11. The political economy of dietary allowances

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There is an assumption that dietary recommendations, including norms for nutritional requirements, have been arrived at through impartial inquiry. This chapter examines the proposition that, to the contrary, they are very much shaped by the socio-political contexts in which they are formulated. Based on a review of literature, key shifts in the development of nutrition are analysed to support this assertion.

11.1 EMERGENCE OF NUTRITIONAL SCIENCE

The science of nutrition began in the mid-nineteenth century with the explicit linking of food chemistry and animal physiology (Kamminga and Cunningham, 1995: 5). Along the lines of the Cartesian notion, the body was visualised as a self-regulating steam engine needing a constant supply of fuel in the form of food to maintain its temperature and carry out work. The use of calorimeter[1] in studying food metabolism led to the adoption of the unit of heat measurement, the calorie,[2] in quantifying energy studies in physiology (Hargrove, 2006). The German scientist Max Rubner (1854–1932) successfully verified his law of isodynamic equivalence, that 'in accordance with their heat-producing value' (as quoted in Chambers, 1952: 4), the three macronutrients (carbohydrates, proteins and fats) could replace each other in the body and calculated their 'standard values' with 1 g of protein being equivalent to 4.1 calories, 1 g fat to 9.3 calories and 1 g carbohydrate to 4.1 calories.[3] This was a turning point in nutrition as the complexity of food culture could now be deciphered, reduced and compared in terms of the ubiquitous, unifying calorie.

Developing as it did, in the context of the Industrial Revolution, with the flow of people from the countryside to urban areas in a situation of destitution, scientific knowledge of the nutritional needs of the population became an important consideration (Lusk, 1909: 223). Thus, in the pre-war period, subject to the prevalent socio-political realties and preoccupation of the emerging nation states, the question – what should be considered an adequate dietary need for these populations – was addressed differently in Europe, Britain (and its colonies) and the United States.

11.2 PRE-WAR PERIOD

11.2.1 Dietary Studies in Europe: Labour and War

In an economically competitive world, which relied on the output from physical labour and was politically at war, the need in Western Europe at that time was to work out the most appropriate diet for the industrial worker and the soldier. Based on animal studies

and observations on human population, the German physiologist Carl Voit (1831–1908), recommended for a labourer performing moderate work, a daily consumption of 118 g. protein, 500 g carbohydrate and 56 g fat equivalent to a total of 3055 calories (Lusk, 1909: 211). For heavy work, he increased protein intake to 150 g and fat to 200 g daily (Mitchell, 1937: 9). For sedentary workers, the recommendation was 85 g of protein, 56 g of fat and 400 g of carbohydrates amounting to 2400 calories per day (Milles, 1995: 78). Rubner estimated energy requirements for men with varying body weights ranging from 80 kg (2864 calories) to 40 kg (1810 calories) (Lusk, 1909: 210).

Although in 1878 the German government had passed the *Sozialistengesetz* (Socialist law)[4] to suppress all democratic organisations including trade unions, German employers wanted their workers to be productive and healthy (Milles, 1995: 80). Thus, for instance, in the1889 'International Work Protection' Conference in Berlin, one section of the German General Exhibition on the Prevention of Accidents was on nutrition. In 1890, the French physiologist Gautier, arrived at 2604 calories for a worker at rest, 3556 calories at hard work, 3800 calories for fatiguing work and 5000 calories for 'exceptionally severe work' (Rabinbach, 1990: 130–131).

11.2.2 Dietary Studies in Britain: Prisoners and the Working Class

Unlike Europe, which was grappling over the question of how best to increase productivity by feeding its workers and prepare for war, '[i]t was controversy over the feeding of prisoners that forced the British Government in the middle of the 19th century' to examine the question of 'nutritional requirements of humans' (Carpenter, 2006: 1). Reports that prisoners in Millbank prison were being fed an 'extravagant' (p. 1) diet that 'no honest hard-working laborer [sic] could afford' (p. 3)[5] had created serious outrage and the prisoners' rations were reduced drastically. Within a year of this, sickness (dysentery and scurvy) and debilitation increased among the prisoners.

Edward Smith (1818–74), a prison doctor, opposed the logic of starving the prisoners on a meagre diet which in combination with the hard labour they, as part of punishment, were put through in treadmills, 'induce[d] disease and a premature death [with] so much human flesh and life wasted' (as quoted in Chapman 1967: 12). Smith's recommendation that changes in body weight be used as an indicator of food adequacy, was refuted by William Guy, the spokesperson of the prison medical officers, who advised that the quantity of food for the prisoners could be reduced with 'safety and economy' (Guy, 1863: 280). In 1864, a Scientific Commission set up by the Inspectors of Prisons to review prison diets, with Guy as the chair, not surprisingly, concluded, 'gain or loss of weight is not to be trusted as an indication of health, or as a test of the sufficiency of our [prison] dietaries'(as quoted in Carpenter, 2006: 6).

