
Difference	..	..	-0.07	-0.10	-0.09	-0.06

Source: WHO 2001a.

6. GENDER DIFFERENTIALS IN ANTHROPOMETRIC FAILURE RATES

6.1. The evidence

All the seven surveys consulted here report separate data on male and female children. This data set is hence by far larger than those used in previous attempts to analyse differences along gender lines in India (for Africa, see Svedberg 1990; 1996). From this large data set, we have derived the ratios of the per cent of male and female children (M/F) who fall below the various anthropometric norms. The ensuing M/F ratios contradict the conventional view that females are at a systematic disadvantage. Had the conventional picture predominated, we would expect the M/F ratios to be consistently below 1.0. The M/F ratios for the four indicators and seven surveys (28 observations in all) are found to be below and above unity with equal frequency (Svedberg 2001b).

The M/F-ratio estimates presented in Table 4 are from the three survey periods for which data at the level of individual states are reported. With the weight for height indicator, the M/F ratio for all the states combined is above unity in all three periods and also in most of the individual states. There is no state where the ratio is below unity in all three surveys. With the two height-for-age indicators, the M/F ratios for all states pooled is slightly above unity in the 1974-79 and 1996-97 surveys, but below unity in 1988-90. At the state level there is notable non-systematic variation. The M/F ratio for given states are above or below unity in different surveys and there is large variation across the states at given survey periods. Also when it comes to underweight (W/A), no systematic pattern is revealed by the data.

Table 4: Ratio of male and female children aged 0-5 years below 2 or 3 sd of median anthropometric norm in 8-11 Indian States**,** selected survey periods

State	Aver.	Andhra Pradesh	Gujarat	Karna-taka	Kerala	Madhy Pradesh	Mahat -ashtra	Orissa	Tamil Nadu
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
W/H (-2sd)									
1974-1979	1.03	1.01	1.00	1.13	1.31	0.94	0.98	1.05	0.97
1988-1990	1.16	1.18	1.30	1.21	1.39	1.28	1.29	0.77	1.13
1996-1997	1.02	1.13	1.23	1.03	1.34	-	1.29	0.79	1.13
H/A (-3sd)									
1974-1979	1.01	1.15	1.01	0.89	1.00	1.06	1.08	0.94	0.95
1988-1990	0.92	0.92	0.96	0.96	0.80	0.99	0.82	0.99	0.91
1996-1997	1.02	0.92	1.03	0.94	0.91	-	0.80	1.00	0.85
H/A (-2sd)									
1974-1979	1.01	1.01	1.05	0.99	1.04	1.11	1.10	1.03	0.95
1988-1990	0.97	0.97	0.99	0.95	0.93	1.03	1.00	1.00	0.94
1996-1997	1.04	1.07	1.08	0.98	1.00	-	0.96	0.95	0.96
W/A (-sd)									
1974-1979	1.01	1.05	1.00	0.97	1.06	1.06	1.06	0.98	0.94
1988-1990	0.99	0.98	0.98	0.99	1.18	1.05	1.02	0.93	0.97
1996-1997	0.98	1.05	1.04	0.92	1.07	-	1.01	0.88	0.89

Source: WHO 2001a.

6.2 Qualifications

In the absence of a more consistent pattern over time, and for lack of statistical significance, the tentative conclusion is that there is no systematic difference between boys and girls when it comes to low anthropometric status in India. But this conclusion is preliminary and has to be qualified on several accounts. First, only two surveys are national; the rest cover a limited number of states that may not be representative. Second, at the state level, the samples are uncomfortably small in many instances and some of the surveys are restricted to rural areas. Third, no investigation has been made of the M/F ratio in urban and rural areas separately. Fourth, the way the WHO has "transformed" the data from the Indian NNMB has yet to be scrutinised.

6.3 Missing women?

There is also the question whether the non-systematic M/F ratios reflect more or less equal treatment of female and male children in terms of nutrition and health care —on the whole—or is a consequence of the under-representation of female children in the data. In most of the surveys consulted, there is a statistically significant difference in the number

of male and female children observed. This under-representation may be the consequence of what Amartya Sen (1992, 2001) has labelled the ”missing women” syndrome.