But Smith's work with the prisoners had been noted, and, in 1863, he was sent by the Privy Council to investigate the famine situation in Lancashire following the closure of the British Cotton mills (Carpenter 1991) and to recommend, 'the least cost per head per week for which food can be bought in such quantity and in such quality as will avert starvation disease from the unemployed population' (as quoted in Oddy, 1983: 76–77). Smith's data showed that in 57 per cent of the single women households and in 33–37 per cent of families, there was a reduction in food expenditure (Scola, 1992: 276). While all of them had reduced their meat and potato consumption, the diet of the

single women households were worse, consisting of just tea, bread and a bit of butter or treacle. Though conscious of the limitations imposed by cost, Smith recommended that men should receive food equivalent to 2800 calories with 80 g of protein and that women should receive similar amounts but because of their body weights, would need 10 per cent less than men, but nursing mothers, children and infants needed more food, particularly protein, per body weight (Carpenter, 1991: 1518). His recommendation included fresh vegetables, at least 1 pint of non-fat milk, since the preferred full cream milk was too expensive, and some fresh meat or herrings, the latter being more suitable for older people with poorer digestion. According to Chapman (1967: 15), 'Smith's survey, and those that followed over the next two years, rank as monumental advances in public health research . . . his was the first scientifically oriented nutrition survey and . . . the first sensible dietary standards of any kind set up for Britain.'

It is not surprising that a latter day reviewer includes Edward Smith in the list of doctors in the Industrial Revolution in Britain who applied their 'professional skills and knowledge to the problems of an industrializing and urbanizing society' (Rose, 1971: 22). Yet, his work was marginalised in his own lifetime.

Chapman (1967) is at a loss to understand why Smith's exemplary work, 'plowing [sic] new ground' (p. 22) in the physiology of nutrition, was acknowledged by his European contemporaries, but ignored in Britain, thereby delaying the progress of physiology both in Britain and in the United States and wonders at the 'failure of Smith's innovations . . . to influence health legislation in Britain within reasonable time' (p. 23). While Chapman puts it down to Smith's alleged quarrelsome and disagreeable personality as perceived by his peers, the more likely explanation could be the political implications of his work which posed a challenge to the then prevailing orthodoxy in nutritional science, and to the policies of the state; that he was apparently not a person who 'contrive[d] to conciliate the affection of his colleagues' (Anonymous, 1874: 653) made it convenient for his British colleagues to find a justifiable reason to marginalise him.

11.2.3 Dietary Surveys in the United States: Nutrition and Labour Reform

The American story too revolves around the diet of the people from the working class but from a diametrically opposite point of view as the baton of scientific research in nutrition shifted from Germany to the United States in the late nineteenth century.

Wilbur O. Atwater (1844–1907), instrumental in putting the United States on the nutritional science map, was a second generation American agricultural chemist exposed to the scientific developments on nutrition in Germany (Carpenter, 1994). Atwater argued that it was possible, scientifically speaking, to eat well for less money. Combining economics with nutritional chemistry, he showed that 25 cents spent on cheese provided 240 g of protein, which was three times as much that available in 25 cents worth of a sirloin of beef. This was the perfect answer that Edward Atkinson, a Boston financier and a laissez-faire liberal, had been searching for his question: how to get the workers to eat better without having to resort to an increase in wages (Aronson, 1982).

In the United States, this question had become particularly urgent in the late nineteenth century, with the escalation of labour unrest, marked by a series of strikes and violent confrontations between the workers, the employers and the state.[6] The average annual income of an urban worker was only about US$400 to US$500, a sum insufficient

to support a family and had to be supplemented by the labour of his wife and children (National Humanities Center, 2010).

Referring dismissively to the 'so-called "iron law of wages" developed by Lasalle [sic] and Carl [sic] Marx', Atkinson (1889 [1973]: 162) propounded a solution for the 'Remedies for Social Ills':

> With respect to food, . . . [e]ach adult person requires substantially the same quantity of food, varying *a little* with the work done; the man who is engaged at hard labor [sic] requires and can digest a greater quantity than the rich man. In quantity rightly consumed, therefore, little economy or saving may be expected or desired; the saving is to be made by right selection of the materials. (Atkinson, 1889: 242) (emphasis added)

The coming together of Atwater and Atkinson was a defining moment as, '[t]he alliance between nutrition science and labor [sic] . . . gave birth to the definition of nutrition as a social problem inextricably tied to labor [sic] reform' (Aronson, 1982: 476) with its central query, what is the nutritional requirement of human subsistence, the point where questions of 'political economy and nutrition research coincided' (p. 477).

With the backing of the state and finance capital, by late 1880s, Atwater and his colleagues had completed over 4000 analysis of dietaries (Maynard, 1962) on populations from diverse geographical, ethnic, occupational and socioeconomic backgrounds and the data was used to formulate dietary standards (Darby, 1994).

'Atwater met frank hunger for the first time' writes Dirks (2003: 84), who has reviewed the data from these studies, but it seems to have left him unmoved. The primary foods among more than half the households were cornmeal, wheat flour, bacon, lard and granulated sugar. There was severe seasonal deprivation and the tenant farmers and plantation labourers experienced a steep fall in food intake during winter, due to the mortgage system that forced them to plant cash crops with little money left over to purchase sufficient food through the year. Among the railway and factory workers, while there was more variety in the foods consumed as compared to the rural households, nearly half of the households were unable to feed their family members resulting in many underweight children. Dirks (p. 95) observes that while it was known that the African Americans living in Black belt communities were poorly nourished, the dietaries revealed its magnitude and concludes that hunger was class based, worsening from the onset of winter through early spring and present in both rural and urban areas.

In contrast, the working class immigrants from Europe and Quebec consumed substantially more protein, fat and energy. It was then this group of migrant households that fitted Atwater's and Atkinson's notion of wasteful calories needing reform (Levenstein, 1980). For the population that was native born, poor, of American and/or African descent, the levels of nutritional intake they were surviving under was so low that the solutions proposed by Atwater and Atkinson would have had no place in their lives as they could not have eaten more cheaply than they were doing.

In contrast, the diets of the better off were looked upon indulgently, as can be seen from the comment on two female missionaries in New York City who weighed 200 and 175 pounds respectively:

> Their weight was . . . due . . . to solid muscle on large, well-knit frames. In their work among the poor . . . climbing long flights of stairs gave ample exercise . . . [They] were working hard in a

> very wearing occupation . . . and . . . their table [was] attractive without being extravagant. (As quoted in Aronson, 1982: 482)

In effect, the nutritional theories were applied 'in a class-stratified fashion, dividing foods into two categories – those for workers and the poor and those for the middle and upper classes. The moral imperative of nutrition was: do not aspire to things that are above one's station in life' (Aronson, 1982: 483).[7]

11.3 INTER-WAR PERIOD

11.3.1 Public Health and Commerce[8]

It was in the inter-war period, that nutrition gained 'widespread recognition [as] a factor of primary importance to public health and to the economic and social welfare of nations' (Eliot and Heseltine, 1937: 331), and the first attempt made to arrive at an international consensus on dietary requirements. In June 1935, the delegates at the Nineteenth Session of the International Labour Conference had to deal with a paradoxical situation of falling food consumption among the poor even while there was enormous surplus of agricultural produce. To keep prices up, the western food-producing countries were restricting food production or destroying it; grains were burnt or ploughed under, cattle were slaughtered, fish were dumped back into the sea and 'in the midst of this feverish destruction of food, it [was] estimated that more than 25 000 000 were unemployed in Europe and America and the majority of these were suffering from . . . undernourishment and malnutrition' (Gangulee, 1934: 21). In the context of plentiful production, there was a need for a solution to hunger which would leave profit margins untouched. Thus, it was that the Labour Conference, while advocating for an adequate living wage, laid the foundation for economic considerations as a basis for setting nutritional standards. The Report of the Director, International Labour Office, noted that,

> [t]his question of consumption is not only national but international in its scope. If it is agreed that *the only real solution of the problem of economic balance is not through scaling down production but in levelling up consumption* . . . The cares of the American, Argentine, Australian, Canadian or Eastern European farmer would be conjured away if the urban population of Europe and America could eat even a little more bread, butter and meat per head.' (as quoted in Aykroyd, 1936: 639–40; emphasis added)

In September 1935, the Sixteenth Session of the Assembly of the League of Nations added nutrition and health, and their bearing on world agricultural problems to their agenda, agreeing that increased consumption of agricultural products and the purchasing power of the agriculturalists must rise, to the benefit of industry and world trade in general as captured by the phrase of an Australian delegate, 'marry health and agriculture' (Aykroyd, 1936: 640). A 'Mixed Committee' comprising nutritionists, economists and agricultural and financial experts was set up to formulate the first international dietary standard; but first, nutrition had to be established as a social problem:

> The economic interests of the community as a whole are bound up in maintaining the standard of physical efficiency among the people and laying the foundations of the health and well-being

> of future generations. Moreover, there is a definite social and political interest in the accomplishment of this task, owing to the well-ascertained relationship between the deficiency of food and especially of protective foods and social unrest. (League of Nations, 1936a: 26–27)

Therefore, the state had to recognise that one of its collective duties was to 'exercise general supervision over the nutrition of the people as a whole' (League of Nations, 1936a: 29–30) and in order to do that, each country had to formulate a centralised national policy 'bringing nutrition and economic policy into harmony' (p. 27); this could then form the basis for international collaboration at a later stage (p. 30). As to the nature of the problem, '[l]eaving the more backward countries out of account for the time being', it was not so much the lack of 'energy giving foods (proteins, fats and carbohydrates)' as the lack of 'protective foods (foods rich in minerals and vitamins)', (League of Nations, 1936a: 15) that needed to be addressed; which,

> would mean, even in a comparatively well-fed country like England, a very great increase in the demand for dairy products, eggs, fruit, vegetable etc., and . . . such a demand would enormously stimulate the agricultural industry. The ideas of our 'over-production' in agriculture, and of restricted production as a way out of the economic depression, seem to be finally defunct. (Aykroyd, 1936: 640–41)

The other means of creating demand was to widen the constituency of recipients to include children, the rationale being that national investment in the health of young children would be richly rewarded by the 'improved vigour and physique of the adult population' (League of Nations, 1936a: 21); the older children, on the other hand, were 'damaged goods' (p. 21) unworthy of national spending. Pregnant and lactating women were added to the group needing state attention because the health of the child, while *in utero* and when breast-fed, was dependent on the mother's nutritional status.[9]

Reiterating the 'modern' scientific basis of the recommendations, the report laid down the concept of 'sound nutrition' (p. 79) as a mixed diet containing adequate amounts of protective foods, and 'good' protein, at least 50 per cent of which was to be from animal sources (p. 32). Instead of settling for a 'minimum' diet, the policy makers were urged to strive for an 'optimum' diet intended to provide 'an adequate supply of nutritive elements for all the physiological requirements of the human body'(p. 17) and 'for the full development of the individual for efficiency without exhaustion and for his [sic] resistance to disease' (p. 53). Since protective foods were expensive,

> [i]t may be increased indirectly by public assistance, whether that be [sic] afforded in cash or in kind or in such a combination of these two as is constituted by rendering essential foodstuffs available to the poor at especially low prices. (League of Nations, 1936a: 81).