In a child population living under well-off and non-discriminatory conditions, the expected male to female ratio is about 1.05. The latest census for India (2001) gives a ratio of 1.07, down from 1.08 in 1991. In the seven anthropometric surveys consulted here, the M/F ratio in the samples sizes ranges from 1.04 in one survey to 1.11 in three surveys. The latter number indicates many “missing” female children. It may hence be that while there is little difference in the anthropometric status of male and female children in general in India, this can in part be a consequence of higher mortality rates for female infants and young children in the wake of discriminatory treatment. There are also mounting indications that the skewed child male/female ratio is a consequence of increasing gender differences in natality, i.e. selective abortions (Sen 2001).

7. SUMMARY AND CONCLUSIONS

The present nutrition situation in India looks different depending on what measure of undernutrition is consulted. Estimates based on the national availability of food and its distribution across households from the FAO suggest that about one-quarter of Indian households have a habitual calorie intake that is insufficient to maintain health-consistent body weights and fuel light physical activity for the members. Estimates of the share of young children and adult women who are unduly short and underweight indicate that the prevalence of undernutrition is higher than purported by the FAO. The latter’s estimates are, however, unreliable for a number of reasons and should be interpreted very cautiously (Svedberg 1999; 2000; 2001a).

The anthropometric indicators, although incomplete (covering young children and women only) and capturing illness as well as primary undernutrition, are more reliable markers of the nutrition situation. According to these indicators, the prevalence of undernutrition in India is (still) considerably higher than in the average African country and also slightly above the South Asian average (Appendix Table 1).

Looking at developments over time, there are some encouraging trends. The shares of young children who are abnormally short and underweight for their age have declined considerably since the 1970. Especially notable is that the share of extremely stunted children in India has dropped from about 50 to 23 per cent. Another encouraging finding is that the “conventional” notion that female children are at a systematic disadvantage vis-à-vis male children is not supported by the anthropometric data.

There are also discouraging developments. One is that the shares of children with unduly low height and weight for their age have increased, while having declined more or less consistently for more than two decades, in the late 1990s. It is too early to say whether this is an incidental statistical phenomenon or a true break in the previous trend; it is nevertheless worrying. Also discouraging is that inter-state differences when it comes to height- and weight-for-age failure of children seem to grow. That is, while the developments for India as a whole look favourable, there are states where progress has been considerably slower. We only have estimates for eight states over time, but these indicate a growing diversification within India. Yet another discouraging development is that the urban/rural divide has grown in the 1990s.

While it is encouraging to find little systematic differences between male and female children in terms of anthropometric status, there are indications that this may be a consequence of a higher mortality rate for female infants and children. To find out more about this worrying link is one of the important challenges for future research, but there are others. In particular, no attempt has been made in this article to provide theoretical and empirical explanations for the statistical regularities revealed. To do that should also stand high on the research agenda for the near future.

APPENDIX

Table 1: Prevalence of anthropometric failure of young children in South Asian countries in the 1990s, per cent

Country	Years	Sample size	Age cohort	Anthropometic indicators				Popula-tion
				W/H -2sd	H/A -3sd	H/A -2sd	W/A -2sd	(million)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Bangladesh[a]	1999	49,459	0.5-5	13.5	20.5	54.8	61.3	128
Bangladesh[b]	1996-97	4,787	0-5	17.7	28.0	54.6	56.0	120
Bhutan	1999	2,981	0.5-5	2.6	14.5	40.0	18.7	-
India[c]	1995-96	46,457	0-5	20.0	36.4	56.5	49.2	998
Nepal	1997-98	17,472	0.5-5	6.7	22.1	54.1	47.1	23
Pakistan	1990-94	3,141	0-5	14.2	16.4	36.3	40.0	135
Sri Lanka	1995	2,782	0-5	13.3	5.1	20.4	32.9	19
W average	..	..	..	18.4	32.2	53.9	49.3	1,300

Source: WHO 2001a.

Notes: a) Rural areas only; b) Urban and rural areas; c) The most recent surveys for India (1998-99) is not comparable with those from the other countries since it covers 0-3 year olds only.

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