Regarding energy requirements, the recommendation was, 'after deducting waste in cooking and at table', 2400 calories per day, for an 'average adult . . . living an ordinary everyday life in a temperate climate and not engaged in manual work' as, 'conditions and age being equal, no difference [is] made between the sexes' (p. 56); supplementary requirements were to be added, depending on the muscular effort involved in specific occupations, categorised as light, moderate, hard and very hard work, and the number of hours of work thus engaged. A table of coefficients was provided for calculation

of dietary needs for children at different ages and pregnant/nursing women. Protein requirements were calculated separately with minimum of 1 g per kg body weight for adults, and higher allowances for children up to the age of 21 years and pregnant/nursing mothers (League of Nations, 1936b: 13–15). It is noteworthy that body weight was not taken into consideration while calculating energy needs.

The League of Nations' proposal to increase nutritional requirements, particularly of more expensive foods, was greeted with enthusiasm by the industry. The national governments, on the other hand, were unhappy as these new standards, higher than their own advisory groups' recommendations, would force member governments to raise the minimum standards for calculating unemployment and maternity benefits for their populations (Borowy, 2008). But more importantly, the scaling up of standards resulted in amplifying the proportion of malnourished even in countries in the west, for instance, Great Britain (Weindling, 1995). Thus, these standards, set to provide universal measuring yardsticks for assessing the nutritional status of nations, were not necessarily linked to the actual health experiences of a population; nor had they been reached through purely scientific reasoning.

11.3.2 Nutritional Standards for the Colonised: A Dual Policy

The international dietary standard was however considered too high for the subjugated people in the colonies. The Sub-Committee on Colonial Territories (1938), while agreeing that the population in tropical countries were not different from the western populations, suggested reducing it to 'some attainable goal for the purposes of practical nutrition work' (as quoted in Raymond, 1940: 118). For instance, for an adult male from southern India, the estimate was 2600 calories (with 5 per cent added for wastage in cooking, i.e. a total of 2730 calories), and for the adult woman who would require less than the adult male, a factor of 0.85 was to be used for conversion (Raymond, 1940). Similar reduction in calorie requirement was made for populations in other colonies as well; for instance, administrators in East Africa felt that same dietary requirements as suggested by the League of Nations Health Organisation (LNHO) could not be applied for the native populations because of economics, and this unwillingness to apply equal standards was attributed to racism (Little, 1991).

In India, the nutritional requirement was accepted, at 2590 calories (Gangulee, 1934: 69), 10 calories less than that recommended for a male sedentary worker by the LNHO. Even with this lowered norm, at the retail prices prevailing then in South India, a well-balanced diet was out of reach for the poor:

> [I]f a coolie has to support himself, his wife, his father, and three children on 16 rupees a month, the diet of the family will *inevitably* be ill-balanced and probably insufficient in quantity as well. It will, in fact, be waste of time to attempt to persuade him of the advantages of the well-balanced diet, which is quite beyond his means. (Aykroyd as quoted in Gangulee, 1934: 233) (emphasis as in original)

Within the Indian National Movement disagreement regarding nutritional standards was apparent. The Sub-Committee on National Health headed by Col. S.S. Sokhey set up by the National Planning Committee (NPC) in 1938 was unambiguous in its statement:

> Indians require as much food of different types as is required in other parts of the world, to permit of [sic] growth and to maintain health. This Sub-Committee cannot do better than suggest to the Planning Committee that they should adopt the standard fixed by the Technical Commission of the Health Committee of the League of Nations, both as regards caloric needs and the provision of proteins, fats and other dietary requirements. (National Planning Committee 1948: 39)

However, the introduction to this report, authored by K.T. Shah, contained a contradictory recommendation, reflecting the compulsions of the newly independent country:

> For our purpose, it is enough if, *as recommended by the National Planning Committee in its Instructions for the Guidance of its Sub-Committees*, an average dietary of 2400 to 2800 calories per day per head were aimed at and achieved as amongst the first objectives of a successful National Plan. (National Planning Committee, 1948: 34) (emphasis added)

The Bhore Committee, that had been set up in 1943 by the British government, as was to be expected, recommended a diet yielding 2600 calories (Health Survey and Development Committee, 1946: 56).

11.4 POST-WAR PERIOD

11.4.1 Whittling Away at the Norms

'The construction of post-war international order began with food' (Cullather, 2007: 362) when, at the behest of the US Government, 44 governments meeting in Hot Springs, Virginia, United States, committed themselves to founding a permanent organisation for food and agriculture[10] with an implicit goal of balancing mass production with mass consumption (Cullather, 2007). From the time of its inception, the Nutrition Division of the Food and Agricultural Organization (FAO) was assigned with the task of determining the 'calorie and nutrients' requirements of humans (Weisell, 2002: 15). While, on the face of it, there was to be no binding on the member states, the implicit message was that revisions in the successive meetings were to be viewed as outcomes of scientific deliberations and therefore above partisan interests.

The following table from Payne (1990: 15) (Table 11.1) summarises the shifts in recommended calorie requirements from late 1950s to the 1980s, with specific focus on India.

A close reading of Payne's table shows that the title, 'Energy requirements of a male adult with a nominal body weight of 55 kg (BMI 22.4)', is misleading, for, within the body of the table, estimates shift to a 44 kg man (line 7). Payne chooses 44 kg because 'this is about the lowest body weight consistent with survival and economic activity for a person of average height' (p. 16) and because the 'actual body sizes of many poor but active Indian men are lower than [55 kg]' (p. 15). This shift is in keeping with the changing position of the FAO with regards to calorie recommendations.

From 1950 until 1985, the FAO norms on calorie requirements, based on western populations, were formulated for planning food supplies at the population level and not as a 'yardstick for the detection of undernutrition' (Payne, 1990: 15). But from 1985 onwards, FAO introduced a notion of calorie requirements for prescriptive purposes, i.e.

Table 11.1 Energy requirements of a male adult with a nominal body weight of 55 kg (BMI 22.4)

Basis of calculation	kcal/day
FAO 1957 Moderate activity	2830
FAO 1973 Moderate activity	2530
WHO/FAO/UNU 1985 Moderate activity	2710
ICMR 1982 Moderate activity	2700
FAO 1985 Corrected for overestimation of BMR[a]	2450
As above, without 'discretionary'activity[b]	2200
As above, with body weight adjusted to 44 kg (BMI 18)	1960
80% of ICMR Lipton (1983) 'ultra poor'	2100
FAO 1985 'survival' requirement (1.27 × BMR)[c]	1550
As above, with BMR adjusted by 15% (1.2 BMR)	1470

Notes:
a. BMR calculated using the equation of Quenouille et al. (1951).
b. Discretionary activities are described in the 1985 UN report as those connected with social and recreational pursuits. They amount to about 250 kcals per day for a man of 55kg.
c. Allows for minimal activities such as washing, dressing, standing, etc. No discretionary or occupational activities.

Source: Payne et al. (1990); Payne (1990: 15).

'recommend[ed] intakes which *should* be anticipated in populations with adequate levels of income, social welfare and health provision' as distinct from diagnostic purposes, 'levels below which individuals would be likely to experience some detrimental effects' (p. 15; emphasis as in original); in other words, minimal survival levels below which negative effects can be expected. In addition, the Body Mass Index (BMI),[11] was introduced as a more appropriate indicator because, 'individuals are no longer automatically classed as undernourished simply because they are smaller: indeed some people are prepared to concede that there may even be advantages to being small' (Payne, 1990: 15).

The use of BMI and Payne's rationale for reducing the FAO recommendations from 2450 calories (line 5) to 1960 calories for a 44 kg man with a BMI of 18 (line 7)[12] are based on a problematic notion of adaptation, a notion I would term 'Indian exceptionalism', which has its origin in the protein-calorie debate of the 1960s, spearheaded by Indian scientists, leading to a proposition of the 'small but healthy' hypothesis.

11.4.2 Protein Versus Calorie or Protein and Calorie

In the early 1930s, in Gold Coast, an illness, kwashiorkor, was described in young children being weaned early with a probable cause of dietary deficiency of some amino acids (McLaren, 1974: 93). Soon, this disease, primarily localised in some communities, mostly in Africa, was cast as a world problem by the FAO and the World Health Organization (WHO) and its cure by skimmed milk came at an opportune moment to resolve the situation of domestic surplus of milk in the United States (McLaren, 1974).

In the mid-1960s, Gopalan, the then Director of the Nutritional Research Laboratories, Hyderabad, India, one among those who opposed the generalisation of the 'protein

problem' (Newman, 1995), challenged the dichotomisation of kwashiorkor and marasmus[13] in children as being two distinct clinical entities, the former said to be due to sufficient calories but inadequate protein and the latter due to insufficiency of both calories and protein. Drawing upon the concept of adaptation, he explained marasmus and the stunting which went with it, as adaptations to low food intake which protected physiological functioning, whereas, in the case of kwashiorkor, there was 'dysadaptation' or failure to adapt, the body being overwhelmed by either an acute or chronic insufficiency (Gopalan, 1968: 57). Sukhatme, the then Director of the Statistics division, FAO, picked up the concept of adaptation proposed by Gopalan and argued,

> [f]or the vast . . . majority who adapt themselves to available diet, low in calories and low in protein but with protein value about adequate for health, and who eventually establish some sort of equilibrium between body-weight, development and physical activity on the one hand and low intake of food on the other, the need is for more food of the type they are eating today. (Sukhatme, 1970: 182–83)

By the mid-1970s, Gopalan's proposition that the protein gap was part of a food gap (Jaya Rao and Kamala, 1976) and a cereal based diet, if adequate in calories, contained within it adequate quantity of proteins, was largely accepted (Wagstaff, 1976). While the turn of opinion, that inadequacy due to deprivation was the cause of nutritional deficiency rather than inappropriateness due to eating wrong foods, was welcome, there was now a shift to a singular preoccupation with calories, with Gopalan declaring 'the major deficiency in the diets of preschool children in India is calorie deficiency' (Gopalan, 1970: 37); the pendulum now swung to the other extreme of minimising the role of protein and protein-rich foods, particularly of animal origin.

11.4.3 The Indian Exceptionalism: The Small but Healthy Hypothesis

The die was cast when two Indian economists, Dandekar and Rath decided, in 1971, to incorporate calorie requirement in their poverty line for identifying and quantifying the poor. Using a mean per capita daily consumption of food, providing 2250 calories,[14] on the assumption that a household that could not afford even this amount should be considered poor, they arrived at an estimate of poverty – that in 1960–61, one third of the rural population and half of the urban population 'lived on diets inadequate even in respect of calories' (Dandekar and Rath, 1971: 29–30).

> People not familiar with these sections of the population . . . have wondered how men [sic] at all subsist at these levels. Therefore, when somebody occasionally brings these facts to public notice, some of them are shocked and are righteously indignant; others simply do not believe. Nevertheless, such are the facts of poverty in this country. (Dandekar and Rath, 1971: 27)

Sukhatme, one such disbeliever, in 1978, a few years after the publication of Dandekar and Rath's report, challenged their estimates as greatly exaggerated, by questioning the use of mean intakes as minimum requirements, because energy needs varied between individuals and, through autoregulation, within individuals as well.[15] In 1981, introducing a new dimension into the debate, Sukhatme averred that, in fact, lowered calorie intake led to better efficiency because,

> [w]hen the total calorie intake is less, the body wastes less, thus using the intake with greater efficiency. As the intake increases the wastage also increases and the energy is used with decreased efficiency. However, a point is reached in the intake of food below which BMR gets depressed and the body is forced into parting with its fat in favour of a more vital need to maintain body heat. That is the point of undernutrition. Likewise a point is reached in the intake of food above which the body gets too hot and is forced into storing the energy as fat. This is the point of overnutrition [sic]. (Sukhatme, 1981: 1319)

This explanation on food metabolism by a statistician reflected a lack of understanding of physiology of food, but since it was to an audience of predominantly economists and political scientists it went unchallenged. The explanation was also looked upon favourably because it appeared scientific enough to support a hypothesis which an American economist, had put forward as the outcome of his 'intellectual odyssey' while traveling through India:

> [w]hile one does not see a great deal of visible malnutrition in India, one does see a lot of extremely small people – and the poorer people are, the smaller they tend to be . . . if the poor weigh less than the weight assumed in the calculation of nutrient requirements, their real nutrient requirements will be less than their assumed requirements at any given point in time . . . most of the people of the world who are considered malnourished are simply 'Small but Healthy' people. (Seckler, 1980: 223)

Had Seckler travelled through Britain in the late nineteenth century, he would have come across equally small people:

> The British army recruiting for the Boer war . . . found around 50% of young working class recruits to be so malnourished as to be unfit for service . . . Twenty years later . . . the infantry were forced to lower the minimum height for recruits from 5' 4'' . . . to 5'. (Clayton and Rowbotham, 2008: 285)

Seckler's proposition about Indians was a circular one: poor people adapt to their low intake by becoming small (short and thin) and because they are short and thin, they require reduced intake. Sukhatme added to Seckler's hypothesis, that smallness was in fact superior because small bodies were more efficient, by illustrating with the real-life experience of women in a community kitchen, rolling 400 to 600 chapatis[16] in an 8-hour shift, whose efficiency increased by over 60 per cent as their intake decreased: 'for any given level of activity, output per unit of calorie intake [was] highest at the lower range of habitual intake as low as 1500 and . . . decrease[d] as intake increase[d] to 2400 calories.' (Sukhatme, 1982: 2014).

What manner of bodies were these that performed more efficiently when the fuel was reduced?

> Before joining the kitchen, the women [in this study] were poor, in that, they had hardly any home or shelter worth the description, little clothing, no hygiene and sanitation worth the name and no education. Many of these women were behind bars for petty thefts when they were recruited for the kitchen. Their poverty was such that they were hardly living as human beings; and the food they ate was what they managed somehow to beg, borrow or steal, living much the way animals live. (Sukhatme, 1982: 2014).

Some of them probably looked thin, perhaps emaciated, but their bodies were 'efficient' enough to roll,

> chapaties at the rate of one a [sic] minute for eight hours, of four hours shift each, [which] calls for hard muscular work and high concentration to ensure that the chapaties are rolled to size, to weigh uniformly and to bake properly. (Sukhatme, 1982: 2013)

The description seems reminiscent of the treadmill in the Victorian prisons with similar compulsions; but, were these women healthy is a question that Sukhatme does not answer as he is consumed with the notion of efficiency. If weight is taken as a measure of nutritional sufficiency (heights were not provided), at recruitment, the women were in the range of 34 kg to 51 kg; two-thirds of them weighed less than 45 kg, and among them one third weighed less than 40 kg. Though it was expected that the women would gain body weight to develop the strength needed for this muscular work, at the end of one year of observation, one third of them lost weight (no information on the range of loss), and one quarter remained at the same level; data on individual changes was, however, not presented.

During the earlier protein debate, Gopalan (1968) had evoked the concept of adaptation to explain the stunting seen in children with reduced food intake as a negative pathological process. He responded to Sukhatme that while the notion of intra-individual variation in calorie intake was unexceptional, what was unacceptable was that people who are 'permanently obliged to subsist on . . . the lower limits of their normal intra-individual variation, can *permanently* adapt their requirement to this low intake without any functional impairment' and that 'it may represent a pathological rather than a physiological equilibrium' (Gopalan, 1983: 593; emphasis as in original). Jaya Rao and Kamala (1985) explains why the response from nutritionists was muted,

> [Sukhatme] was quicker than the nutritionists, who for some reason kept quiet for a long time. Either we were overwhelmed by the statistical language, or the whole debate was considered to pertain only to statistics . . . It was an opportunity lost for the nutritionists and a tactical gain for Sukhatme. (Jaya Rao and Kamala, 1985: unnumbered)

The end result was that the image of an under-fed, thin, small body of an Indian from the working class as an extraordinary efficient machine became fixated in the minds of the policy makers.[17]

The late nineteenth century Atwater's and Atkinson's proposition in the United States that poor people should consume cheaper foods and live within their means was recast anew as policies to be adopted by poor nations but with a singular difference: unlike the poor in rich nations, the poor in poor nations should economise not just by reducing quality but also the quantity of their food intakes because the western dietary allowances were wasted on their small (wasted) bodies.

11.4.4 Defining Away the Poor

The timing of Sukhatme's proposition coincided with the changing paradigm initiated in the World Food Conference of 1974 in Rome where malnutrition was cast as a development problem, 'both a contributor to and consequence of underdevelopment' (Berg and Austin, 1984: 304). Sukhatme's prescription, that the basic cause of malnutrition was due to lack of water and that, '[a] nutrition intervention programme will at best help to treat the symptoms – not the cause of hunger and malnutrition' (Sukhatme, 1982: 2015),

changed the focus, 'to the question of technological needs of the poor (such as water and environmental hygiene and sanitation)', taking away the attention 'from the central issue, the distribution of economic power and therefore food' (Zurbrigg, 1983: 2084). It also fitted with the Indian state's need, post emergency,[18] to define away the poor.

Contestation over nutritional threshold continues in the contemporary period, and this need has become acute, particularly after countries structurally adjusted their economies. Lately, there is an added urgency to resolve the puzzle of stagnating nutritional level, in the context of 'unprecedented' economic growth and falling cereal consumption in India (Deaton and Drèze, 2009: 42). Increasingly, the use of calorie intake as a nutrition indicator at the population level (Deaton and Drèze, 2009: 63) and at the individual level (Svedberg, 2000: 24) is being questioned. To do away with the problematic minimum calorie thresholds, Jensen and Miller (2010) recommend the use of a new measure, 'staple calorie share' (SCS) on the assumption that those 'who consume 80 per cent or more of their calories from the staple are likely to be undernourished, while those who receive less than 80 per cent from the staple reveal through their behavior that they have passed subsistence' (p. 20). Their assumption is based on a controlled experimental study on the urban poor in two provinces in China, with mean calorie intake of 1710 in the poorer province and 1800 in the slightly better off province, where they observed that when given an opportunity to buy more food, if the poor households opt for the more expensive food (fish) to add flavor to their diet instead of increasing consumption of the cheaper staple, it would indicate that they are above subsistence level (Jensen and Miller, 2008). They explain the rationale in a less dense article in the American popular press:

> Imagine you are a poor consumer in a developing country. You have very little money in your pocket, not enough to afford all the calories you need. And suppose you have only two foods to choose from, rice and meat. Rice is cheap and has a lot of calories, but you prefer the taste of meat. If you spent all your money on meat, you would get too few calories . . . when faced with true hunger, taste is a luxury you can't [sic] afford. (Jensen and Miller, 2011)

While we do not hear the voices of the people in the study to know why they did what they did, Oddy (1970) comments on a similar situation in the late nineteenth century when the Inter-Departmental Committee on Physical Deterioration disapproved the behaviour of the working class spending money on pickles and vinegar to add flavor to their food: 'However, this [Committee's] attitude fails to take account of the need for food to be palatable. In a diet high in carbohydrate foods such as these families in the 1890s ate, palatability was probably the overwhelming consideration in expenditure on food.' (Oddy, 1970: 322).

Should the poor not be allowed to have 'discretionary foods? . . . permitted to have palates and preferences? A sweet tooth perhaps?' (Saith, 2005: 4604).

The use of SCS has been criticised both on theoretical grounds and policy implications (Kaicker and Gaiha, 2011), yet it could appeal to policy makers precisely because of that, as it 'yields an estimate of undernourishment or hunger that is half of that estimated by the traditional method using a minimum threshold' (Jensen and Miller, 2010: 4). From a nutritional point of view, Jensen and Miller's 'minimum-cost' constructed diets that require a person to consume daily, anything from 500 g to 1000 g cereal to meet energy needs, could increase morbidities and mortalities in such populations because

high carbohydrate diet is indicted as a risk factor in cardio vascular disease (Merchant et al., 2007).

11.4.5 Dietary Allowances: A Contested Territory

While, converting the three macronutrients in food into calories has become an accepted way to provide a balance sheet for accounting inputs, it makes little physiological sense in terms of output. Though technically, the body can utilise proteins as energy, it does so only in times of starvation for its primary function is to provide amino acids for building body proteins; and fats, a concentrated source of energy, not only acts as a buffer during periods of starvation or excess energy needs (as in breast feeding), but provides essential fatty acids which have a vitamin-like function in the body (Gopalan et al., 2012: 2). The critical role of vegetables and fruits to provide essential vitamins and minerals has been known for more than a century. Moreover, the requirements would vary according to age, gender, work and physiological status as in pregnancy and lactation.

The dissonance between the economic and public health reasoning in the choice of dietary recommendations seems to be linked to their differing objectives as the former is preoccupied with defining poverty and the latter with health.

Thus, in India, in 2009, an expert group reviewing the methodology for estimation of poverty utilised FAO's revised calorie norm of 1770 per capita per day in its calculations (Government of India, 2009) for no reason other than that it was closer to the actual observed intake of 1776 calories (p. 2). In contrast to this, around the same time, the recommendations arrived at by the Indian Council of Medical Research (ICMR) based on studies on Indian populations was far higher, with, for instance, a male (55 kg) engaged in moderately heavy work requires 2560 calories and a female (50 kg.) engaged in moderately heavy work requires2050 calories (Indian Council of Medical Research, 2010: 50).[19] Table 11.2 gives the recommended energy, protein and fat intake for adult males and females in India as per the National Institute of Nutrition.[20]

11.5 CONCLUDING REMARKS

While revising of dietary norms is to be expected as advances are made in nutritional science, recommendations of dietary allowances become a contested territory. Depending on particular socio-political contexts, recommendations have been scaled up or scaled down to suit the needs of the state and capital. Use of calorie counts in poverty calculations has taken the focus off from the need to provide for a diet with all the necessary, equally important nutrients in appropriate quantities for optimal health, irrespective of costs. As pointed out by Gopalan (1983) reliance on only calories is unwarranted from the point of view of nutrition, as '*[a]ll nutrient deficiencies* represent undernutrition' (Gopalan, 1983: 591; emphasis as in original).

Table 11.2 Nutrient Requirements for Indians (adults)

	Category	Body weight (kg)	Energy			Protein	Visible fat
			kcal/d[a]	kcal/kg/day	g/kg/d	Total	g/d
Men	Sedentary work	60	2320	39	1.0	60	25
	Moderate work	60	2730	46	1.0	60	30
	Heavy work	60	3490	58	1.0	60	40
Women	Sedentary work	55	1900	35	1.0	55	20
	Moderate work	55	2230	41	1.0	55	25
	Heavy work	55	2850	52	1.0	55	30
	Pregnant	55 + GWG[b]	+350			55 + 23	30
	Lactating	55 + WG[c]	+600 +520			55 + 19 (first six months) 55 + 13 (next six months)	30

Notes:
a. Rounded off to the nearest 10kcal/d.
b. GWG – Gestational weight gain.
c. WG – Gestational weight gain remaining after delivery.

Source: Indian Council of Medical Research (2010: 50, 82 and 103).

NOTES

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1. Calorimeter – an apparatus used for measuring heat (*calor* – heat in Latin) in the study of thermo-chemistry.
2. Calorie – defined as the amount of energy required to raise the temperature of one kilogramme of water by one degree Celsius at one atmosphere of pressure (Hargrove, 2006). Energy in food is quantified as kilocalories (kcal).
3. This was later refined by Atwater to 4, 8.9 and 4 calories, respectively (Maynard, 1962: 8), the conversion factors currently in use.
4. The 'law against the dangerous activities of social democracy', an emergency law extended till 1890. Source: http://translate.google.com/translate?hl=en&sl=de&u=http://www.uni-giessen.de/~g41007/sozialis.html&ei=wOmIS9PFCsLr-AaOy4TkDQ&sa=X&oi=translate&ct=result&resnum=2&ved=0CA0Q7gEwAQ&prev=/search%3Fq%3DSozialistengesetz%26hl%3Den%26sa%3DG. Accessed 27 February 2010.
5. The prisoners' accounts were very different from the popular perception. The food was so inadequate that, 'The first part visibly affected was the neck. The flesh shrinks, disappears and leaves what look like two artificial props to support the head . . .' (as quoted in Priestley 1985: 158).
6. http://www.digitalhistory.uh.edu/database/article_display.cfm?HHID=224(till234). Accessed 25 February 2010.
7. Strangely though, while focusing on eating cheaply to reduce costs, Atwater refused to lower his dietary standards for intake of protein which were higher than that of Voit's, and despite his own studies showing lower requirements (Maynard, 1962: 6). This was probably linked to the emerging beef industry.

8. Part of this section and the next one on colonial diet was published earlier as a working paper (see Sathyamala, 2010).
9. This recommendation was controversial then, because even as late as 1946, the medical advice to pregnant women in many parts of the western world was to refrain from gaining weight during pregnancy to facilitate easy delivery, particularly in the context of contracted pelvises and destructive surgeries with adverse maternal and child outcomes (Luke and Johnson, 1991).
10. Source: A short history of FAO, http://www.fao.org/UNFAO/histo-e.htm. Accessed 25 May 2010.
11. Body Mass Index is a proportion of weight for height in squares with a normal range said to be from 18.5 to 24.99.
12. This is also misleading because the lower range of normal BMI is 18.5. The height for this man works out to be 156 cm and if he had a BMI of 18.5, the lower cutoff point, with the same weight, he will have to drop 2 cm from his height.
13. Another clinical manifestation in young children due to food deprivation.
14. This was considered 'adequate under conditions of climate etc.' (Dandekar and Rath, 1971: 129).
15. The paper by Sukhatme and Margen (1982) was published after this; for a critique, see Dasgupta and Ray (1990).
16. Indian unleavened flatbread.
17. In 1929, the passing of the Bombay Maternity Act also saw a similar debate, with opponents to the bill stressing that 'coolie women had a different body and capacity for physical endurance that could do continue working up to practically a few days before confinement' (Chhachhi, 2004: 73).
18. In India, the period from 26 June 1975 to 21 March 1977 was declared as a period of emergency with the suspension of civil liberties.
19. Although the ICMR report was published in 2010, the first meeting took place in April 2009, 7 months before the publication of the report of the Expert Group on Poverty Estimation.
20. See the report of the expert committee on nutrient requirements (Indian Council of Medical Research, 2010) for dietary allowances of other nutrients for Indians.

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